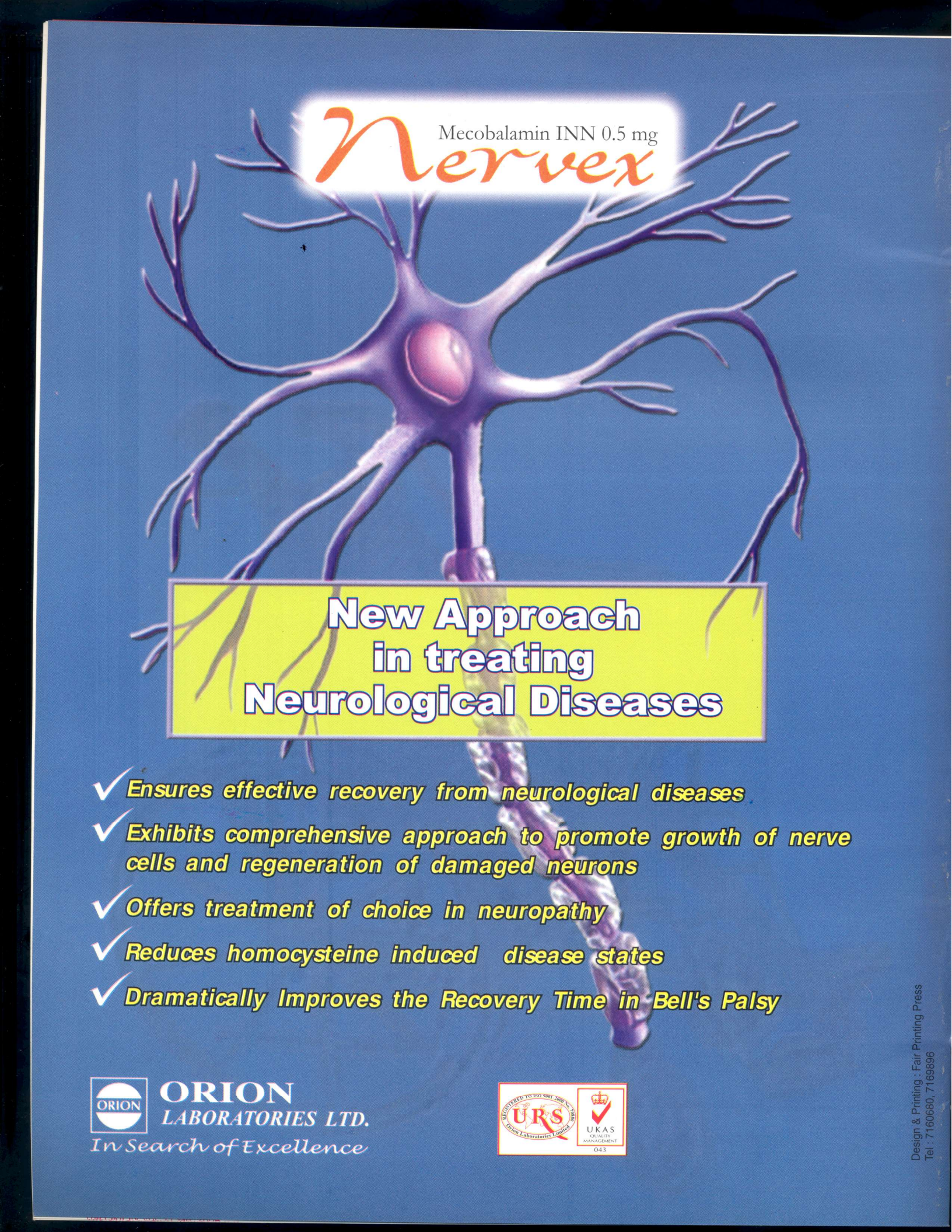
New year issue

The ORION

Medical Journal

Vol-17, January-April 2004

Multi Discipline Vol - 17 : 129 -160, 01 January 2004, International ISSN 1606 - 9722


Mecobalamin INN 0.5 mg
Nervex
New Approach
in treating
Neurological Diseases
Ensures effective recovery from neurological diseases
Exhibits comprehensive approach to promote growth of nerve cells and regeneration of damaged neurons
Offers treatment of choice in neuropathy
Reduces homocysteine induced disease states
Dramatically Improves the Recovery Time in Bell's Palsy
ORION
LABORATORIES LTD.
In Search of Excellence
URS
UKAS
QUALITY
MANAGEMENT
043
Design & Printing : Fair Printing Press
Tel : 7160680, 7169896

Third generation oral cephalosporin

Truso

Cefixime USP

Shows outstanding performance against:

- **T** *yphoid fever*
- **r** *espiratory tract infections*
- **U** *rinary tract infections*
- **S** *inusitis*
- **O** *titis media*

Most economic price

200 mg Capsule		
Price of existing brands	**Price of Truso**	**Savings up to**
up to Tk. 50/cap	**Tk. 35/cap**	**42.86%**

Powder for Suspension (37.5 ml)		
Price of existing brands	**Price of Truso**	**Savings up to**
up to Tk. 225/phial	**Tk. 160/phial**	**40.63%**

ORION LABORATORIES LTD.
In Search of Excellence

REGISTERED TO ISO 9001:2000 No. 7980 URS Orion Laboratories Limited
UKAS QUALITY MANAGEMENT 043

Founded September 1998 • Published quarterly • Volume 17• Thursday 01 January 2004

The ORION Medical Journal

Editor's Choice

The ORION, A voyage beyond the excellence

Peerless pre-eminence of The ORION admitted to all hands owes itself to be esteemed to go on with the supremacy. This unparallelism enthuses The ORION for successive evolution to be arrayed into a broad medical spectrum. Therefore, this issue is assembled with valuable topics like ' Use of amniotic membrane in ocular surface disorder' (p-139-140) discussing about a unique way of management of such cases that enlightens a hope to prevent loss of vision.

Apart from this, an editorial points out the global scenario of cardiovascular risks and Bangladesh perspective (p-130) . A review article on' Prediction of response to lithium in affective disorder' (p-131-133) reveals the use of lithium to reduce the morbidity and mortality of recurrent affective disorders.

An original article on 'Anesthesia in Open Heart Surgery: Evaluation of 1150 cases' (p-134-135) nicely demonstrates the role of team work in open heart surgery specially focuses on cardiac anesthesia on beating heart and ICU management. Another original article on 'Zinc treatment for childhood diarrhea' (p-136-138) is highlighting a new and innovative project of ICDDR,B on scaling up Zinc treatment for children with diarrhea (SUZY project).

The review article on 'SARS: A mysterious pneumonia' (p-141-143) reveals on etiology, clinical manifestations, source, treatment and prevention of SARS. Another article on 'Hydatid disease: An overview' (p-144-145) gives an updated information regarding diagnosis and management of hydatid disease.

The article on 'HIV and pregnancy' (p-146) flushes the global prevalence of HIV and management of HIV diagnosed woman with pregnancy. The review article on 'Role of granulocyte colony stimulating factor in hematological disorder' (p-147-148) reflects the advancement of treatment in hematological disorder. A very interesting article on 'Amblyopia or Lazy eye: A silent thief of children's sight' (p-149-150) confers on commonest cause of vision defect in children and its management.

An original article on' Enhanced detection of ischaemic but viable myocardium by pharmacological stress agent with re-injection protocol thallium-201 SPECT study: A preliminary experience report' (p-151-156) evaluates the role of thallium-201 scintigraphy in distinguishing ischaemic from infarct myocardium with coronary artery disease. A case report on 'Omphalocele-A congenital umbilical defect' (p-156) documents a very interesting childhood congenital defect and its management.

Furthermore, The ORION is happy to offer the valued readers a world wide access through the internet website www.orion-group.net/journals where all the issues of The ORION are available. All the esteemed readers can also access The ORION from anywhere in the world through other international web search options like Google, MSN, Yahoo etc.

The opinion and suggestion of esteemed readers are always appreciated to make The ORION medical journal upgraded day by day.

May the Almighty bless all in the spirit of good health.

The ORION wishes all a very Happy New Year-2004 and prosperous life in each and every moment.

DR. MOHAMMAD ZAKIRUL KARIM
Chief editor, The ORION
and Manager,
Medical Services Department, ORION Laboratories Ltd.

Global scenario of cardiovascular risks and Bangladesh perspective

Zaman M A[1]

The ORION 2004 ; 17 : 130

Total number of patients who die due to Ischaemic heart disease every year world wide is almost 76 million. But 40% death can be prevented by controlling risk factors and life expectancy can be increased by 10 years globally[1]. Bangladesh is one of the developing countries whose both incidence and prevalence of Ischaemic heart disease has been increasing gradually and unless concerted efforts are made and national policy of prevention of risk factors are undertaken, it is feared that by next 10-15 years time the number of patients will increase dramatically. This will obviously put a serious stress on the health services resources and a big burden on health service providers. The improvement in clinical and interventional cardiology has been progressing at a galloping speed all over the world but at a very high cost and it has become difficult for a country like Bangladesh to transfer those technology due to limited number of specialists in the field and the high cost of technology. The infra structural development in cardiology both in govt. and private sector has been progressing at a snail's space. Therefore we are at this stage is quite unprepared to face the large number of patients who will be seeking medical help and treatment facilities. Already a large number of patients are going abroad for cardiovascular treatment and given the scenario stated above this trend I am afraid will increase in future.

It is therefore very essential that we do put more emphasis on preventive side in the overall challenges in management of Ischemic heart disease in Bangladesh.

The risk factors of Ischemic heart disease is now well established all over the world and its prevalence in Bangladesh's perspective has been evaluated over the last 15-20 years. The mortality of Ishemic heart disease is also higher in Bangladesh. Adequate approach in prevention of Ischemic heart diseases has not made any head way in Bangladesh yet.

A. Inspite of campaigns by govt. and many non government organization's regarding smoking hazards the percentage of smokers presenting with IHD has not decreased yet and the no. 1 risk factor for IHD in Bangladesh is still smoking (70-72% in Bangladesh for the last 25 years[2].)

B. Although more and more cases of hypertension is diagnosed now in Bangladesh than 15 years ago but still detection of all hypertensive persons in Bangladesh is a far cry even those who are diagnosed, the percentage of adequate control of BP still is very low and drug compliance still poor. Therefore high blood pressure is still high BP as risk factor in stroke is well established than the risk of IHD in hypertensive patients. a risk factor in Bangladesh[3].

However, control of BP is very important to prevent complications and it is worth mentioning that relation of high BP as risk factor in stroke is well established than the risk of IHD in hypertensive patients.

1. Professor M. A. Zaman MRCP (UK) FCRP (Glasgow) FRCP (London)
Principal and Professor of Cardiology, Bangladesh Medical College
Ex-Director -cum -Professor of NICVD

C. Many people believe that high lipid may not be a risk factor in Bangladesh in view of the high proportion of population is poor and may not have more than required amount of fats in the diet but abnormal lipid profile particularly high TG level is quite high in a large number of patients who are diabetic as well. It has been reported that expatriates Bangladeshis and people from other South Asian Countries have higher level of TG even if they have settled in UK or Europe for a long time . Therefore heredity factors may have a place here for higher TG level.

D. Diabetes mellitus particularly uncontrolled diabetes mellitus keeps on assaulting the endothelium of blood vessels including coronary arteries ,thereby accelerating the process of atherosclerosis the main hall mark of offending lesion in coronary vessels . There are a large number of diabetic patients in Bangladesh (2-3% of population) which is a big burden on the ongoing process of patho physiology of cardio vascular diseases. When diabetes mellitus is in combination of other risk factors then the risk is, double or triple in developing Ischemic heart disease.

E. Obesity and lack of physical exercise puts extra load on cardiac output in terms of supplying extra amount of oxygen and nutrients of heart muscles. Excess weight need excess amount of blood supply. Thereby forcing heart muscles to contract more and need more Oxygen supply as energy.

F. Stress/Anxiety and tension can not be measured in laboratory in an easy method but it is now recognized as a definite risk factor for Ischeamic heart disease. Stress always releases lot of biochemical and catecholamines in the circulation triggering rise of blood pressure, enhancing heart rate and initiating all sorts of arrhythmias. Modern -day stresses in life can drive a person's sympathetic chemical reactions leading to spasm of Coronary vessels so called dynamic stenosis of Coronary circulation leading to even myocardial infarction.

During the past 30 years, there have been major reductions in mortality rates for the various forms of cardivascular disease[4]. The potential benefit for primary preventive of M.I by modifications of risk factors has been demonstrated by a meta analysis of epidemiological studies[5].

There seems no let up in the prevalence of risk factor in Bangladesh. There is also no visible or demonstrable indicator of any impact on the preventive measure in terms of either reduction of prevalence or improvement in mortality rates in Bangladesh. Hopefully more public awareness has lead to the increase in the number of patients being diagnosed resulting in demonstrable singular most important beneficial effect of early thrombolysis therapy in myocardial infarction and this has made a difference in the out come of early therapeutic measures.

References

1. National Heart Lung and Blood Institute 1998.
2. Llyod Jones Dm. Larson MG, Beiser A, Levy D. Life time Lancet 1999.
3. Thom TJ, Rocella EJ, Trends in blood pressure control and mortality in: 1220 JL. Black HR eds. American Heart Association 1999.
4. Vital statistics of USA, National Centre for Health Statistics. (adjusted for US population 2000)
5. Manson JE, Tosteson H, Redker PM et al, New England Journal of Medicine 1992;326:1406-1416.

Prediction of response to lithium in affective disorders

Firoz A H M[1]

The ORION 2004 ; 17 : 131-133

Introduction

The rediscovery of lithium and its reintroduction to psychiatry in 1949 has provided one of the most dramatic developments in psychiatric practice. Indeed it has antedated the introduction of chlorpromazine in 1957and imipramine in 1962. Moreover its established efficacy in the management of manic depressive psychosis has affirmed Kraeplin's distinction between schizophrenia and manic depressive psychosis and later on the distinction between bipolar and unipolar affective disorder. Its efficacy in the management of affective disorders has been established by numerous high quality controlled studies which showed that the use of lithium substantially reduces the morbidity and mortality of recurrent affective disorders Coppen, A (1994). However the impact of Lithium on the naturalistic outcome of affective disorders was challenged by Dickson and Kendell (1986) who reported a threefold increase of admissions for mania to the Royal Edinburgh Hospital between 1970 and 1981, despite a tenfold increase in the use of lithium during that period. Goodwin and Jamison (1990) criticised the study referring to factors that could have contributed to this finding : diagnostic shift from schizophrenia to mania, the increased incidence of drug and alcohol misuse and the increased use of anti-depressants resulting in greater risk for mania or lithium-resistant mania. Naturalistic studies reported from the Lithium Clinic in Epsom however consistently reported higher rates of effcacy for lithium in both bipolar and unipolar illness (Abou-Saleh, and Coppen 1990) including studies evaluating lower doses / levels of lithium (Coppen and Abou-Saleh, 1988). My personal interest in the study of lithium developed when I worked with the Medical Research Council, Metabolic unit at the Royal Edinburgh Hospital in 1978. Whilst I was impressed with its dramatic and almost cufative effects in bipolar illness, I was also intrigued with its lack of efficacy in some patients. This observation prompted me to study predictors of response in an attempt to identify sub-groups of patients in reponse in an attempt to identify sub-groups of patients in relation to response to lithium including those who were lithium resistant who could be spared exposure to it. This review will focus on prediction of response to lithium in the acute treatment of mania, depression and to its prophylactic effects in recurrent affective disorders.

General Considerations

Before reviewing the evidence for the effective use of various predictors of response to lithium it is important to address a number of issues. Firstly there is the issue of definition of response which ranges from complete success when no further episodes are observed to the other extreme of total lack of efficacy. Secondly there are qualitative and quantitative measures of response. In our studies, we have used the affective morbility index (AMI) which is a composite index of the severity and duration of affective episodes. A recent analysis of the already published data (Abou-Saleh and Coppen 1990) showed that predictors of response were the same whether a qualitative (response/non-response) or quantitative measure of outcome (AMI) was used. Thirdly there is non-compliance in relation to prediction of response. Aagaard and Vestergaard (1990), distinguished between predictors of non-compliance with lithium and true predictors of response in lithium adherent patients. Fourthly there is the issue of consistency of response or nonresponse between episodes of illness which has not been adequately studied. Jefferson (1995) identified a number of other issues including the specificity of predictors to response to lithium versus other treatments such as anti-convulsants e.g. poor response to lithium in dysphoric mania, co-morbid substance abuse and personality disorder. The selection of patients and its impact on outcome with more recent studies showing less efficacy for lithium than earlier studies Grof et al, (1998).

Predictors of anti-manic response

In a recent review, Jefferson (1995) identified a number of putative predictors of response to lithium in acute mania. Clinical characteristics of mania are poor predictors of response to lithium and the earlier finding that manic patients with paranoid destructive feautures respond poorly to lithium was not confirmed in later studies. Severity of mania including mania with psychotic features is also not a reliable predictor of poor response. The most important predictor of response however is the presence of depressive symptoms with mania particularly if these symptoms qualify for the diagnosis of major depressive episode. It was noted that mixed affective states occur in 40% of manic episodes Goodwin and Jamison, (1990) with a good response that is half of that in pure mania. The recent placebo-controlled study of lithium, divaloproex in mania suggested that even a modest level of pre-treatment depression-related symptoms is a robust predictor of lithium non-response and is associated with better response to divaloproex Swann et al, (1997). The search for biological predictors of response has been disappointing. Sullivan et al, (1997) reported that good response to lithium was associated with higher platelet monoamine oxidase activity than poor response. Swann et al, (1987) reported that lithium nonresponders had higher ratios of urinary MHPG excreton. Stoll et al (1991) found that patients with a high RBC choline levels had a poor response to lithium, a finding which may be related to the notion that patients with higher RBC cholina levels were more severely ill than those with lower levels. Goodwin and Jamison (1990) in reviewing the evidence, identified predictors of poor antimanic response to lithium : mixed affective state, substance misuse and a history of rapid cycles which appear to predict a good antimanic response to carbamazepine.

Predictors of anti-depressant response

Overall, bipolar depression responds better to lithium than unipolar depression.Goodwin and Jamison, (1990) in a review of placebo controlled studies, found good response to lithium in 79% of bipolar patients and in 36% of unipolar patients. Studies of personality factors showed distinguishing

1. **Prof. Dr. A. H Mohammad Firoz,** MBBS, DPM, MAPA, MCPA, MBA, FCPS, MRCP, FRCP
Professor of Psychiatry, Director, National Institute of Mental Health, Dhaka

characteristics of patients on the MMPI who respond well to lithium. Goodwin and Jamison (1990) also reviewed the evidence for personality predictors of lithium response. They noted that, lithium compliance was not adequately controlled for as well as the affective state at the time of personality testing, diagnostic criteria and measures of outcome. Biological variables have not been shown to have predictive value for lithium, Studies of lithium augmentation for refractory depression did not identify any predictors of response (Johnson, 1991).

Predictors of prophylatic response

For both the patient and the clinican, prediction of response for prophylactic lithium is more important than prediction of its antimanic and antidepressants effects : it spares those who are poor responders to lithium, a long term trial of a potentially hazardous treatment and identifies optimal alternative treatment, Reviews of the evidence identified the following predictors (Goodwin and Jamison, 1990; Abou-Saleh, 1993 : Jefferson 1995)

Diagnosis and clinical features

Bipolar illness responds better to lithium than unipolar illness and 'pure' bipolar illness responds better than schizo-affective illness. Within bipolar illness, bipolar I responds better than bipolar II illness. This is probably related to the higher occurrence of personality disorder and substance misuse in bipolar II than bipolar I illness. Mania with psychotic symptoms responds better than mania without such symptoms, whilst mania with depressive symptoms responds less well than 'pure' mania. Bipolar illness starting with a manic episode responds better than if the first episode was depression.

Frequency and sequence of episodes

Among bipolar patients, those with frequent (rapid cycling patients) show a greater incidence of prophylaxis failure than those with non-rapid cycling illness. Simiarly patients with a higher frequency of recent hospital admissions had a higher incidence of treatment failure on lithium. Depressive episodes of patients with rapid cycling illness are more resistant to lithium than manic episodes. The occurrence of rapid cycling is strongly related to the use of antidepressants in the treatment of bipolar depression. Episode sequence has an impect on prophylactic response. Kukopulos et al (1980) showed that patients with the classic mania-depression-normal interval had more favourable response than those with depression-mania-normal interval whilst those with a continuous cricular course particularly short cycles had a poor response. These findings were confirmed by other investigators (Grof et al, 1987). Maj and colleagues (1984) reported similar findings in a prospective study in which the course of illness was evaluated independently of lithium efficacy.

Early and acute response

Early response (within 6-12 month) strongly predicts long-term response to lithium. Dunner and colleagues (1976) studies clinical predictors of prophylaxis failure in non-rapid cycling bipolar patients. Although none of the clinical variables studied predicted outcome, they observed that patients who received lithium had a failure rate similar to those on placebo in the first six months of treatment. A fourth of their patients had early failure of treatment (within three month), and that tended to predict failure during their continued lithium treatment. Studies, by the author of long term outcome of recurrent affective disorder with lithium treatment showed that the most powerful predictor was impirical: outcome over the first six months and first year predicted long-term outcome over 2-14 years (Abou-Saleh and Coppen 1986; Abou-Saleh and Coppen 1990). The few open studies that evaluated the relationship of acute antimanic or antidepressant response to lithium and prophylactic response reported an association (Svetska and Nahumeck, 1975).

Co-morbidity

Patients with recurrent affective disorders and co-morbid medical and psychiatric disorders respond less well than those without co-morbidity. The common co-morbid psychiatric disorders are substanse misuse, anxiety disorders and personality disorders. Among the clinical features of affective states investigated, marked psychomotor retardation was found to be associated with better response (Dunner et al, 1976). There is inconsistent evidence for an association between the presence of family history of bipolar illness and favourable response to lithium (Carroll, 1979). A family history of non-bipolar affective disorder was not, however, associated with a more favourable response (Dunner et al 1976). Studying a combined group of bipolar and unipolar patients, Svetska and Nahumek (1975) noted a family history of endogenous psychosis or suicide in first-degree relatives to be significantly associated with good prophylatic response. The most convincing evidence that genetic heterogeneity affects response to lithium was presented by Mendlewicz (1979) in a study of twins. A high concordance rate was found in bipolar monozygotic and dizygotic twin pairs in which one twin experienced a good long-term response to lithium. Prophylactic response was better in concordant that in discordant twins.

In both bipolar and unipolar patients, those with greater disturbance in their personality characteristics, including neuroticism, introversion, low drive, and low self-confidence, responded less well than those with less or no personality disturbance Abou-Saleh and Coppen, (1990). Patients with substance misuse co-morbidity are at a particularly high risk of relapse of lithium failure which is probaly mediated by the associated mixed by the associated mixed affective states and/or poor compliance. It has been claimed that responders show premorbid mood liability, whereas nonresponders have premorbid triats of chronic anxiety and obsessiveness. Social support is strongly associated with good treatment outcome, as demonstrated in a study of 60 bipolar patients by O'Connel and co-workers (1991). Aagaard and Vestergaard (1990), in their two year prospective study, showed nonadherence to treatment was mainly predicted by substance abuse and many earlier admissions. Nonresponse in those who adhered to treatment was mainly predicted by female sex, younger age, and a previous chronic course. A third of the population of patients studied, however, had a chronic illness and half showed social deterioration prior to starting lithium. Life events in the 12 months prior to starting lithium had no influence on outcome on lithium.They also found that those who relapsed had no more life events prior to their relapse than at other times.

Biological predictors

Suboptimal thyroid function and hypothyroidism have been related to prophylaxis failure: thyrod hypofunction was shown to occur in patients who suffered recurrences, including those who developed rapid cycling bopolar disorder. Morever, Coppen and Swade (1986) showed that payients with high TSH levels without hypothyroidism sufferred greater affective morbidity during prophylaxis. A study of biological predictors of response Abou-Saleh and Coppen (1989) showed no association between the dexamethasone suppression test and response. Serotonin transport into the platelet, however, predicted response: patients who had an increase in Vmax had lower long-term morbidity than those with decreased Vmax (Abou-Saleh et al, 1992). Platelet monoamine oxidase (MAO) activity in bipolar patients was not associated with response to prophylactic lithium Abou-Saleh, (1983). Good response was, however, observed in those with increased calcium binding to red blood cells Abou-Saleh (1980). An increase in the red blood cell/plasma lithium ratio and a low frequency of HLA-A3 antigen were shown to predict good response over two years in a study of 100 bipolar and unipolar patients (Maj et al, 1984).

Conclusion

The search for predictors of outcome has not been particularly rewarding, and the use of lithium remains empirical : a trial of lithium is the most powerful predictor of outcome. Multivariate analysis of predictors of response showed that most of the variation in prophylactic response was accounted for by 3 factors: the diagnosis, the quality of the symptoms-free interval and the recent frequency of episodes Grof et al, (1993). In our own studies in a series of 116 bipolar and unipolar patients who received prophylactic lithium for a mean of 5.9 years, we identified 3 predictors of outcome : diagnosis, personality factors and early response over the first year Abou-Saleh and Coppen, (1990). Clinical and psychological variables examined may be general correlates or predictors of outcome rather than specific to lithium. However, lithium remains a highly specific treatment for bipolar disorder. Clinical, psychological, and biological correlates of nonbipolar affective disorder: mood-congruent phychotic features, retarded-endogenous profile, cyclothymic personality, positive family history of bipolar illness, periodicity, and normality between episodes of illness.

References

1. Agaared, J, Vestergaard P. (1990). Predictors of outcome in prophylactic lithium treatment: a 2 year prospective study. J Affect Disord. 18: 259-266.
2. Abou-Sleh, M. T. (1993). Platelet MAD, personality and response to lithium prophylaxis. J Affective Disorders 5:55-65.
3. Abou-Saleh ,M.T. (1980). Prediction of Lithium response in manic depressive illness. M.Phil. Thesis, University of Edinburgh.
4. Abou-Saleh, M. T. (1993). Who responds of prophylacic lithium therapy ; Br J Psychiatry Suppl (21) : 20-6.
5. Abou-Saleh M. T. and coppen, A.J, (1990). Predictors of long-term outcome of mood disorder on prophylactic lithium 1:27-35. Affective Disorder 10: 115-125.
6. Abu-saleh, M. T. (1986). Who responds of prophylactic lithium therapy Br J
7. Abou-Saleh, M.T. and Coppen, A. (1989). The efficacy dose lithium : clinical, Psychological and Biological correlate. J Psychiat 23 (2) : 157-162.
8. Abou-Sleh, M.T. Swade, C. and Coppen, A. J. (1992). Increased Platelet 5-HT Transport is associated with Decreased Morbidity During Lithium Prophylaxix. Lithium 3, 301-304.
9. Carroll, B.J. (1979). Prediction of treatment outcome with Lithium. Arch Gen Psychiatry 36 : 870-878.
10. Coppen, A (1994). Depression as a lethal disease ; prevention. J Clin Psychiatry 55: 37-45.
11. Coppen, A, Abou-Saleh, M.T. (1988). Lithium therapy : from clinical trials to practical management. Acta Psychiatr. Scand 78: 754-762.
12. Coppen, A and Swade, C. (1986). Lithium Dosage Improves Prophylaxis A PossibleMechanism. New Result in Depression Research (Eds. Hippius et al) Springer-Verlag Berlin Heidelberg 126-130.
13. Dickson, W.E. Kendell, R.E. (1986). Does maintenance lithium therapy prevent recurrences of mania under ordinary clinical conditions? Psychol. Med 16(3): 521-30.
14. Dunner, D. L, Fleiss, j and Five, R.R. (1976) Lithium carbonate prophylaxis failure. Br. J Psychiatry, 129: 40-44.
15. Goodwin, F.K. Jamison, K.R. (1990). Manic-Depressive illness. New York, Oxford University Press.
16. Grof, E, Haag. M. Grof, P, Haag H, (1987) Lithium response and the sequence of episode polarities: preliminary report on a Hamilton Sample. Prog Neuropschopharmacol Biol Psychiatry 11(2-3) : 199-203.
17. Grof, P. (1989) Has the effectiveness of lithium changed? Impact of the variety of lithium's effects. Neuropsychopharmacology 19 (3) : 183-188.
18. Grof, P. Alda M. Grof, E, Fox, D. Cameron, P. (1993). The Challenge of predicting response to stablishing lithium treatment. The importance of selection. Br. JPsychiatry Suppl. Sept (21) 16-9.
19. Jefferson, J, W. (1995). Lithium in predictors of Treatment Response in Mood Disorders. P.J. Goodnick (ed) 95-117.
20. Johnson, F. N. (1991). Lithium augmenntation therapy for depression. Reviews in Contemporary Pharmacotherapy 2:1-52.
21. Kukopulos, A, Reginaldi, D, Laddomada, P Floris, G, Serra. G, and Tondo, L (1980). Course of the manic-depressive cycle and changes caused by treatment. pharmakopsychiatr Neuropsypharmakol 13 (4) : 156-67.
22. Maj. M. Del Vecchio,M, Srarace, F, et al (1984). Prediction of affective psychoses response to lithium prophylaxis : the role of socio-demographic, clinical, psychological and biological variables. Acta psychiatr Scand 69-37-44.
23. Mendlewicz, J. (1979). Prediction of treatment outcome : family and twin studies in lithium prophylaxis and the question of lithium red blood cell/plasma ratios. in Lithium:Controvers
24. O,Connell, R.A, Mayo, J.A. Flatow, L Cuthbertson, B, O, Brien, B.E. (1991). Outcome of bipolar disorder on long-term treatment with lithium. Br Psychiatry 159:123-9.
25. Stoll, A.L. Cohen, B.M. Snyder, M.B. Hanin, I, (1991). Erythrocyte choline concentration in bipolar disorder: a predictor of clinical course and medication response. Biol Psychiatry 15: 29 (12): 1171-80.
26. Sullivan, I.L. Cavenar J.O. Maltbie. A, t al, (1977). Platelet-monoamine-oxidase antivity predicts response to lithium in manic-depressive illness. Lancet 2: 1325-1327.
27. Svetska, J, Nahumeck, K, (1975). The result of lithium therapy in acute phases of affective psychoses and some other prognostical factors of lithium prophylaxis. Act Nerv Super (Praha) 17:270-271.
28 Swann, A.C. Koslow, S.H, Katz, M.M.et al, (1987). Lithium carbonate treatment of minia: cerebrospinal fluidand urinary monoamone metabolites and treatment outcome. Arch Gen Psychiatry 44.345-354.
29. Swann, A.C. Bowden, Calabrese, J. R. Petty, F, Small, J, Silsaver. S.C. Davis, J, M, et al, (1997). Depression during mania, Treatment response to lithium of divalproex. Arch Gen Psychiatry 54(1) : 37-42.

Anaesthesia in Open Heart Surgery : Evaluation of 1150 cases

Rahman M[1], Hannan M A[2], Masud K M[3], Rahman L[4], Hossain L[5], Ahmed A[6], Kalam S M A[7]

The ORION 2004 ; 17 : 134 -135

Introduction

Cardiac Surgery either open or closed is a challenging task, needs an educated expertise involving big manpower, instruments and equipments as well as tremendous finance. Although Cardiac Surgery started in the fifties of previous century, could not flourish adequately in our country because of the reasons clear to all. Inspite of all the hurdles; Doctors community with their informidable attitude being helped by the govt started this challenging job in 1980-5; In private sector Cardiac Surgery in this country was started in the later part of 1990-5. Our centre is treated as the pioneer of cardiac centre in private sector. We have done till date 1150 case out of which first 250 cases were handled with cold cardioplegic, second 300 cases were warm blood cardioplegic third 400 cases were on fibrillating arrest, remaining 200 cases were exclusively on beating heart on multivessels.

For treatment purpose a huge number of people are going abroad and spending a major amount of foreign currencies for the purpose - in fact the major amount is going for cardiac ailments. The people's less confidence on country doctors, their schizophrenic attitude towards and lustures for foreign doctors, less involvement & interest and minimum pioneering from the government, social insecurity of the doctors are also responsible along with so many factors.

Patient's demography

Points	250 cases (cold cardioplegia)	300 cases (warm blood cardioplegia)	400 cases (Fibrillating arrest)	200 cases (Beating Heart)	P
Mean age (Male/Female)	47.6 + 12.7	48.3 ± 11.8	48.7 ± 12.1	47.1 ± 15.3	NS
Assessment of the Left Ventricular Function (EF)	45 - 70% (54%)	45 - 70% (48%)	35 - 70% (40%)	25 - 70% (35%)	S
Co-morbidity - a) Hypertension	29%	27.8%	28.3%	29.1%	NS
b) Br.Asthma	3%	3.2%	2.9%	2.8%	NS
c) D. Mellitus	80%	81.6%	82.2%	81.9%	NS
d) Dyslipidemia	51.5%	51.3%	52.1%	51.8%	NS
e) Obesity	5.1%	5.3%	5%	4.9%	NS
f) Smoker	75.3%	75.1%	74.6%	74.8%	NS
g) Renal Failure	5.6%	5.3%	5.5%	5.2%	NS
h) CVA	1.25%	1.3%	1.15%	1.4%	NS
i) Hepatic disorder	1.6 %	1.56%	1.54%	1.61%	NS
j) Rheumatoid Arthritis	1%	0.9%	0.85%	0.97%	NS

1. **Dr. Major Muzibur Rahman,** MBBS, FCPS
Professor Cardiac Anaesthesiology, Z.H.Sikder Medical College
2. **Dr. M. Abdul Hannan,** MBBS, DA
Senior Consultant Cardiac Anaesthesiology, Z.H. S.M.C
3. **Dr. Khondaker M. Masud,** MBBS, MD
Consultant Cardiac Anaesthesiology , Z.H. S.M.C
4. **Dr. Lutfor Rahman,** MBBS, MS (CTS)
Chief Cardiac Surgeon, Z.H. S.M.C
5. **Dr. Lokman Hossain,** MBBS, MS (CTS)
Cardiac Surgeon, Z.H. S.M.C
6. **Dr. Amran Ahmed,** MBBS, MD, FPGCS
Cardiac Surgeon, Z.H. S.M.C
7. **Dr. S.M. A. Kalam,** MBBS, FMICS (USA),
Cardiac Surgeon, Z.H. S.M.C

Our experiences of 1150 cases

Points	1st 250 cases cold cardioplegia)	2nd 300 cases (warm blood cardioplegia)	3rd 400 cases (Fibrillating arrest)	4th 200 Cases (Beating Heart)
1. Premedication	Morphine Phenergan	Morphine Phenergan	Pethidine Phenergan	Pethidine Phenergan
2. Anaes.time (h)	21.5 ± 6.5	20.7 ± 7.1	10.8 ± 2.3	6.4 ± 1.5
3. Anaesthetic Protocol	Morphine + Midazolam + TPS + Pancuronium + Isoflurane	Morphine + Fentanyl + Midazolam + TPS + Isoflurane	Pethidine + Tramadol + Propofol + Diazepam + Halothane	Pethidine Diazepam + Propofol + Tramadol + NSAIDS
4. Surgery time (h)	4.5 ± 0.67	4.3 ± 0.58	4.1± 0.31	3.7 ± .77
5. Extubation time (h)	12.2 ± 4.2	10.3 ± 3.2	6.6 ± 1.5	3.3 ± 1.1
6. Drainage (ml)	875 ± 250	792 ± 351	651 ± 199	251 ± 73
7. Urine Output in ICU ml/h	551 ± 199	451 ± 229	309 ± 132	227 ± 71
8. Blood trans (units)	4.5 ± 2.1	3.2 ± 1.9	2.1 ± 0.92	1.1 ± 00.3
9. Inotropic Support	Maximum	Max. to Moderate	Moderate	Minimum
10. IABP support	7%	5%	3%	0%
11. ABG & Electrolyte assess	Every hourly	Every 2 hrly	every 3 hrly	every 4 hrly
12. Hb% during surgery	5.8% ± 1.9	6.1 ± 2.3	8.5 ± 1.33	10.3 ± ..
13. ICU Analgesic + Sedative protocols	Morphine + Midazolam	Morphine + Midazolam	NSAID + Diazepam	NSAID + Diazepam
14. Number of Re-intubations	(%) 5	3	0	0
15. Number of reopenings (%)	20	15	5	0
16. Number of morbidity (%)	7	3	1.5	0
17. Hospital stay in days	10 ± 3.5	7.5 ± 2.1	7.7 ± 1.5	6.8 ± 1.2
18. ICU Stay in days	3.2 ± 1.3	3.1 ± .87	2.91 ± 1.1	1.7 ± 1.3
19. No. of infections	3.2 ± 1.3	3.1 ± .87	2.91 ± 1.1	1.5 ± 0.41
20. Mortality (%)	2%	1%	0.5%	0%
21. Infusion / Trans	crystalloids+ colloids	crystalloids+ colloids	crystalloids	crystalloids
22. Neurological compli. (%)	3	1.5	0.7	0
23. Renal complications (%)	11.5	7.3	0.3	0
24. Cardiac Enzyme anomal(%)	33.3	27.38	14	02
25. Hepatic complications (%)	18.9	12.3	3.5	01
26. SIRS (%)	27.3	11.3	3.5	00
27. Peroperative arrhythmia(%)	25.3	21.9	10.7	07
28. Number of grafts	2.3 ± 1.23	2.1 ± 1.3	2.7 ± 0.97	3.5 ± 0.1

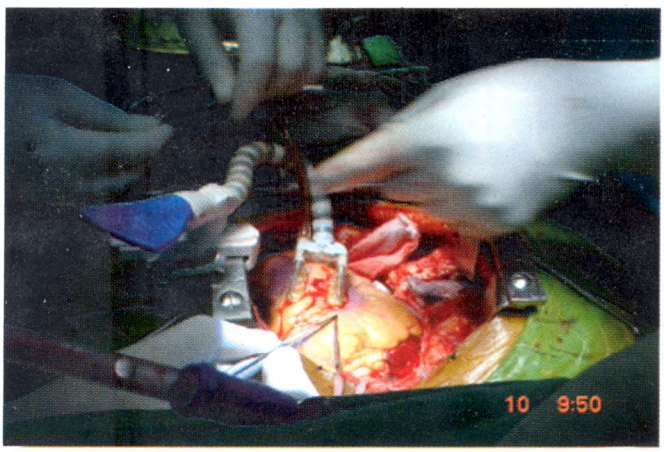


Fig -1: Beating heart on process

Fig -2: Graft on completion at beating heart

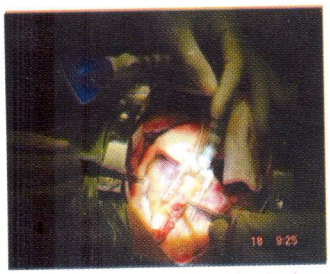


Fig -3 : Graft on completion at beating heart

Discussion

We have given elaborate parameters of our 1150 cases since the inception of our cardiac centre. Now a days we are only concentrating on beating heart by pass (CABG) Surgery. Our discussion will revolve around the anaesthetic management and postoperative analgesia of off pump CABG. Off pump coronary artery BYPASS surgery creates challenges for the anesthesiologists. Issues that differ from the conventional CABG includes restriction of motion of the heart, regional interruption of native coronary artery blood supply during anastomosis suturing, differences in work load of the Rt. & left Vertricles, maintenance of normothermia and lack of haemodilution. On the top of that the choice of surgical access may influence the pump function of the heart. Our clinical experiences shows that Off pump CABG is a good alternative to conventional by pass grafting (on-pump) in terms of graft patency[1], anaesthetic management[2-4] , cost[5] and clinical outcome[6].

Anaesthetic management and monitoring

Patients were treated up to the day of intervention with β-blockers, Ca++ antagonists, nitrates and with or with out ACEI or ACERB. Premedication consists of IM pethidine 1.5mg /kg and promethazine 25mg. Perioperative monitoring consists of five lead ECG with ST segment trend analysis, capillary pulse oximetry, ETCO2 determination, invasive ABP, CVP, urine output. Induction was done with propofol 2mg /kg. Pipecuronium 0.1mg/kg and lignocaine 1.5mg/kg Diazepam 0.2mg /kg. Anaesthesia is maintained with propofol infusion 2mg /kg/hour and intermittent dose of Pipecuronium and lignocaine. During incision and sternotomy we use Ketamine Hcl 1mg / kg. Before closure we administer diclofenac sodium 1.5mg/kg.

Monitoring and role of anaesthesiologist

All the parameters we monitor thoroughly and we tried to keep them within the normal range, any alteration we immediately correct by adjusting inotropes, vasodilators, volumes, ventilatory modes applying atropine, Ca++, Mg++, K+ accordingly as and when required.

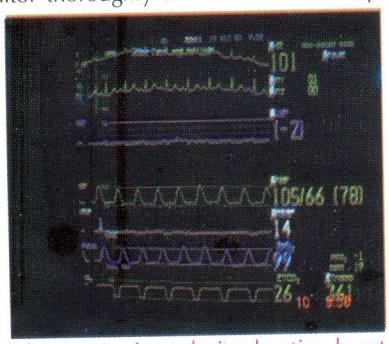


Fig -4: Monitors during beating heart

Heparin, ACT and protamine protocol

Heparin is administered 1.5mg/kg to maintain ACT around 300 seconds or above, checked every 45 minutes interval, additional 1mg/kg heparin is added to maintain ACT around 300 seconds. At the end of surgery protamine 1mg /kg infusion is administered very slow and cautiously.

Fluid protocols

We use only 0.9% NaCl , blood is used only when Hb% is less than 8gm% or Hct is less than 25%.

Shifting of the patient to ICU

Shifting is done with transport monitor mandatorily and ventilating the patient with ambu in Oxygen. Two anaesthesiologists and two surgeons always accompany during shifting of the patient to ICU.

Postoperative analgesic protocol

We use I.V Inj diclofenac 1.5mg/kg along with Ranitidine (50mg) 5-6 hourly for postoperative analgesia.

We generally extubate the patient from vertilator within 2-3 hours after operation.

Conclusion

Cardiac Anaesthesia on a beating heart and ICU management is a progressively developing subject. Extensive studies on the subject gaining profound knowledge, their application and devotion to the subject are required. Constant vigilence and concentration are the corner stone of success in this field. Meticulous and stringent surveillance is compulsory along with experience by a team member. Hard working attitude, giving time to patient, sacrificing self-comfort forgetting family affairs & to be with the patient may be key to gain success. Good relationship and mutual understanding of the team-members are mandatory because - **the surgery belongs to " WE " and not to " I "**

Cooperation of the expert surgical colleagues are badly needed for eventual success. Our dissussion so reveals that our success is hundred percent and that on the beating heart surgery. It was possible because of the very expert and smart surgical teamwork where surgeon is the captain, nevertheless anesthesiologists are his best cooperative colleague and holds the actual key role for the final success by keeping their eagle eyes on the patients during surgery & at ICU.

Our Surgical team headed by Dr. Lutfor Rahman, MBBS, MS (CTS) consists of Dr. Lokman Hossain, MBBS, MS (CTS), Dr. Amran Ahmed, MBBS, MD, FPGCS and Dr. S M A Kalam MBBS, FMICS (USA) are really contributing their role with sincerity, puntuality and dexterity.

Overall outcome depends on work, their knowledge, referring doctors, attitudes of the patients, governments, rich peoples, medias like radio, TV, newspaper, booklets, banners. We should compete for success not for jealousy. Government, political leaders should encourage the people to go to home doctors instead of criticizing them (local doctors) negatively. They themselves should also go to their country doctors for treatment instead of going abroad as Mahathir did (he was the 13th CABG patient of his country at Malaysia). The doctors should also refer the patients to their local country friends only and not to any foreign countries. Only then like ours, many cardiac centers will be born and will be viable, only then may would triumph their 100% Success.

References

1. Mack M., Damiano R., Matheneny R,. Reichenspurner H., Carpentier A. Inertia of success. A response to minimally invasive coronary bypass. Circulation 1999; 99:1404-1406. [Full Text]
2. Nierich A.P., Diephuis J. Jansen E.W.L., et al. Embracing the heart. J Cardiothorac vasc anesth 1999; 13:123-129. [Medline]
3. Schaff H.V. New surgical techniques. J Cardiothorac Vasc Anesth 1997;11; 6-9[Medline]
4. Gayes J. M., Emery R.W. The MIDCAB experience. J Cardiothorac Vasc Anesth 1997; 11: 625-628. [Medline]
5. King R.C., Reece T.B., Hurst J.L., et al Minimally invasive coronary artery bypass grafting decreases hospital stay and cost. Ann surg 1997;225: .805-809.[Medline]
6. Jansent E.W.L., Borst C., Lahpor J.R., et al. Coronary artery bypass grafting without cardiopulmonary bypass using the octopus method. J Thorac Cardiovasc Surg 1998;116-67.[Adstract]

Zinc treatment for childhood diarrhoea

A new and innovative project of ICDDR,B: Centre for Health and Population Research

The ORION 2004 ; 17: 136-138

Larson C P[1], Ernst R[2]

Introduction

In 2001, worldwide more than 10.8 million children under five years of age died, most of them from preventable causes and in poor countries. In Bangladesh, 330, 000 children under five died in that year[1]. The main causes of under-5-deaths are: neonatal disorders, diarrhoea, pneumonia, and malaria. WHO estimates that 13% of all under-five deaths can be attributed to diarrhoea. However, recent research has shown that this percentage may be higher, at 22% with an uncertainty range of 14-30%[2].

The reduction of child mortality is one of the Millennium Development Goals. The goal is to reduce under-five mortality in developing countries by two thirds between 1990 and 2015. However, at current reduction rates it is unlikely that this goal can be achieved. In 1990, the under-five mortality rate in all developing countries on average was 103 deaths per 1000 live births. By 2001, this rate had dropped to 89 on average. This is a reduction of just 14% over 11 years[3]. The target, a reduction of under-five mortality to 34 per 1000 live births, requires increased efforts.

Jones a.o. argued recently in The Lancet that the interventions needed to achieve this Millennium Development Goal are already available, however "that they are not being delivered to the mothers and children who need them"[4]. Jones a.o. showed that level 1 interventions (level 1 = sufficient evidence of effect) are available for almost all of the major causes of under-five-deaths, however, global coverage is insufficient. They categorize zinc as a level 1 treatment for diarrhoea and also as a measure to prevent diarrhoea and pneumonia, and argue that zinc as a preventative intervention could prevent up to 459, 000 under-five-deaths each year and as a treatment zinc could prevent almost 400, 000 under-five-deaths each year[5]. However, so far zinc is not being delivered to treat diarrhoea or pneumonia.

ICDDR,B's project, Scaling Up Zinc Treatment for Young Children with Diarrhoea (SUZY), will fill this gap, first in Bangladesh and then, hopefully, worldwide. Thus, Bangladesh is about to become the starting point for an exciting and innovative project with the potential of helping to save thousand of young lives and contributing towards achievement of one of the Millennium Development Goals.

Research on zinc and diarrhoea

Zinc is a micronutrient found in foods rich in protein such as red meat, poultry, nuts and dairy products. It is essential for human growth and protection against illness and disease. Many people living in developing nations, such as Bangladesh, do not have access to sufficient amounts of zinc-rich foods. This results in zinc deficiency that can lead to growth failure and increased susceptibility to illness and death, especially among young children.

Over the past two decades, a large body of research on the role of zinc for human health has been created[6]. ICDDR,B: Centre for Health and Population Research has been among the frontline research organizations conducting zinc research. Studies conducted at the Centre, from basic to applied research, have helped to build an evidence base for integrating zinc therapy into current child health practice and policies, such as the WHO recommendation for the use of zinc in the treatment of persistent diarrhoea.

Research conducted at the Centre has demonstrated, for example, that zinc supplementation in persistent diarrhoea significantly reduced the length of the recovery period in malnourished children and prevented a fall in body weight and serum zinc concentration, indicating that zinc is a beneficial therapeutic strategy in this high-risk childhood illness[7].

In a study conducted at Matlab, clusters of children were randomly assigned to receive zinc, 20 mg daily for 14 days, with each episode of diarrhoea. After two years of follow-up, the clusters receiving zinc experienced a 50% reduction in overall non-injury mortality compared to those receiving standard therapy without zinc[8].

SUZY - Scaling Up Zinc Treatment for Young Children with Diarrhoea

In 2002, ICDDR,B decided that the effectiveness and benefits of zinc as a treatment for childhood diarrhoea have been proven and that it is time to move to the next step: to make zinc available as a treatment to the entire under-five population. However, this requires, in addition to further research, innovative solutions for the production of zinc tablets, ways to promote the use of zinc and the establishment of a sophisticated and far-reaching distribution system.

In 2003, the Bill and Melinda Gates Foundation generously agreed to provide a grant to enable ICDDR,B to scale up zinc as a treatment for children with diarrhoea in Bangladesh.

While research related to the zinc scale up project is well underway, the actual rollout is scheduled to begin in April 2004. In April, a mass marketing campaign will start to promote the use of zinc to users and providers and zinc tablets will then be available through a variety of outlets.

The beginning of the rollout will also coincide with an international conference on zinc to be held in Dhaka. Tentatively, the conference will be held on 19th and 20th April 2004 at ICDDR,B headquarters in Dhaka.

1. **Dr. Charles P Larson,** MD, CM, FRCP (C)
Project Leader, Scaling Up Zinc Treatment for Young Children with Diarrhoea (SUZY), ICDDR,B

2. **Ralf Ernst,** Master of Geography
Information Dissemination Advisor, Scaling Up Zinc Treatment for Children with Diarrhoea (SUZY), ICDDR,B

Prescribing zinc as a treatment for diarrhoea

WHO recommends that zinc treatment be prescribed for a period of 10 to 14 days at a dose of 20 mg a day for children one to five years old (10-20 mg/day for children younger than 1 year). The product to be introduced is a 20 mg dispersible tablet that can be dissolved on a spoon with a little bit of water. The tablets will be packed in blister packs of ten. For ten days, one tablet needs to be taken a day.

This is the first time that zinc will be introduced in form of a tablet in Bangladesh. Interestingly, there are several zinc syrups available in the market. Usually, they are being prescribed to increase growth, reverse weakness, increase appetite and improve digestion. In some cases they are also used for treatment of diarrhoeal illness.

ICDDR,B decided to use tablets rather than syrup because tablets have three main advantages:

- they are less costly to produce,
-it is easier to measure the amount given, and
-tablets are easier to handle, transport and store.

Production of zinc tablets

The zinc tablet that will be introduced was developed by Nutriset, a French non-profit company specializing in the production of nutritional products for emergency and disaster situations. Nutriset developed the formula for the dispersible zinc premix; it is free of metallic taste. In Bangladesh, the zinc tablets will come with a taste of vanilla.

Although Nutriset will import the zinc tablets during the scale-up phase, it is planned to transfer the entire technology for the production of zinc tablets to Bangladesh. In the long term, the production of the zinc premix, the conversion into tablets and the packaging of tablets in blister packs will all be located in Bangladesh.

Nutriset and ICDDR,B are currently looking for a local partner who is interested in this technology and able to produce the zinc tablets to the required standards.

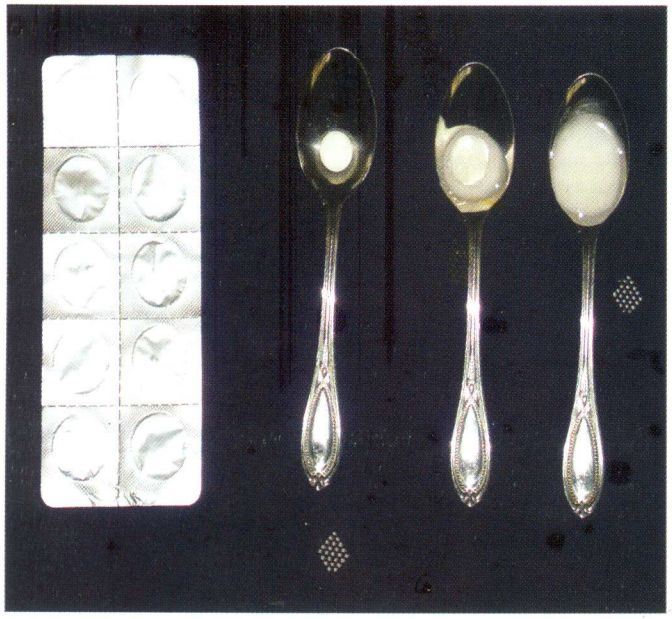


Fig : Dispersible Zinc tablet

Development of distribution systems

ICDDR,B and its partners are working to establish an innovative distribution system for the zinc tablets. This will involve partners in NGOs, in the Ministry of Health and Family Welfare (MOHFW) and in the private sector. Currently training manuals are being developed to provide training to all those who will be involved in the distribution process.

The Social Marketing Company (SMC) is well known for its work on scaling up Oral Rehydration Solution (ORS) throughout Bangladesh and has an extensive network of sales officers and sales promotion officers covering the entire country. They distribute products such as ORS and condoms to providers all over Bangladesh. This includes physicians, allopaths, homeopaths, drug sellers and pharmacists. This network will be available for the distribution of zinc tablets as well.

Zinc tablets will also be available via the facilities of the Ministry of Health and Family Welfare (MOHFW). Initially, ICDDR,B will provide MOHFW facilities with the zinc blister packs free of charge. Later, a fee will need to be considered that reflects commitment and sustainability.

A further partner in the distribution of zinc tablets will be the NGO Service Delivery Program (NSDP) depot-holders. The USAID NSDP covers rural Bangladesh and has been estimated to service about 15% of the population. The NSDP relies on community/village-based health workers, known as depot-holders, as the point of entry into its health services. Depot-holders have received a modest amount of training and receive a small monthly honorarium. They make additional income through the sale of ORS, condoms, and oral contraceptive pills, as well as from referrals made to static health centres.

Mass marketing campaign

Like any new product, zinc as a treatment for childhood diarrhoea needs to be marketed to its target group. The Social Marketing Company (SMC) will oversee the marketing and distribution of the zinc blister packs. A tender process has just been held to identify a company that will be tasked with the development of a mass marketing campaign.

SUZY research

The scale-up process of zinc tablets and their introduction into the local market will be accompanied by formative and operational research informing the actual implementation process, and evaluation research, for example in form of National Coverage Surveys.

Formative research

Currently, formative research is being conducted to collect information needed in the initial phase of the zinc rollout. The overall aim of the formative research is to gain an understanding of key issues affecting the treatment of diarrhoeal diseases in children under 5 years of age.

In a first step, the research team determines local terminologies, beliefs and concepts about childhood diarrhoea and management of diarrhoeal illness and examines local perceptions of vitamins and minerals, with a focus on zinc and the acceptability of zinc during diarrhoea

episodes. The team also describes the local health system, including biomedical, traditional, religious and home care as related to health seeking behaviours for cases of diarrhoea.

Knowledge gained through the project will help, for example, to develop communication messages to be used during a mass marketing campaign, which will start in April 2004. The formative research will also contribute to the assessment of changes in provider practices for the treatment of diarrhoea, in particular regarding the use of antibiotics, injectables and antidiarrhoeals.

It is planned to present first results of the formative research component at an international conference to be held in April 2004 in Dhaka.

Safety study

Although zinc has been used in many trials and no serious side effects have been reported, there is a need for phase IV trials to identify, validate and quantify possible side effects in large patient populations. For this study, zinc therapy is being introduced at two Dhaka hospitals as part of the standard management of all children with acute or persistent diarrhoea. All children treated with zinc will be monitored, especially for excess or unusual vomiting. Based on the yearly patient attendance at the centre, it is estimated that 60000 children per year will be treated with zinc and monitored for side effects. Safety monitoring will be conducted for 12 months.

Acceptance, adherence and compliance study

This study addresses the acceptability of the dispersible zinc tablets in terms of taste and method of delivery, relative to syrup formulations already available in the market. For this study, children and caretakers who were given zinc tablets will be followed to investigate whether or not the children are receiving the zinc following discharge from hospital, for how long and what factors influence adherence to diarrhoea management instructions. For the acceptance, adherence and compliance study, the research team will enrol 1600 children.

Evaluation

The scaling up project will be accompanied and supported by an immediate evaluation of its the overall performance and impact. Several research projects will contribute to the overall impact evaluation.

National coverage surveys will be undertaken in rural and urban populations within each of the 6 divisions of Bangladesh to evaluate caretaker treatment practices, service utilization and equity and changes in these areas. The study will be carried out in both slum and non-slum areas in Dhaka and Chittagong. Surveys are also planned in six districts, one from each division.

The most important question to be answered is whether or not the scaling up activities are having the desired effect; to what extent are children with a diarrhoeal illness receiving zinc and what impact is this having on antibiotic and ORS use. Closely connected to this is the question of disparities (equity) based upon income status, gender, type of provider seen, and where children live.

In addition, longitudinal, repeat observational studies of incident cases of childhood diarrhoea will be conducted in two sub-districts where ICDDR,B conducts routine demographic surveillance; in one rural sub-district (Mirsarai) and in one urban sub-district (Kamalapur in Dhaka).

Specifically, this study aims to

- monitor the proportion of children under five receiving zinc treatment during diarrhoeal episodes,
- document changes in provider and caretaker practices,
- document caretaker expectations, satisfaction and acceptance of zinc as a treatment,
- document provider satisfaction and acceptance of zinc treatment protocols,
- determine what influence the zinc treatment protocol has on other services and activities carried out by Ministry of Health and Family Welfare (MOHFW) staff and depot-holders under the NGO Service Delivery Program,
- estimate the health impact of the zinc treatment protocol.
- determine the value added, in terms of coverage and impact, of training village-based depot holders to dispense zinc for diarrhoeal illness.

The various research projects will provide valuable information for national health policy and service delivery in the private, public and NGO sectors. In addition, they will help international policy makers to decide about a global roll-out of zinc treatment scale-up based on ICDDR,B's experience in Bangladesh.

Acknowledgement

For further information about the SUZY project and for updates on the research projects and the roll-out, please visit the newly established homepage of the Scaling Up Zinc Treatment for Young Children with Diarrhoea at *http://www.icddrb.org/activity/SUZY.*

The homepage will also provide information on the international conference on zinc tentatively to be held on 19th and 20th April 2004 in Dhaka.

References

1. UNICEF: The State of the World's Children 2003.
2. BLACK,R.E, MORRIS, S.S., BRYCE, J.: Where and why are 10 million children dying every year? In: THE LANCET, Vol. 361, June 28, 2003, p. 2226-2234.
3. All figures from UNICEF: The State of the World's Children 2003. JONES, G., STEKETEE, R.W., BLACK, R.E., BHUTTA, Z.A., MORRIS, S.S., and the Bellagio Child Survival Study Group: How many child deaths can we prevent this year? In: THE LANCET, Vol 362, July, 2003, p.65.
4. JONES, G., STEKETEE, R.W., BLACK, R.E., BHUTTA, Z.A., MORRIS, S.S., and the Bellagio Child Survival Study Group: How many child deaths can we prevent this year? In: THE LANCET, Vol 362, July, 2003, p.66.
5. JONES, G., STEKETEE, R.W., BLACK, R.E., BHUTTA, Z.A., MORRIS, S.S., and the Bellagio Child Survival Study Group: How many child deaths can we prevent this year? In: THE LANCET, Vol 362, July, 2003, p.66.
6. For an overview on the literature on zinc, see for example BLACK, R.E. and MIGUEL, S.G.: The Emerhging Role of Zinc in Infant Nutrition, Development and Infectious Diseases. In: World Feeding Views, Vol 4, Nr. 1, 2000.
7. Roy SK, Tomkins AM, Mahalanabis D, Akramuzzaman SM, Haider R, Behrens RH, Fuchs G. Impact of zinc supplementation on persistent diarrhoea in malnourished Bangladeshi children. Acta Paediatr. 1998 Dec; 87(12): 1235-9.
8. Baqui AH, Black RE, El Arifeen S, Yunus M, Chakraborty J, Ahmed S et al. Effect of zinc supplementation started during diarrhoea on morbidity and mortality in Bangladeshi children: community randomised trial. BMJ 2002; 325 (7372): 1059.

Publisher's Note

Contents of articles published in this journal are those of authors and do not neccessarily reflect those of its editors or of Orion Laboratories Ltd.

PUBLISHED BY
Chief Editor
The ORION
Orion Laboratories Ltd.
153-154 Tejgaon I/A, Dhaka-1208
Phone : 8822401, PABX : 9888494, 9888176
Fax ; 880-2-8826374, E-mail : orionmsd@dhaka.net
Web: www.orion-group.net, online : www.orion-group.net/journals

Use of Amniotic membrane in ocular surface disorder

Hassan S A[1]

The ORION 2004 ; 17 : 139-140

The significant contribution of amniotic membrane transplantation to a variety of severe ocular surface diseases. Some of these diseases previously had no effective management and the outcome was severe loss of vision. The results with amniotic membrane transplantation successful. The amniotic membrane is attached to the placenta and surrounds the fetus in uterus.

Indications for Amniotic membrane transplantation

- Persistent of recurrent corneal defects
- Corneal perforation or melting
- Sever Symblepheron
- Dry eye: Lachrymal punctual occlusion
- Glaucoma: Large leaking filtering blebs

Characteristics and effects of the transplanted amniotic membrane

1. This membrane stimulates re-epithelialization, it has antinflammatory effects, it is anticicatricial and antineovascular.

2. It is not invaded by blood vessels. Once you transplant the membrane, the previous tendency for blood vessel proliferation is significantly diminished including blood vessel invasion of the cornea.

3. It reduces the tendency for scar tissue proliferation and invasion of the damaged tissue. It acts as a barrier against fibroblast multiplication because it creases obstacles to growth factor.

4. It does not trigger immunological rejection. Immune rejection does not occur after the transplantation. The stromal matrix shawls a moderate antigenicitiy. The other fetal membrane, the chorine must be removed because it has considerable antigenicitiy and provides strong host- vs.- graft rejection.

5. It stimulates apoptotic death of inflammatory cells.

6. It takes easily, creating a new surface membrane. It is nourished by simple diffusion from the subjacent host tissue and it creates a resistant and protective sheet covering the affected tissues that we want to heal. Tensile strength of the amniotic membrane is very high.

7. It enables the surrounding epithelial cells to migrate over it. This includes epithelial cells of any type: cornea, mouth and also endothelial cells. There is a strong attachment of these epithelial cells to each other and to the amniotic membrane.The amniotic membrane also triggers and reinforces the typical differentiation of the epithelium that migrates over it. The epithelial cell attachment to its basement membrane suppresses apoptosis.

1. **Dr. Syed A. Hassan,** MBBS, DO (Dhaka)
Fellow Cornea-Ant. Segment (Hyd)
Fellow Refractive Surgery (Japan), Fellow Phaco Surgery (LVPEI)
Cornea & Phaco Surgeon, Consultant, Islamia Eye Hospital

8. It protects the tissues it covers, reducing fibroblast proliferation and scarring in the tissue it contacts. It reduces haze after (experimental) photo therapeutic keratotomy. It facilitates nerve regrowth

9. It has nonspecific mild antimicrobial effects both antiviral and antibacterial. Advantages of amniotic membrane Murube reveals that the amniotic membrane has no antigenic substances. These substances act like an identity card or a passport that identify each different cell as friendly or unfriendly to the patient's immunological system. The absence of these antigens allows the cells in the amniotic membrane not to be attacked by the patient's immunological system. Schaffer Tseng, M.D., in Miami and Prof. Kazuo Tsubota, M.D. in Tokyo have done some additional revealing work analyzing the various compounds impregnated in this membrane. It is like a chemical sandwich in which both antinflammatory compounds and cytostimulating compounds are present. Professor Hugh Taylor, M.D. believes that the amniotic membrane is effective in treatment for two primary reasons. First, it serves as a new basement membrane over which epithelium can grow more easily. Secondly, it contains many chemical mediators, or cytokines, that reduce inflammation and stimulate healing.

We performed two studies at Cornea Clinic, Islamia Eye Hospital are

Study-1: New technique in management of corneal perforation with multi layer amniotic membrane

Purpose : To evaluate the effectiveness of newer technique in management of corneal perforation with multiplayer amniotic membrane graft.

Methods : This is a prospective non-randomized study. A clinical trial of 38 cases of perforated infectious keratitis attending Islamia Eye Hospital, Dhaka, Bangladesh from January 2001 to December 2003. The patients were treated with multiplayer Amniotic membrane graft (AMG) to seal the perforation of cornea. The perforation which affected the optical zone is classified as optical zone perforation and which affected the peripheral and para central did not affect the optical zone is classified as non optical zone perforation. The patients were followed for three months.

Result : 38 eyes of 38 patients with corneal perforation due to infectious keratitis and sterile corneal perforation. 27 of them are male and the rest 11 are female. Of all those perforation only 23 affected the optical zone and 15 in non-optical zone. All cases of corneal perforation had prolapsed iris. Bacterial infection was present in 23, fungal infection in 9 cases and sterile corneal perforation in 6 patients. All patients were treated with multiple layers AMG and Bandage contact lens (BCL), along with topical and systemic antibiotic or antifungal agent accordingly in intensive form. Sterile perforated eyes were managed with multilayer AMG and BCL along with simple dose of topical antibiotics and steroids. Each patient was followed at least three months. After an average follow-up of three months, 15 eyes (39%) had the best-corrected visual acuity (BCVA) 20/60 or better and all of them were in non-optical zone. The vision was save Hand Movement (HM) to Counting Finger Close to Face (CFCF) for

perforation in optical zone group of which 6 were undergone Keratoplasty and rest 9 are waiting for Keratoplasty.

Fig. 1: Perforated corneal ulcer with iris prolapsed

Fig. 2: Multi layer AMG.

Fig. 3 : Healing of corneal ulcer after multi layer AMG with serving good vision

Study-2: Management of pterygium: Stem cell conjunctival auto graft vs amniotic membrane graft

Purpose: This study is to determine the efficacy and safety of stem cell conjunctival autograft and amniotic membrane graft in prevention recurrence pterygium.

Methods: We performed a prospective, clinical trial on 50 eyes of 46 patients with primary and recurrent pterygia. 35 eyes were advanced primary pterygia and 15 eyes were with recurrent pterygia. Stem cell conjunctival autograft were done in 33 eyes and amniotic membrane grafts were done in 17 eyes.. Selection of cases were done at a random basis. Whole procedure was completed from June 2000 to May 2001 at Cornea Clinic and Research center, Dhaka, Bangladesh. Patiénts were followed for last six months.

Result: There were two recurrences (6.06%) in a stem cell conjunctival auto graft and two recurrences (11.8%) in amniotic membrane graft. No significant difference was seen in recurrence rate between the two groups (P= 0.59). No major complication occurred in any patient of two groups.

Conclusion

Use of Amniotic Membrane in ocular surface disorder is now practicing successfully in our country. From Study-1 we have seen that corneal perforations resulting from delayed & improper treatment is not uncommon in our country. Management by tissue adhesive with BCL followed by PK isn't possible in many cases due to un-availability of cornea. This study shows how useful this new technique of Amniotic Membrane Graft in sealing the perforation. This technique served a useful gross workable vision in non-optical zone perforation group, as cornea is not easily available in country like Bangladesh and in cases of optical zone perforation; patient could wait for a longer period for keratoplasty. In Study -2 we have seen that pterygium was managed successfully by both stem cell conjunctival autograft and amniotic membrane graft. In some cases amniotic membrane graft is superior especially in cases of primary double-head pterygia and large pterygia. Recurrence rate was higher in amniotic membrane graft than stem cell conjunctival autograft in our study. But statistically recurrence rate is insignificant in both groups. So Amniotic membrane graft is an alternative to stem cell conjunctival autograft.

References

1. Davis JW Skin transplantation with a review of 550 cases at the Johns Hopkins Hospital, John Hopkins Med J 1950; 15: 307
2. Stern W, The grafting of preserved amniotic membrane to burned and ulcerated skin surfaces substituting skin grafts, JAMA 1913; 13: 973-4
3. Sabella N, Use of fetal membranes in skin grafting, Med Records NY 1913; 83: 478-80
4. burger K, artificial vaginal reconstruction with the help of amnions, Zentral blatt Fur Gynakol 1937; 2437-40
5. de Roth A, Plastic repair of conjunctival defects with fetal membrane, Arch Opthalmol 1940; 23 : 522-5
6. Sorsby A, Symmons HM Amniotic membrane grafts in caustic burns of the eye(burns of the second degree). Br j Ophthalmol 1946; 30: 337-45
7. Sorsby A, Haythorne J, Reed H. Further experience with amniotic membrane grafts in caustic burns of the eyes. Br J Opthalmol 1947; 31: 409-18
8. Troensaggard-Hansen E. Amniotic grafts in chronic skin ulceration. Lancet 1950; 1: 859-60
9. Trelford JD, Treiford-Sauder M, The amnion in surgery, past and present. Am j Obstet Gynecol 1979; 134: 844-5
10. Colocho G Graham III WP, Green AE, et al. Human amniotic membrane as a physiologic wound dressing. Arch Surg 1974; 109: 370-3

Continuation of the article 'Hydatid disease : An overview' from page no.145

biliary tree cause spontaneous cure following biliary colic. Abscess formation or infection is controlled by antibiotics.

Medical treatment consist of drugs and minor invasive therapy. Drugs like Albendazole is the treatment of choice. 15 mg/ kg/ day in two divided doses for 12 weeks to 6 months. Medical therapy with Albendazole results in cure 30% of cases and improvement is 50%. Many of the failures are subsequently treated with additional courses of medical therapy.

Minimum invasive therapy include- PAIR/ PAIRD/ PPDC
PAIR-Puncture Aspiration Injection Re-aspiration
PAIRD-Puncture Aspiration Injection Re-aspiration Drainage
PPDC-Puncture Aspiration Drainage Curettage

These therapy can be used in primary case or failed medical therapy case or an alternate to surgery. Scolicidal agent used are hypertonic saline (20%) or absolute alcohol. Response to treatment is best assessed by serial imaging.

Surgical treatment

Cysts are excised and washed with Silver Nitrate solution

References

1. Clinton White. Jr. Peter F. Weller. Cestodes : Echinococcosis Pages : 1250-1251, 2001, Harrison's Principles of Internal Medicine- 15th Edition. Mcgraw Hill medical Publishing Division. USA
2. Hydatid Disease : Diseases of the Liver and Biliary system. 11th Edition, Black well Science. 511-516, 2002. Sheila sherlock James Dooley
3. Ibarrola AS, Sobrini B, Guisantes J et al. Membraneous glomerulonephritis secondary to hydatid disease. Am. J. Med 1981; 70 : 311
4. Schaefer JW. Khan MY : Echinococcosis (Hydatid Disease) Lessons from experienc with 59 patients. Rev Infect Dise 13 : 243. 1991
5. Schanty PM. Kramer HJ : Larvas Cestodes infections : Cysticercosis and Echinococosis Curr Opin Infects Dis 8 : 342, 1995
6. World Health Organization Informal Working group on Echinococcosis : guidelines for treatment of cystic and alveolar echinococcosis in humans. Bull World Health organ 74 : 231, 1996
7. Ammann RW. Eckert J : Cestodes : Echinococcus. Gastroenterol Clins North Am 25 : 655. 1996
8. Gil -Grande LA et al. Randomised Controlled trial of efficacy of albendazole in intra abdominal hydatid disease, lancet 342 : 1269. 1993
9. Kammerer WS : Schanty PM : Echinococcal disease. Infect Disclin North Am 7 : 605 : 1993
10. Khuroo MS et at Percutaneous drainage compared with Surgery for hepatic hydatid cysts. N. Engl. J. Med 337 : 881 : 1997
11. Pawlowski Z, Schanty P (eds) : Advances in clinical management of cystic echinococcosis Acta Trop. 64 : 1 : 67 : 1. 1997
12. Natmias J. goldsmith R, Soibalman M et al. 3 to 7 years following after albendazole treatment of 68 patients with cystic echinococcosis (hydatid disease) Aun. Trop. Med. Parasitol. 1994 : 88 : 295
13. Gharbi HA, Hassine W, Brauner MW et al. Ultrasound examinations of the hydatic liver. Radiology 1981 : 139 : 459
14. Lewall DB. Hydatid disease : biology, pathology, imaging and classifications. Clin. Radiol. 1998 ; 53 : 863
15. Filice C, Pirola F, Braunetti E et al. A new therapeuthic approach for hydatid liver cysts Aspirations and alcohol infections under sonographic guidance gastro enterology 1999 ; 98 : 1366
16. Magistrelli P. Masetti R, Coppola R et al. Surgical treatment of hydatid disease of the liver. A 20 years experience. Arch. Sug. 1991 ; 126 : 518
17. Lawrenc M, Tierney Jr. MD. cystic hydatid disease. Current Medical Diagnosis and Treatment 2000, 39th Edition Lavge Medical Books/ Maegraw-Hill 1440-1443, 2000

SARS: A mysterious pneumonia

Uddin K N[1]

The ORION 2004 ; 17 : 141-143

Etiology

A virus has been defined as the etiological agent. Initially it was through to belong to paramyxovirus (same group of Measles, Mumps, RSV). Subsequently it was confirmed that it is caused by an RNA virus, a Corona virus of same family that cause common cold. It was presumed that the SARS virus was originally a virus of pig which some how has mutated or recombined in a fashion that permitted it to infect, cause the disease and pass from person to person. The 'CROWN' name is from it's resemblance to flower/crown in shape. The name Urbani SARS associated virus (after the name of the doctor who first described it) has been proposed (Fig-1).

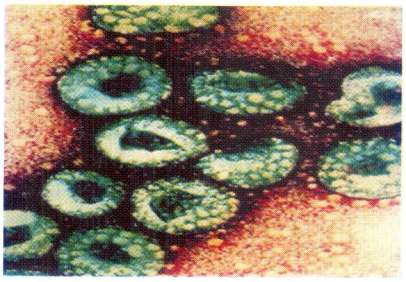


Fig. -1 : Crown or flower like (SARS Co-V) SARS Virus

Spread

Spread occurs through respiratory droplets and contact with secretion of the patients. Speard of SARS may occur in three ways: 1. Close contact 2. Distant contact 3. Unknown ways.

Close contact (droplet infection) may be a. direct b. indirect. Droplet is the drops coming through sneezing, coughing or spaking from patients and causing infection. Droplet can go direct to the eyes, nose, mouth of a person. When droplet falls on a surface and that is touched by someone and if the touching fingure goes to nose eyes, or mouth it may indirectly infect the person. Airborne infection (distant contact) can occur with SARS through air conditioning system transport like planes, buses. WHO in latest considering blood transfusion a mode of transmission. Virus can live on hands, tissue papers and other surfaces for more than six hours; it can live up to three hours after the droplet is dried. It can live longer in freezed preparations. Live virus has been found in stool/ urine and other body fluids and secretions. It can live in stool, urine for two days.

Incubation period

This is the time period elapsed between exposure to an infection and appearance of it's symptoms. In SARS it was initially through to be 2-7 days, it has been accepted by Central disease control (CDC) USA as 10 days. This is because of reinfection occurs in SARS like flue. Quarantine and isolation for patients or exposed ones is 10 days. Because of reinfection it has become difficult for physician to predict the danger period of the disease for patient. People with active disease are definitely contagious but it is not known how long he is contagious either before or after the infection.

1. **Dr. Khwaja Nazim Uddin,** MBBS, FCPS (Medicine)
Associate Professor, Dept. of Medicine, BIRDEM

Source of SARS

SARS was originated in Guangdong province of Southern China. First victim was a businessman Foshan city. It was in November 2002, similar cases with outbreak were treated then as atypical pneumonia with conventional approaches. It first came into international attention when a physician from Guangdong province become sick in a hotel in Hong Kong. So first case diagnosis as SARS was on 26 Feb/2003, first physician diagnosed the case was Dr. Urbani, a WHO worker. Dr. was affected by the disease and died in March 29/2003. Guangdong is an agricultural area with thousands of farms with small and large animals. First affected person lived in ninth floor of the hotel with seven others in same floor. These eight persons and four other guests became affected and became index cases of SARS and transported the disease wherever they landed viz., Vietnam, Singapore, Canada, Ireland, USA there. It is good that in a short time it could be detected that causative agent of SARS is a virus and it belongs to the RNA virus of corona group. Corona virus mostly cause disease in one host species usually species. Corona virus usually causes upper respiratory illness (not pneumonia) in humans; it causes pneumonia and diarrhoea in animals. SARS corona virus is now through to be a novel virus with unique virulance to cause upper and lower respiratory tract (pneumonias) infections in humans. SARS virus was initially through to be a virus of pig which has been mutated to become infections and to spread disease. It was also through that it was a recombinant of either two human or one human and one animal virus which inparted it's virulence. None of these preposition is accepted now. It is recognized now SARS virus is a previously unrecognized corona virus (possible through identification of antibodies convalescent serum of patients), probably from a nonhuman host that somehow acquired the ability to infect humans. If it jumps from an animal and loses its original host the reservoir of infection is lost and it would be very easy to eliminate the disease. If there is no mutation it would be very easy to get a vaccine for the disease.

Statistics

The disease is continuing to occur. New transmission still occurring in China, Taipei, Singapore, Hong Kong, inner Mongolia. Many places like Vietnam could contain the disease. Some province of China still having the grave sequences. Number of new cases are decreasing day by day. So far total number of cases reported to WHO from 28 countries including the United States is 8,240 with 745 death-case fatality proportion : 9.0% (date: 28-5-03). WHO recommended those who travelled in those areas should keep track of their contact. It also restricts nonessential travel to Guangdong, Hebei province, Hong Kong special administrative area (SAR) of China and inner Mongolia, Taipei. It prohibits blood transfusion from SARS patients up to after twenty one days. WHO defined SARS cases as 1) Suspect and 2) Probable. It has updated the definition by inclusion of clinical, laboratory and epidemiological of the disease.

Suspected case

Has been defined as cases having 1. temperature greater then 100.4°F (38°C). and 2. one or more of the clinical features of respiratory illness (viz. cough, shortness of breath, difficulty in breathing) and 3. travel within ten days of onset of symptoms to an area with documented or suspected community transmission of the disease or 4. close contact within ten days of onset of symptoms with a person.

Probable case

Suspected cases with one of the following: 1. Radiographic evidences of pneumonia or respiratory disease syndrome (ARDS) or 2. Autopsy findings consistent with ARDS without an identifiable cause.

*Travel (including transit in airport) within ten days of symptoms to an area with documented disease or recent transmission of it.

**Close contact is defined as having cared for, living with or having direct contact with respiratory secretion or with body fluids of a person within ten days of infection. Examples of close contact are kissing, embarrassing and sharing, eating, drinking utensils, close conversation (<3 ft), physical examination and any other direct physical contact between persons. Close contact does not include activities such as walking by a person or sitting across a waiting room or office for a brief period. Recent transmission means outbreak of the disease or new cases within 20 days

SARS symptoms

Common symptoms: Fever (100.4°F-38°C), cough, difficulty in breathing, shortness of breath, chill, shaking, aches, headache.

Less common symptom: Dizziness, productive cough, sore throat, runny nose, nausea, vomiting, diarrhoea. SARS initiates with fever and associated symptoms, three days later respiratory features like dry cough, difficulty in breathing occurs which progresses to shortness of breath and hypoxia to respiratory failure.

SARS sign

Auscultation of Lungs may yield creps, ronchi and other features of pneumonia.

SARS-Lab tests

A quick sensitive test is yet to be introduced.

X-ray chest and CT chest

Shows progressive changes Chest x-ray may help confirm the diagnosis (Fig-2,3).

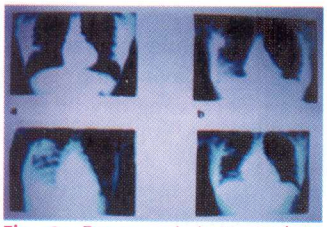


Fig. -2 : Pneumomia in X-ray chest confirm SARS

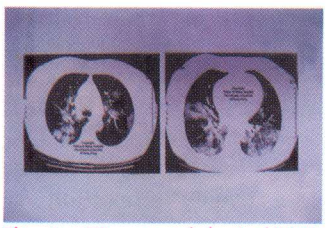


Fig. -3 : CT scans of chest of SARS patients.

Hematology

Index cases have been shown to have leukopenia, lymphopenia, thrombocytopenia of different grades and biochemical tests have shown raised LDH, CPK and ALT with decrease of Na, K; all these tests favor a viral etiology.

Test of virus

Isolation of virus (Which can be done by PCR, cell culture) and antibody tests (ELISA, IFA). Virus have been identified from culture with electron microscopy. Polymerase chain reaction (PCR) can detect genetic particle. ELISA (enzyme linked immunosorbant assay) can detect antibodies after 21 days. IFA (immunofluorescence assay) detect IgM after 10 days of infection.

Recommended specimens for evaluation of potential cause of SARS

Patients may be category raised in three settings. 1. outpatient 2. inpatient 3. fatal cases. In outpatient setting we can take a. nasopharyngeal and oropharyngeal swabs or aspirates b. whole blood c. acute or convalescent serum d. stool. For inpatient setting along with above specimen's bronchoalveolar lavage, tracheal aspirate or pleural tap can be examined. For fatal cases fixed tissue specimens from major organs like liver, spleen, brain, Kidneys, lungs, or frozen tissues from lungs, upper respiratory tract can be used.

SARS treatment

As it has been confirmed that SARS is a viral infection antibodies has no role in treatment. In complicated cases, superadded infection it may be used. Broad spectrum antiviral like ribavarin has been used with some satisfactory result in Hong Kong. High dose steroid has been used in some initial cases with ARDS with no proven effect. Symptomatic and supportive treatment like O_2 and mechanical ventilation is needed in many cases. Neuraminidases (anti influenza drugs) have also been used. So far, there is no approved drug with proven activity against SARS.

SARS prognosis

Reinfection has troubled the prediction of outcome in many cases. Time is to come yet to say about the mortality, but it would be better to remember that mortality from community acquired pneumonia in USA is 4.9% and total number of deaths from influenza is estimated to be 35000. In early cases fatality rate was 4%. It has been seen that fatality increases with age; 14% at 45>50% above 65 yrs. Overall fatality rate so far is 15%. SARS cases recovers spontaneously, those who recover resolution is complete. Life long immunity is not predicted like that of flue. 10-20% needs mechanical ventilation and more than these needed ICU care.

SARS prevention

As treatment is yet to define we can take various measures to prevent it. 1% can done through 1. Effective vaccine 2. Control of infection and 3. Control of spread of the disease. Vaccine may not be impossible but in usual process it takes time as different phases of studies are needed. For control of infection in **a.** inpatient settings one must have 1. Standard precaution like hand hygiene i.e., washing of hand with soap and water each time, use of alcohol based disinfectants when soiled with patient's secretions and after removal of gloves, measures for eye protection, masks etc. 2. Contact precaution with use of gown, gloves 3. Airborne protection like isolation of patient in a room with negative pressure use of N-95 disposable respirator and ordinary surgical masks to prevent airborne pathogens.

In **b.** outpatient setting with 1. surveillance for possible exposure 2. compulsory wearing of gown, gloves, masks for health worker along with their practice of standard precautions. In **c.** home setting with adoption of standard and contact precaution exposed persons should be restricted to house. Cleaner should use gloves, gowns, goggles, masks. Wards cabin should be cleaned daily, during discharge and during transfer of patients. All horizontal surfaces (viz., table, chair floor etc) should be cleaned. Commonly used disinfectants (quaternary ammonium based, phenol based, alcohol based products) used for other purpose in hospitals suffices i.e. no special disinfectant has been recommended for SARS. Patient care instruments like stethoscope, BP instruments ventilator etc. should be cleaned. Fumigation has been advised.

Control of spread

Spread of SARS can be done in three ways;

1.Isolation

2.Quarantine

3.Surveillance at international borders

1.Isolation : It is for the person who are ill. Isolation can be done at home, hospital or any health care facilities. It is mostly voluntary but patient may be compelled in special circumstances. China in recent days has announced punishment for violation of its rule of isolation and quarantin which range from imprisonment to death. In USA patients are asked for isolation for 10 days after the appearance of symptoms.

2.Quarantine : Can be imposed by the state by declaration and enforcement of it within it's international border.

3.Surveillance at international borders : We have three international airports, two sea ports and thirteen points of check post at borders. To stop SARS outbreak we are to tighten surveillance in this places as we have business and traffics with other Asian countries with serious SARS outbreak. Russia has closed its border with China to stop spread of SARS. Goods, foods, from countries of SARS do not spread (also handing money) to other countries. Departure from endemic areas of person who have fever respiratory symptom and history of exposure should be postponded. In case of arrival who has history of exposure and who is sick should be isolated in special word in our infectious disease hospital. If no symptom and not sick but has history of close contact he/she may be kept under surveillance for 10 days.

Conclusion

SARS is a mysterious deadly pneumonia of viral origin. It is fortunate that the cause has been identified promptly. Quarantine and strict isolation can contain the disease which has been proved by this time. We are lucky we have no SARS cases so far. The virus does not mutate so vaccine will be developed soon. A polymerase enzyme responsible for growth and development of the virus is known, so drug discovery is quite possible. Whatever it is we should remain vigilant. There is no alternative to awareness to combat the disease.

(source : Internet)

Continution from page no.- 158

MSD NEWS

on 16th September 2003at Hotel Raffle INN, Faridpur. Dr. Md. Golam Kabir, Senior Consultant (Orthopaedic Surgery) & Superintendent, Faridpur Medical College Hospital, chaired the occasion and Dr. Md. Enamul Karim, Assoc. Prof. of Medicine & Principal, Faridpur Medical College was present as the Chief guest on the occasion.

Venue : Comilla Medical College Hospital, Comilla

Orion Laboratories Limited arranged a grand gala intern doctors reception program of Comilla Medical College Hospital, on 23rd September 2003 at Nuclear Medicine Centre Auditorium, Comilla. Dr. Syeda Badrun Nahar, Superintendent, CoMCH chaired the occasion. Prof. Dr. Abdul Haque, Principal, CoMC was present as the Chief on this occasion. Dr. Golam Mohiuddin Dipu, General Secretary, BMA, Comilla and Dr. Md. Iqbal Anwar Present, BMA, Commila were also present as special guests on the occasion.

Venue : Dhaka Medical College Hospital, Dhaka.

From left to right : Dr. Lutfar Rahman Bipu, Brig. Gen. Md. Nazmul Huda,Dr. Kazi Kamaluddin Ahmed Dr. Zakirul Karim.

Orion Laboratories Limited arranged a grand gala intern doctors reception program of Dhaka Medical College Hospital, on 21st October 2003 at China Kitchen Restaurant, Dhaka. Dr. Lutfar Rahman Bipu, President, IDA, DMCH, chaired the occasion. Brig. Gen. Md. Nazmul Huda, Director, DMCH and Dr. Kazi Kamaluddin Ahmed, Deputy Director, DMCH were present as cheif guest and special guest on the occasion respectively.

Venue : Sher-E-Bangla Medical College Hospital, Barisal.

Orion Laboratories Limited arranged a grand gala intern doctors reception program of Sher-E-Bangla Medical College Hospital, Barisal on 22nd October 2003. Dr. Md. Sydul Islam Abir, president, IDA, SBMCH, chaired the occasion. Dr. Aziz Rahim, President, BMA, Barisal was present as the Chief guest. Dr. Habibul Rahman, Secretary, BMA, Barisal, Dr. Aminul Haque, Secretary, Teachers Association, SBMCH were present as special guests and Prof. Abdul Barek Khan Principal, SBMC was present as a Guest of Honour on this occasion.

Program at National Healthcare Network (NHN)

Venue : NHN, Wari, Dhaka.

Orion Laboratories Limited arranged a Round table meeting with the doctors of NHN Wari, Forashgonj, Juraine on 'Stimulin-A life Style advancement in diabetes' on 16th October 2003 at Grand Azad Hotel, Dhaka.

Venue : NHN, Uttara, Dhaka.

Orion Laboratories Limited arranged a Round table meeting with the doctors of Uttara NHN on 'Stimulin-A life Style advancement in diabetes' on 26th October 2003 at La Vinci Hotel, Dhaka.

Venue : NHN, Wari, Dhaka.

Orion Laboratories Limited arranged a Round table meeting with the doctors of Wari NHN on 8th December 2003 at Conference Room on 'Stimulin-A life Style advancement in diabetes' where Dr. Ataur Rahman, in charge of the center, chaired the session.

Venue : NHN, Basabo, Dhaka.

Orion Laboratories Limited arranged a Round table meeting with the doctors of Wari NHN on 'Stimulin-A life Style advancement in diabetes' on 16th October 2003 at Conference Room.

Hydatid Disease : An overview

Rahman S[1], Zaki K M J[2], Fazal K[3]

The ORION 2004 ; 17 : 144 -145

Cystic diseases of Liver constitute a large percentage of the liver space occupying lesion. Of them Hydatid disease is not uncommon.Though there is no exact data about the incidence and prevalence of Hydatid disease in Bangladesh but Hydatid disease is not uncommon in our day to day practice . Most of the patients come to the Physician with pain or dull ache in the upper abdomen for prolonged period without any weight loss or fever. Some times patients may present with lump in the upper abdomen or as incidental finding for investigations for other diseases.

This disease is due to the larval or cystic stage of infection with the tapeworm, Echinococcus granulosus. Echinococcus granulosus is a small tape worm of 5mm in length with a head region known as scolex and 3 segments.

Dogs are definitive host. Sheep, cattle, camel and horses are usually intermediate host. Dogs become infected with this worm by eating the viscera of sheep. Man is an accidental intermediate host in whom usually there occur a dead cycle.

E. granulosus usually produces unicellular cystic lesions and is prevalent where livestock is raised in association with dogs. This tape worm species is found in Australia, Chile, Argentina, Africa, Eastern Europe, the middle east, New Zealand and Mediterranean region particularly Lebanon and Greece.

Other Ecchinococcus like E. multilocularis is found in alpine, Arctic or Subarctic regions including Canada, USA, Asia , Central and Northern Europe. This Echinococcus causes multilocular alveolar lesions that are locally invasive which usually use mice and other rodents as their intermediate host. The life cycle of E. multilocularis is similar except that small rodents serve as the intermediate hosts. The cyst of E. multilocularis however is quite different in that larval form remain in proliferative phase and the cyst is always multilocular and the vesicles invade the host tissues by peripheral extension of process from the germinal layer.

E. Vogeli causes polycystic hydatid disease and is found only in Central and South America. Hydatid cyst contains the protoscolices, proto scolices are released from the cyst into the gut of dog. Scolices get adhere to the wall of the small intestine (Jejunum) and become adult worm (5-20 months). The last segment of the adult worm is gravid. Each adult worm sheds about 500 ova into the small intestine of dog which excretes out along with feaces. The infected feaces contaminate the grass and firm land and also the surface of its own body. Ingesting the grass or contaminated water infects sheep, pig, camel and cattle. Man becomes infected by eating contaminated water, green leaves or, vegetables or accidentally eating ova from the surface of the contaminated pet dogs but never from eating meat.

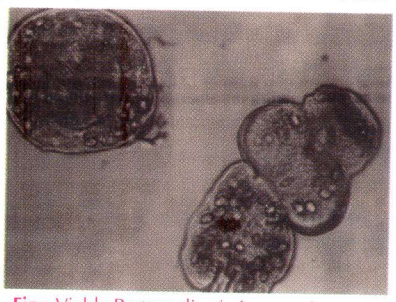


Fig : Viable Protoscolies (microscopic-examination of cyst fluid) - Courtesy by WHO bulletin

1. **Dr. Salimur Rahman,** MBBS, FCPS
Associate Professor, Department of Hepatology, BSMMU
2. **Dr. K.M.J. Zaki,** MBBS
Student of MD (Thesis Part), Department of Hepatology, BSMMU
2. **Dr. Md. Fazal Karim,** FCPS
Student of MD (Thesis Part), Department of Hepatology, BSMMU

Development of Hydatid cyst

The ova adhere to the surface of the dogs or present in contaminated water green vegetables are the source of infections in man. This ova has chitinous coats which are dissolved by gastric juice. The released ovum burrow through the intestinal mucosa and enters into the portal circulation to reach in the liver and other organs. Most (65%) of the cyst developed in the liver, some in the lungs, few in other organs like spleen, brain and bones.

Hydatid cyst in man occur from eating ova of the worm never from raw meet containing the cyst. The adult cyst in the tissue can initiate a cellular response. Wall of the cyst consist of three zones 1) A peripheral zone of fibroblasts which derive from the host tissues and become the adventitia or Ectocyst, that may ultimately undergo calcification. 2) The intermediate zone consist of endothelial cells. 3) Inner zones consist of round cells and eosinophils. The intermediate and inner zones become hyalinized (laminated layer). Finally the inner surface of the cyst become lined with germinal layer that has the capability to multiply and give rise to the development of brood capsules. This brood capsules are invaginations from the germinal layer into the cyst. Scolices lie within these invaginations. The attachment of the brood capsules to the germinal layer becomes progressively thinner. At times the capsules burst and release the Scolices in the cyst fluid, that give rise to the term hydatid sand which change its positions with change of posture of the patients. Daughter and grand daughter cyst may develop from germinal layer. Cyst fluid is a transudate of serum. Protein of cyst is antigenic and leakage of the fluid cause production of anti-Echinococcal antibody. Cystic fluid released into the circulations causes eosinophilia, urticaria and anaphylactic shock.

Clinical features depends upon the site, size and stage of the cyst whether alive or dead. The liver may become enlarged not only due to the presence of cyst but the rest of the liver also hypertrophies.

Uncomplicated hydatid cyst may remain silent till death. The only complaints may be a dull ache in the right upper quadrant and sometimes a feeling of abdominal swelling. Sometimes the cyst may present with complications:

1. Rupture may lead to multiple cyst formations, intestinal obstructions and gross abdominal distensions. Cyst rupture into the bile ducts may lead to cure or cholestatic jaundice with recurrent cholengitis. Rupture in the colon leads to elimination per rectum and secondary infection. Rupture into the lungs may lead to expectoration of scolices. Rupture into or pressure over the hepatic veins may give rise to Budd Chiari Syndrome.

2. Infections of the cyst by pyogenic organisms may occur from rupture into the biliary passage or colon. This will transform the

cyst into a pyogenic abscess. The parasite dies within the abscess. Occasionally the cyst undergoes aseptic necrosis and the parasite dies. Here the cystic fluid becomes amorphous yellowish, which should be distinguished from pus of liver abscess.

3. Other organ involvement: Cyst may also occur in lung, kidney, spleen, brain or bone. If hydatid cyst is found elsewhere, there is always concomitant infestations of the liver.

4. Allergy : Cystic fluid contains specific antigen which is a foreign protein that sensitizes the hosts and may lead to anaphylactic shock but more commonly urticaria or hives. This fluid also sensitizes the patient with the productions of antibody. This antibodies are the basis of serological test.

5. Membranous glomerolonephritis may occur from Echinococcal antigen.

6. Bone involvement may cause pathological fracture.

7. CNS involvement may give rise to SOL like lesion

8. Heart involvement cause conducting defect and pericarditis

Diagnosis

Diagnosis is done by history, clinical examination routine investigation, serological test and imaging. Routine blood test shows eosinophilia in 30% cases of Echinococcosis.

Serology

Cystic fluid of Echinococcosis is antigenic and leak of this cyst induce the production of specific antibodies that are the basis of serological test.A cyst that never leaks will always give negative result.

1. IHA test for Echinococcus 2. Echinococcal antibody detection by ELISA are positive in 85% cases.

Both tests may give false (+) ve or false (-) ve result. Cason's test and CFT for Echinococcus are not well practice now a day.

Imaging

1. Radiology may shows calcification of the cyst, raised poorly moving right dome, hepatomegaly 2. Ultra sonogram and CT scan are very sensitive test for diagnosis.

By USG, WHO classify Hydatid cyst into active, transitional and inactive cyst.

WHO-IWGE classifications of USG images of cystic Echinococcosis cysts

1. **CL** (Cystic lesion) : Unilocular cystic lesions with anechoic (Echo free) content without any limiting membrane that is cyst wall is not visible. Usually indicate active cyst but are not fertile in the initial stage. USG does not detect any pathognomic sign. Differential diagnosis require further diagnostic techniques.

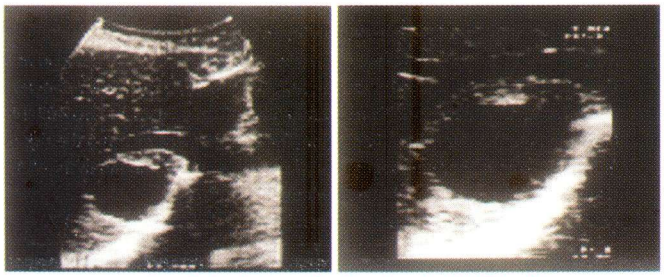


Fig : Cystic Lesion (CL) -Courtesy by WHO bulletin

2. **CE1** (Cystic Echinococcosis 1) : Unilocular simple cyst with uniform anechoic content with hydatid sand at the floor or may shows fine echoes due to shifting of brood capsule/ Hydatid sand in the floor (snow flake sign). Cyst wall is visible. Active cyst usually fertile. Ultrasonographically pathognomic signs are visible cyst wall and snow flake sign.

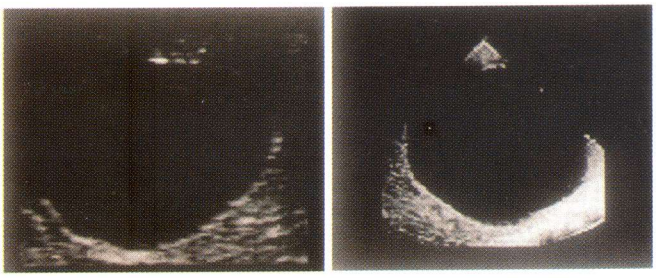


Fig : Cystic Echinococcosis1 (CE1-active) -Courtesy by WHO bulletin

3. **CE2** (Cystic Echinococcosis2) : Multivesicular, multiseptated cysts. Cystic septations produce' Wheel like' structures and presence of daughter cysts are indicated by' rosette like' or' honey-comb like' structure. Daughter cysts may partly or completely fill the unilocular mother cyst. Cyst wall normally visible. Cyst is active and fertile. USG features are pathognomic.

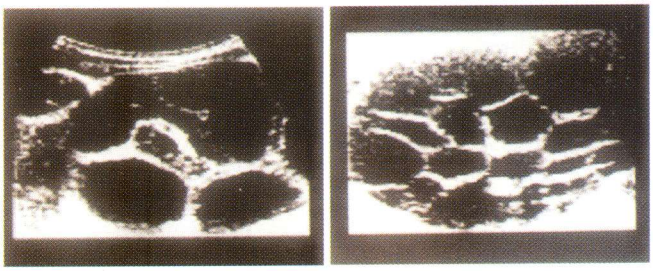


Fig : Cystic Echinococcosis 2 (CE2-active) -Courtesy by WHO bulletin

4. **CE3** (Cystic Echinococcosis 3) : Unilocular cyst which contains daughter cysts. Echo free content with detached laminated membrane from cyst wall give rise to the' water lily' sign, which indicates many detached membrane floating in the cystic fluid. In the earlier stages the cyst is round in appearance but at this stage the cyst is less round due to decrease in the intra-cystic fluid pressure. It is the transitional stage of the cyst which may degenerate or give rise to further daughter cyst. USG features are pathognomic.

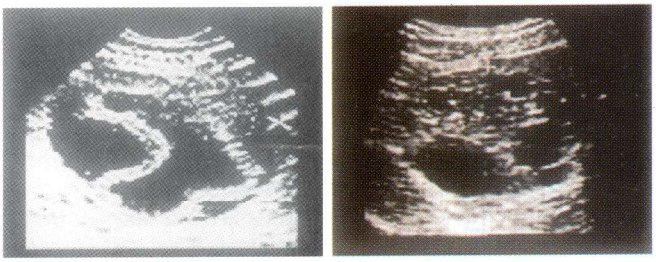


Fig : Cystic Echinococcosis 3 (CE3-Transitional) -Courtesy by WHO bulletin

5. **CE4** (Cystic Echinococcosis 4) : Cyst contains mixed hypo and hyperechoic degenerative contents. No daughter cysts. Contents may give' ball of wool' sign which is indicative of degenerating membranes. The cyst is inactive and infertile. USG features are not diagnostic and diagnosis need further investigations.

6. **CE5** (Cystic Echinococcosis 5) : Cyst is characterized by Arch like thick calcified wall producing cone shaped shadow. Calcifications may occur partially or completely. Cyst is inactive and not fertile in most cases. USG features are not pathognomic but highly suggestive for E. granulosus. All the cyst type can be divided as small(less than 5 cm) medium (5-10 cm) and large (more than 10 cm).

Treatment and prognosis

Uncomplicated hydatid cyst has good prognosis but risk is always present. Complications like rupture into intrapleural and intraperitoneal space. On the other hand rupture into

The rest of the article is given on page no. 140

www.orion-group.net/journals

HIV and pregnancy

Nasreen SZA[1]

The ORION 2004 ; 17 : 146

Human Immunodeficiency Virus (HIV) and pregnancy is one of the burning issue throughout the world as it involves two lives mother and the baby. Unlike cancer majority of HIV infected women are of reproductive age, so knowledge of AIDS management and intervention to reduce raters of mother to child transmission (MTCT) is very important.

Antenatal screening of HIV, provides early recognition of HIV; thereby obstetricians can plan the strategy for her full medical care and preventive measure to minimize (MTCT) or the option of pregnancy termination. As this screening might bring a traumatic news for the women, counseling and informed consent seems mandatory. MTCT varies from 14.4%-30%[1]. Again infected child of 26% develops AIDS and 17% dies by 12 months[2]. In our country routine screening of HIV is not feasible but probable high risk group women must be screened. Treatment and intervention of HIV disease progression is currently monitored by serum viral load and CD_4 count. Once CD_4 falls to below $200x10^6$/L patients are at risk of developing opportunistic infection and AIDS.

Introduction of highly active antiretroviral therapy (HAART) dramatically reduces progression rate improves survival of infected person[3]. Combination antiretroviral therapy should be commenced in pregnancy if women need treatment[4]. But if women not already taking treatment and need treatment by HAART, defining commencement until the 2nd trimester after the period of organ genesis. The pediatrics AIDS Clinical trial group showed ZIDOVUDINE, a nucleoside reverse transcriptase inhibitor 5 times daily from 14-34 weeks of pregnancy could reduce transmission from 2.5-7.6%[5].

BHIVA (British HIV Association) recommend either a simple form twice daily ZIDOVUDINE from (28-32 weeks) or short term antiretroviral therapy (STAR) taken from around 28 weeks gestation. Some mitochondrial dysfunction may occur in mother and exposed infants[6]. HELLP like syndrome may be difficult to distinguish nucleated related disorder. Close monitoring is important. Other routine measures of antenatal clinic need to be carried out. Screening for genital infection especially for bacterial vaginosis at early pregnancy and at 28 weeks[4] is worth-while as it is associated with premature delivery which eventually increase the risk of MTCT.

Mode of delivery

Majority of transmission occurs at the time of delivery[7] prolong rupture of membrane doubles the risk. A meta analysis of 7800 mother infant pair reveal each caesarean section regardless of ZIDOVUDINE significantly reduces transmission[8].

1. **Dr.Sk. Zinnat Ara Nasreen** MBBS (DMC), FCPS, MRCOG (London)
Gold Medalist, Asso. Prof. and Head, Dept. of Gynae & Obs.
Z.H.Sikder Medical College

Breast feed

Avoidance of breast feeding significantly reduces the rate of infection in developed country[9]. But according to WHO this is not justified in our country.

Postnatal follow-up

This is very important, as this is the time for providing adequate and suitable contraception. Condom is must even though they may use IUCD or pills. Effect of pill may be reduced by antiretroviral agent. Cervical smear should be performed annually in all HIV positive women.

A woman diagnosed HIV with pregnancy not only has to consider her own health and that of her unborn child but also the possibility that her existing children and husband are infected. So attention to them is needed. In our country long term outlook of AIDS is extremely poor. She might be the victim of physical violence abandonment by her family. So proper support and rehabilitation is necessary. Mass education of safe sex and danger of AIDS is urgently warranted. Government and non government organization need to come forward to fulfill the policy of antenatal HIV screening, medical care of infected women and their social support and rehabilitation.

References

1. Euro Peon Collaboration Study, Risk factors for Mother to child transmission of HIV, Lancet 1992;339;1007-1012.
2. Euro peon Collaboration Study, Risk factors for Mother to child transmission of HIV. Lancet; 1991;337;253-263.
3. Palella FJ Jr. Delaney KM, Moorman AC, Loveless MO, Fuhrer J. Satten GA, et al. Declining morbidity and with advance human immunodeficiency virus infection. HIV Outpatient Study Investigations. N Engl J Med 1998; 338; 853-60.
4. BHIVA Writing Committe on behalf of the BHIVA Executive Committee. British HIV Association (BHIVA) Guidelines for the treatment of HIV-infected adults with antiretroviral therapy. HIV Med 2001; 2; 276-313.
5. Connor EM, Sperling RS, Gelber R, Kiselev P, Scott G, Osullivan MJ, et al. Reduction of maternal-infant transmission of human immunodeficiency virus type-I with zidovudine treatment. Paediatric AIDS Clinical Trials Group Protocol 076 study Group. N Engl J Med 1994; 331; 11380.
6. Blanche S, Tradieu, M, Rustin P, Slama A, Barret B, Firtion G, et al. Presistent mitochondrial dysfunction and perinatal exposure to antiretroviral nucleoside analogues. Lancet 1999; 354; 1084-9.
7. Mock PA, Shaffer N, Bhadrakom C, Siriwasin W et al Maternal viral load and timing of mother-to-child transmission, Bangkok, Thailand. Bangkok collaboration Perinatal HIV Transmission Study Group AIDS 199;13;407-14.
8. The International Perinatal HIV Group. The mode of delivery and the risk of MTCT of human immunodeficiency virus type 1-a meta -analysis of 15 prospective cohort studies. N Engl J Med 199;340;977-87.
9. Kreiss J. Breastfeeding and vertical transmission HIV -1, 1997;421;113-7.

Role of granulocyte colony stimulating factor in haematological disorder

Rahman M J[1]

The ORION 2004 ; 17 : 147-148

Introduction

The haemopoietic growth factors are glycoprotein hormone that regulate the growth proliferation and differentiation of haemopoietic progenitor cells and the functions of mature blood cells. They may act locally at the site where they are produced or circulate in plasma. They may act locally at the site where they are produced or circulate in plasma. The biologic effects of growth features of mediate through specific receptor on target cells. An important features of growth factor action is that two or more factors may syergize in stimulating a particular cell to proliferate or differentiate. A common action of growth factors in to inhibit apoptosis of target cell.[1]

Human granulocyte colony stimulating factor (G-CSF) is a glycoprotein which regulate the production and release of functional neutrophil from the bone marrow. It is coded by gene on long arm of chromosome17. It is produced by endothelium, fibroblast, adipocytes and other bone marrow stromal cells. This is produced mainly by constitutively or after stimulation. The target cells of G-CSF are high proliferative (HPP) CFC, MixCFC and CFC.[2]

Pharmacokinetics

Commercially prepared G CSF is Filgrastim. There is a positive Liner co-relation between dose and the serum concentration when administered intravenously or subcutaneously. Following subcutaneous administration of recommended dose, serum concentration is maintained above 10 ng/ml for to 16 hours. Clearance of filgrastim has been show to follow first order pharmacokinetic[3] after both SC and IV administration.

Biological actions of G-CSF

In common with all haematopoietic growth factors (HGFs). G-CSP exerts its effects by interacting with target cells membrance receptors. Studies have shown the existence of a class of G-CSF specific high-affinity receptors on cells of the neutrophil lineage from myeloblast to the mature neutrophil as well as on a subset of cells of the monocyte lineage (Nicola et al. 1987).

Neutrophil production

1. Administration of filgrastim leads to an initial transient fall in peripheral blood neutrophil counts followed within 4-5 hours by a rapid, specific, dose-dependent increase above normal values (Bronchud et at, 1987, Morstyn et al. 1988. Lindemann et al. 1989, Data on file) More modest increases in monocytes and macrophages are also observed at high concentrations.

2. The increase in neutrophils is due to both an increase in the number of lineage-specific cell divisions and decrease in the maturation time leading to accelerated release into the peripheral blood.

3. Clinical labelling studies, using tritated thymidine, showed that the increase in circulating netrophils arises via increased amplification in the maturation compartment of the marrow and earlier release of neutrophils[4] (Lord et al. 1989). Following G-CSF administration, newly produced neutrophils were released into the circulation within one day of labelling compared with normal time of approximately 5 days.

4. The absolute neutrophil count (ANC) decreased within 24 hours of filgrastim treatment, with neutrophil counts returning to normal within 1-7 days after the end of administration (Vincent et al. 1994).

5. Neutrophils produced in response to G-CSF stimulation demonstrate normal or enhanced function, as show in assays of phagocytosis and chemotaxis (Bronchud et al. 1987, Morstyn et al.)

6. They also demonstrate prolonged survival time in human peripheral blood.

7. Morphological changes, such as the apperance of secondary cytoplasmic granules and Dohle bodies, are the same as those observed during infection (Morstyn et al, 1988, Lindemann et al, 1988) and are considered indicative of functionally primed neutrophils.

PBPC mobilization

In addition to its effects on neutrophils, filgrastim produces large increases (up to 60 fold) in the peripheral blood content of pluripotent cells and progenitor cells of multiple cell lineages. A number of studies have confirmed that G-CSF alone can effectively mobilise haemopoietic progenitor cells from the bone marrow to the peripheral blood[5] (Durshen et al. 1988, Hass et al.1992 Basser et al. 1995, Desikan et al. 1998, kroger et al. 1988). Mobilised peripheral blood progenitor cells (PBPC), harvested by leukapheresis, can reconstitute the bone marrow of patients receiving myeloablative chemotherapy.

Effects on other haematopoietic cells and tumour cells

Initially, some concerns regarding the therapeutic use of HGFs were expressed. However:

1. There is no evidence to suggest that the filgrastim -stimulated increased in neutrophils leads to depletion of pluripotent stem cells (Lord et al, 1989, Bungart et al. 1990, Countiho et al. 1990).

2. No clinically relevant adverse effects on thrombopoiesis and erythropoiesis have been found in experimental (Molineux et al. 1990, Pojda et al. 1990), or in clinical studies of up to 24 months.

3. While some HGFs, including G-CSF, GM-CSF, IL-3 and M-CSF, can stimulate clonal growth of some non-myeloid tumour cells in vitro (Berdel et al. 1990). no clinical evidence of filgrastim -induced stimulation of non-myeloid malignancies has been observed (Trillet-Lenoir et al. 1995).

4. Although in vitro studies have shown inconsistent stimulation of leukaemic cells clone proliferation by some myeloid growth factors, the use of filgrastim to support induction or consolidation chemotherapy in patients with acute myeloid leukaemia (AML) has not been associated with a detrimental effect on response or survival.[6] (Godwin et al. 1998, Maslak et al. 1996, Heil et al. 1997). In addition, data from a study in acute lymphoblastic leukaemia (ALL) do not indicate any increased risk of relapse in patients associated with the use of filgrastim to support induction therapy (Gessier et al. 1997).

1. Dr. Md. Jalilur Rahman, MBBS, M Phil (Path)
Fellow on Haemato-oncology
Professor & Chairman, Department of Haematology
BSMMU, Dhaka.

Indications of G-CSF 7

1. Prophylactic use of filgrastim in patient under going myelosupressive chemotherapy. This intern reduces the duration of hospitalization and need for antibiotic and is of obvious benefit to patient, who spend fewer days in hospital.

2. G-CSF Priming combined with chemotherapy (Idarubicin, Ara-C, VP-16) yield higher remission rates in patients with advanced myelodys plastic syndromes and high risk AML. Filgrastim is given both prior to and during chemotherapy, with the aim of increasing the sensitivity of leukaemic blast cells to cytotoxic agents as well as reducing the duration of neutropenia following chemotherapy.

3. Use of G-CSF for induction of maturation in patient with AML. In certain situation leukaemic cells can be provoked to terminal differentiation.

4. Filgrastim in PBPC mobilization and allogenic BMT. Increased population of monocyte in peripheral blood harvested from donors mobilized with filgrastim leads to suppression of T cell activation. This will reduced severity of acute graft versus host disease (GVHD) following transfusion of peripheral blood progenitor cells. G-CSF may also be used to stimulate bone marrow prior to harvest for allogenic bone marrow transplantation. Filgrastim primed bone marrow transplanted from HLA matched donor is capable of rapid, stable engraftment with an acceptable incidence of chronic GVDH.

5. Mobilization of peripheral blood progenitor cells, High dose cyclophosphamide usually with combination with G-CSF is generally used for mobilization of peripheral blood progenitor cells to autologous transplant to patient with multiple myeloma. G-CSF alone for mobilizing PBPC avoid the toxic effect of high dose cyclophosphamide. This approach existing renal may particularly benefit older patient and those with existing renal or cardiac problem.

6. Harvest of PBPC from healthy donors. This is generally done for allogenic transplant from relatives.

7. Appreciable use of G-CSF in Agranulocytosis.

Clinical problems with neutropenia

The risk of developing febrile neutropenia varies depending on the type and doses of chemotherapy administered. As expected, higher doses of chemotherapy are usually associated with a greater incidence of febrile neutropenia.

Hospitalization

The standard approach to the management of febrile neutropenia in cancer patients remains prompt hospitaliz ation and the empiric use of broad-spectrum anti-infective therapy (Freifeld and Pizzo 1996). There may be a subset of 'low risk` febrile neutropenic cancer patients who have a better prognosis in terms of morbidity and mortality. These patients, who are thought to represent around 25% of patients with febrile neutropenia, may be able to be treated in an outpatient setting. A scheme which may reduce the demands on the healthcare system (Kiastersky et al. 1998). However, it has been cautioned that even low risk' febrile neutropenic patients are prone to rapid and serious alterations in their medical condition and thus require close observation.

Neutropenia and febrile neutropenia lead to dose reduction dose delay

The treatment of chemotherapy-sensitive solid tumours and haematological malignancies usually involves cycles of intensively dosed chemotherapy. Following chemotherapy-induced toxicity, it is common practices in clinical oncology to reduce the dose of chemotherapy or to delay of the next cycle. Thus, in practice, many patients continue to receive chemotherapy at doses lower than found to be effective in clinical trails.

Dose modification compromises treatment outcome

Evidence that dose intensity is an important of ensuring optimal clinical outcome is growing. In retrospective analyses conducted in the 1980s, Hryniuk and colleagues showed clear relationship between dose intensity and clinical outcome in breast cancer patients (Hryniuk and Levine 1986). Recently published results, using a single scale to compare the dose intensity of chemotherapy regimens in breast cancer, have confirmed the early findings (Hryniuk et al. 1998).

Dose and amininistration

Established cytotoxic chemotherapy

05 MU (5 micro gram) / kg/day

Myeloablative therapy followed by BMT

Starting dose 1.0 MU (10 micro gram) /kg/day given as a 30 minutes or 24 hours IV or SC infusion. Once nadir has passed, the daily dose of filgrastim should be tritated against the nuetrophil response as follows.

Neutrophil count > 1.0 x 10 9/L for further 3 days, then discontinue the drug.

PPBC mobilization

When used alone the dose is 1.0 MU/kg/day for 6 consecutive days. When used with myelosuppressive chemotherapy the dose is 0.5 (5 micro gram)/kg/day until the expected neutrophil nadir has passed.

Contraindications of use of filgrastim

1. Should not be used to patient known to be hypersensitive to the product or its constituents.
2. It should not be used to patient with eastablished congenital neutropenia (kost Mann's syndrome).

Hazards of filgrastim

1. Administration of filgrastim at the recommended dose. dosage is frequently associated with musculoskeletal pain.

2. Less frequently adverse events include mild or moderate dysuria.

3. Transient decrease in blood pressure, not requiring clinical treatment have been reported occasionally.

4. White cell count of 100 x 109/L or greater have been observed in less than 5% of patient receiving filgrastim at above 0.3 MU (3 MG) /kg/day. No adverse events directly attributed to this degree of leucocytosis been reported.

Bibliography

1. Hoffbrand, A.V. Pettit, J.E. Essential Haemotology, 3 rd edition : 8-6.
2. Hoffbrend A. V. Liwis, S.M. and Tuddenham, E. G.D. Post gradute Haematology, 4 th edition 1999 : 13-22.
3. F. Hoffmann-La Roche Ltd, Basel, Switzeriand, May 1995.
4. Lord B I., Bronchud M.H. et al. The kinetic of human granulopoiesis following treatment with G-CSF in vivo Proc Nati Acas Sci USA 1989: 9499-503.
5. Kroger N, Zeller w. et al. Mobilization peripheral blood stem cells with high dose G-CSF alone is as effective as with Dexa-BEAM plus G-CSF in lymphoma patients. Brit J Haemotology 1998 : 102: 1101-6.
6. Godwin J.E. et al. A double -blind, Placebo -controlled trial of G-CSF in elderly patients with previously untreated AML : a south west Onchology Group Study (9031). Blood 1998 : 91: 3607-15.
7. Kari Wete et al. Filgrastim (r-met Hu G-CSF): The first 10 years : The Journal of Americal Society of Haematology vol 88, No. 06 September 15, 1996.

The ORION Vol. 17 Jan. 2004

www.orion-group.net/journals

Amblyopia or Lazy Eye : A silent thief of children's sight

Anwar K S[1]

The ORION 2004 ; 17 : 149-150

Commonest cause of vision defect in children at present in all over the world and the prevalence of about 2-5% . Amblyopia is a Greek word means dull vision (amblys=dull, ops=eye)and this can be in one eye (monocular pattern distortion Amblyopia)or both the eyes(bilteral pattern distortion Amblyopia). This Amblyopia is due to abnormal visual experience during the sensitive period of visual development. Vision is a process for making inferences about the three dimensional structure and composition of the external physical world, based upon information contained in two dimensional retinal images. The final result is seemingly unified visual perception. Interruption or alteration to the functioning of the image processing pathways results in abnormal or incomplete image formation. Amblyopia should not be viewed only as an eye problem but as brain problem too. Newborn infants are able to see but not far.

Fig : Unilateral Cataract
Cause of dense amblyopia difficult to treat

With time vision improves when the baby learns to focus on objects and then to co ordinate both eyes into a sterioscopic system. During early childhood years the visual system changes rapidly and vision continues to develop up to eight years (some says nine years).After this period no major developmental maturation occurs in the visual system. If a child fail's to use his or her eye normally by this period, improvement of vision would be difficult in that eye .The stronger eye becomes dominant and retains good vision. Other eye with poor vision becomes lazy eye. The earlier the onset of the abnormal stimulation, the greater the visual deficit. The critical period for visual development is somewhat controversial. But most clinician and researcher accept the time frame between one week and 2 months of age. Severe visual loss is expected, if any disruption of vision happens during this period causes severe visual loss.

Fig : Cataract with Micropthalmos
Microcornea

For practical purposes amblyopia is defined at least 2 Snellen lines difference in visual aquity but amblyopia is truly a spectrum of visual loss ranging from missing a few letters on the 20/20 line to hand motion vision.Amblyopia is primarily a defect of central vision,peripheral visual field nearly always remains normal.

1. **Dr. Kazi Shabbir Anwar,** MBBS, DO (Dhaka)
Fellow Paediatric Ophthalmology (Canada)
Head & Consultant, Dept. of Paediatric Ophthalmology
Islamia Eye Hospital & M.A.I. Institute of Ophthalmology, Dhaka.

Common cause of Amblyopia

Ocular misalignment or Strabismus
Uncorrected refractive error
Any disorder that interfere clear image formation and transmission to the brain from the eye.

Ocular misalignment

Strasbismus is always associated with strong fixation preference results in constant unilateral suppression of cortical activity related to non preferred eye(deviated eye).Constant suppression in the visually immature patient results in poor vision of the deviated eye means non preferred eye.

Fig : Esotropia

Fig : After surgical correction

The most common type of unilateral amblyopia is strabismic amblyopia. Strabismic amblyopia is most commonly associated with Esotropia but this can also be seen in Exotropia. More than 50% of strabismic amblyopic cases are due to Infantile esotropia.

Uncorrected refractive error

Anisometric amblyopia(where refractive power is different in two eyes) is the second most common cause of unilateral amblyopia after infantile esotropia.

Hypermetropic anisometric amblyopia may occur when difference of refractive power is greater than 1 to 1.5D. Myopic anisometropia is considered if the difference is -3D or more(some says -5D or more) Uncorrected plus 1.75D astigmatism in school children ,plus 2.50 in preschool children ,plus 3-4D astigmatism in infants is good enough to cause meridonial Amblyopia.

Myopic anisometropic amblyopia is usually mild and amenable to treatment even in late childhood but hypermetropic amblyopia is often difficult to treat when they come late (after 4 or 5 years of age).The reason firstly myopia is usually acquired after the critical period when good visual development has already been occurred.

Fig : Accommodative Esotropia

Fig : Full correction with only appropriate glasses

Secondly with myopic anisometropia the more myopic eye is used for near and the less myopic eye is used for the distance. On the other hand ,patients with hypermetropic anisometropia always use the less hypermetropic eye and constantly suppress the more hypermetropic eye creating difficult ambly opia. distortion amblyopia.This amblyopia occurred if the lental opacity fails to be cleared within 2-3 month of life.

How amblyopia is diagnosed ?

Is not difficult to do if there is strabismus or ptosis and any obvious cataract.But it is not easy to recognize when there is anisometric and ametropic refractive error most of the time.A child may not be aware of having one good eye and another weak eye.There is often no way for parents to tell that something is wrong.

Goal of treatment

Three important point to remember

To preserve ,improve and restore vision

To make the two eyes work together for depth of perception

To straighten the eyes if needed and to remove any obstacle to see clearly.

Management

Eye glasses -to correct refractive problems.

Patching-doing in the good eye to use the weak eye in order to use more to improve vision.

Eye drops-these may be used in some cases to imprve the vision in the weaker eye when other methods can be applied Drops are placed in the good eye in order to blur vision in that eye and thereby forcing the lazy eye to work more.

Surgery-Is required to align the eye,remove the cataract or to fix the eye lid in normal height.

Ametropic amblyopia usually takes place with hypermetropia of plus 5D and above

Congenital cataract

It is one of the common cause of amblyopia due to sensory deprivation .This can cause monocular or binocular pattern

Every child is different

Each case of amblyopia management is different because every child's cause is a little different. Management would depend on child's age, underlying cause and density of amblyopia. It is also important to do the follow up with the doctor upto the age of 9 years,even if the child has regained vision after treatment.Vision might fall without maintainence treatment within the period of visual maturation.

Timing to start management

Every child need an eye exam with first 2 month of birth to confirm healthy red glow . Second examination should be done at one year of age and at the three years of age just before starting school. Strabismus most of the time never goes away by it self. It is always advisable to get an eye checked right away when parents first notice it.

References :

1. Paediatric Ophthalmology- 2nd. edition by David Taylor
2. Paediatric Ophthalmology And Strabismus- Kenneth W. Wright
3. Paediatric Ophthalmology And Strabismus- American Academy of Ophthalmology- 1999-2000.
4. Management of Strabismus and Amblyopia-2nd. edition John A Pratt Johnson; Geraldine Yillson
5. Paediatric Ophthalmology And Strabismus- Transaction of the New Orleans Academy of Ophthalmology

Enhanced detection of ischaemic but viable myocardium by pharmacological stress agent with re-injection protocol thallium-201 SPECT study : A preliminary experience report

Hoque R[1], Britton K E[2]

The ORION 2004 ; 17 : 151-155

Abstract

The identification of ischaemic but viable myocardium by thallium exercise scintigraphy is widely practiced. Thallium study can predict the location of the myocardium affected by impaired perfusion and can asses the severity, extend and reversibility of the lesion. The conventional exercise-stress, redistribution and rest thallium scintigraphy is often imprecise, since many of the perfusion defects that develop the ischaemic myocardium doing exercise do not "fill-in" on subsequent redistribution images. On the otherhand conventional exercise protocol provided by exercise on a bicycle stress table or treadmill does not allow a significant proportion of the patient. Considering these two major problems, we studied 7 patients with Coronary Artery Disease (two of them have only atypical chest pain with normal exercise ECG, 5 patient have CAD with history of myocardial infarction and angioplasty, stent in situ) following stress thallium study with pharmacological stress agent adenosine and re-injection of thallium 3 hours after the stress. Significant reversible myocardial ischaemia was observed in different segments in five patents, the other two patients have irreversible fixed defects. The datas indicates that the thallium study with pharmacological stress agent adenosine improves the detection of ischaemic myocardium and that myocardial region with improved thallium uptake on re-injection imaging represents viable but jeopardized myocardium.

Introduction

The use of physical effort in the diagnosis of coronary artery disease was originally described by Mark[1] who recorded electrocardiographic changes in patients during episodes of pain associated with chronic stable angina. Since that time, treadmill or bicycle exercise has been used widely in conjunction with ECG, echocardiography, and scintigraphic imaging to diagnose myocardial ischemia, cardiac wall motion abnormalities, or coronary perfusion defects. Yet diagnostic accuracy of these procedures can be limited by problems inherent in echocardiography or scintigraphic imaging during or immediately following exercise[2]. These constraints, together with the need for alternatives to exercise in patients with peripheral vascular, respiratory, orthopedic disease[3] have led to the development of pharmacological stress tests. This strategy uses agents intended to mimic certain aspects of the cardiac response to exercise, i.e., tachycardia, coronary dilation, and inotropic activation, which provoke ischemia and elicit cardiac functional changes in patients with coronary artery disease[4].Exercise Thallium-201 myocardial perfusion imaging provides diagnostic information regarding the presence of coronary artery disease, enables determination of the hemodynamic significance of known coronary lesions with respect to regional myocardial ischemia, gives an estimate of the amount of viable myocardium in patients with prior myocardial infarction, and allows for risk stratification of patients with regard to future cardiac events. However, exercise imaging is usually not practical in patients with orthopedic debilities, patients who are elderly and deconditioned, and patients with peripheral vascular disease and claudication. Pharmacological stress agents are now provides an excellent alternative to exercise. These agents are either vasodilators (dipyradamole or adenosine) or catecholamine (dobutamine or arbutamine)[5]. The purpose of this report is to enumerate the initial experience withpharmacological stress agent with reinjection thallium-201 myocardial perfusion imaging protocol.

Materials And Method

Patients : Seven patients over the age of legal consent, with symptoms or signs of coronary artery disease necessitating coronary angiograph or with angiographic evidence of coronary artery disease were enrolled in this study.

Screening included history and physical examination, laboratory studies and electrocardiography. Patients were excluded if they had rest ECG abnormalities, unstable angina within 6 weeks. Myocardial infarction within 30 days, a pacemaker, a history of significant arrhythmia, heart failure, cardiomyopathy and states of secondary ventricular hypertrophy, uncontrolled hypertension, aortic aneurysm or dissection, hypokalemia or other significant disease. Prohibited medications included tri-cyclic antidepressant agents, class I antiarrhythmic agents and drugs interfering with catecholamine metabolism within 1 week; and amiodarone or any investigational drug within 30 days.

Pharmacological stress agents and perfusion imaging: Adenosine is administered intravenously at a dose of 0.14 mg/kg per minute for 6 minutes. Thallium is injected at the end of the third minute. The patient's heart rate, blood pressure, and electrocardiogram are monitored closely. Imaging is begun within 10 minutes, with delayed/redistribution imaging at 3 to 4 hours, and additional delayed or reinjection imaging was obtained. Thallium images were then obtained with a wide-field of view rotating gamma camera with SPECT facility equipped with a high-sensitivity, low-energy, medium-resolution, parallel-hole collimator centered on the 68-keV photo peak with a 20 percent window. The camera was rotated in a 180-degree are in an elliptical orbit about the patients thorax from a right-anterior oblique angle of 40 degrees to a left-posterior oblique angle of 40 degrees at 6-degree increments for 30 seconds each. Redistribution images were obtained three to four hours after the pharmacological stress testing while the patients were resting. Immediately thereafter, all patients received a second injection of 1 mCi of Thallium-201, and Single Photon Emission Computed Tomography (SPECT) was performed within 10 to 15

1. **Dr. Roquibul Hoque,** MBBS, DNM
Director, Centre for Nuclear Medicine & Ultrasound, Comilla

2. **Dr. K E Britton,** MD, MSc, FRCP, FRCR
Professor and Head, Dept of Nuclear Medicine, St. Bartholomew's Hospital, West Smithfield, London, United Kingdom

minutes (reinjection imaging). From the raw scintigraphic data, sagittal short-axis (SAA), vertical long-axis tomo-grams (VLA) and horizontal long axis (HLA) (Fig. I) were reconstructed as previously described, 12 and four consecutive representative slices of each view were selected for interpretation. The reconstructed stress, redistribution, and reinjection images were then analyzed both qualitatively and quantitatively.

Electrocardiographic and hemodynamic variables :
In this study, pharmaceutical stress agents induced exercise like symptom-limited tests were continued to horizontal or down sloping ST segment depression or elevation unless the maximal heart rate or intolerable angina, fatigue or other adverse events occurred. The maximal heart rate for adenosine was limited by the automated device to [(220-age) X 0.85 beats/min].

The ECG, blood pressure and heart rate were continuously monitored. After stress, heart rate and blood pressure were recorded at longer intervals for 30 min or until heart rate returned to within 20 beats/min of baseline, whichever was longer.

Results

The pharmacological stress events illustrated in Table -I including change of pulse, blood pressure, and symptoms with ECG changes. Image interpretations described in Table-II, Fig. I and Fig. of cases 1 to 7 with 6 slices of three sections of heart with stress and reinjection events with individual segmental analysis.

Table I: Baseline, stress, symptoms and ECG changes after Adenosine stress

Case	Pulse/min		Blood Pressure (mmHg)		ECG Changes	Symptoms
	Baseline	Stress	Baseline	Stress		
1.	83	99	130/80	130/90	Significant ST depression and chest pain	Chest Pain
2.	92	125	110/60	120/70	Left bundle branch block	Chest Pain
3.	68	92	140/80	150/70	No change	Burning sensation in the chest
4.	64	84	135/80	140/90	No change	Burning discomfort in throat
5.	96	110	165/80	170/85	T-wave inversion, ST deflection in V_5-V_6- STelevation V_2-V_3	Neck Pain
6.	64	96	115/80	130/85	ST change	Chest Pain
7.	74	92	105/80	125/85	Bundle branch block	Chest Pain

Table II: Image description and interpretation.

Case	Thallium Image	
	Stress	Re-injection
1.	1. Left ventricular cavity enlarged 2. Reduced perfusion to antero-apical segment, apex to the inferior wall and septal wall 3. Perfusion to the lateral interior wall is reduced too.	1. Perfusion of the septum and apex is improved. 2. No improvement of perfusion of the antero-septal and inferior wall.
2.	1. Left ventricular cavity enlarged, reduce perfusion in the septal, antero-septal segment, apex and the inferior wall 2. Normal perfusion in the lateral wall	There is improvement of the Inferior Wall and apex.
3.	1. Left ventricular cavity is in normal size 2. There is reduced perfusion in the lateral wall. 3. Elsewhere the perfusion is well.	Good perfusion to the myocardiam
4.	1. Size of the left ventricle cavity is slightly enlarged. 2. Reduced perfusion to the anterior wall.	1. Good perfusion to the ant and lateral wall of the left ventricle. 2. Ventricular cavity is normal in size.
5.	1. Left ventricular cavity is enlarged 2. Marked reduced perfusion to anterior, antero-septal and apical segment.	1. Little reduction in cavity size 2. Improvement in the perfusion of anterior wall but no improvement in antero-septal, apical, infero-apical segment.
6.	1. Left ventricular cavity is enlarged 2. Reduce perfusion in lateral wall, inferior wall and apex.	1. Improved perfusion to lateral wall. 2. Cavity size is smaller. 3. No improvement in the perfusion in apex and inferior wall.
7.	1. Left ventricular cavity size is enlarged 2. Reduced perfusion in the septal, antero-septal segment, apex, and inferior wall. There is normal perfusion in lateral wall.	There is improved perfusion in the Septum, partial improvement with Inferior wall and the apex.

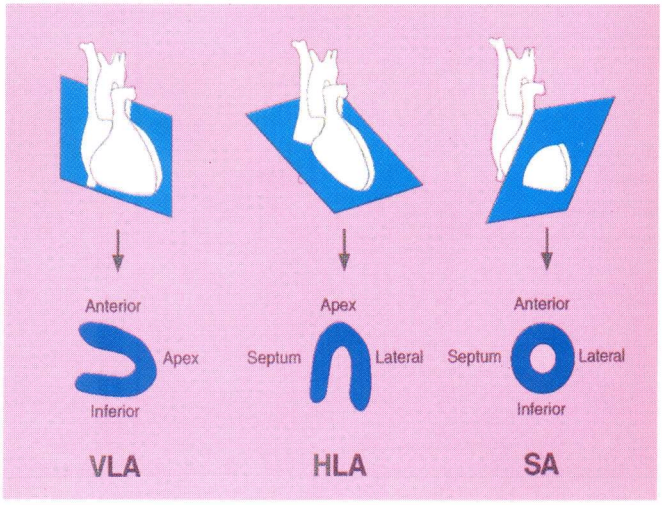
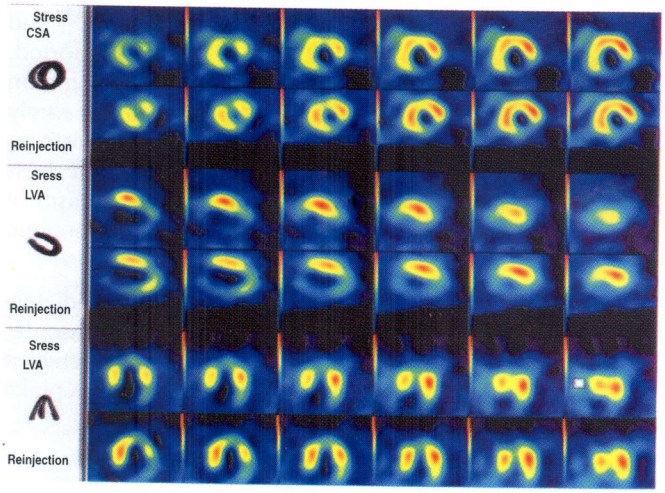
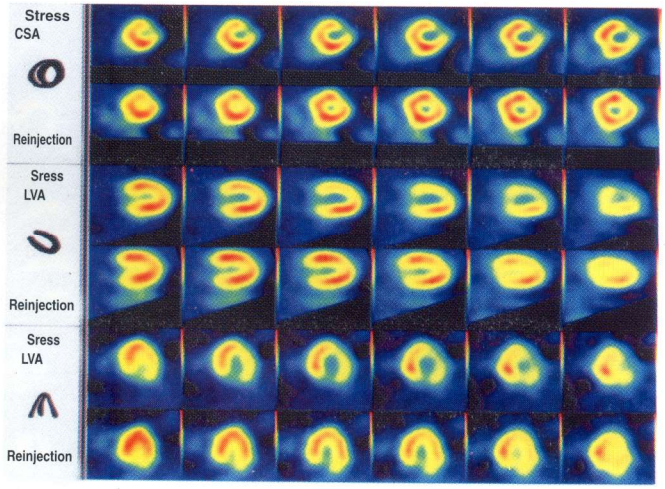


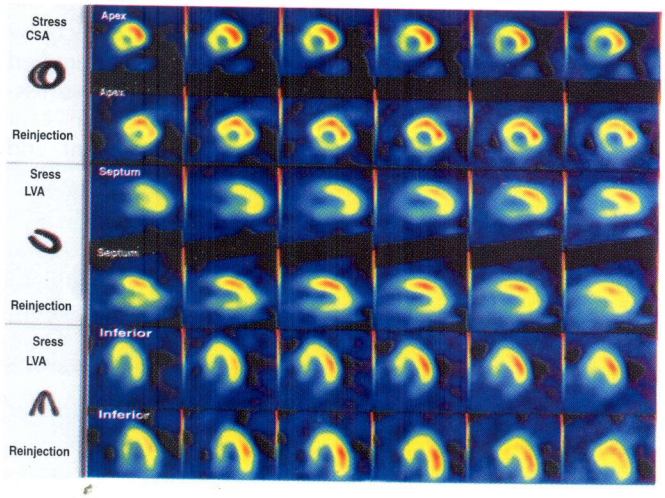
Figure I : SPECT reconstruction slices of the heart



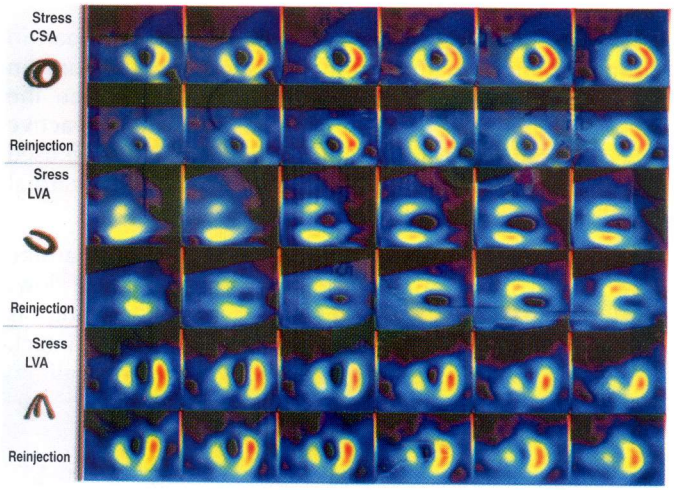
Case 1 : Significant reversible perfusion defect in the distal septum & the septum related apex. the antero-septal segment & the inferior wall shows a persistent defect to infarction



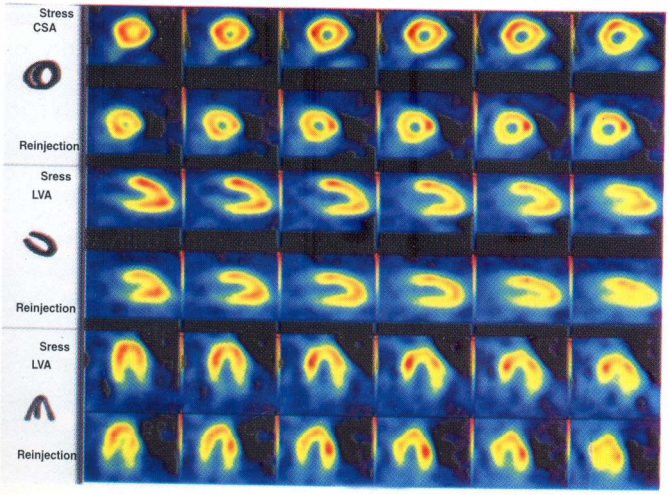
Case 4 : Significant reversible myocardial ischaemia



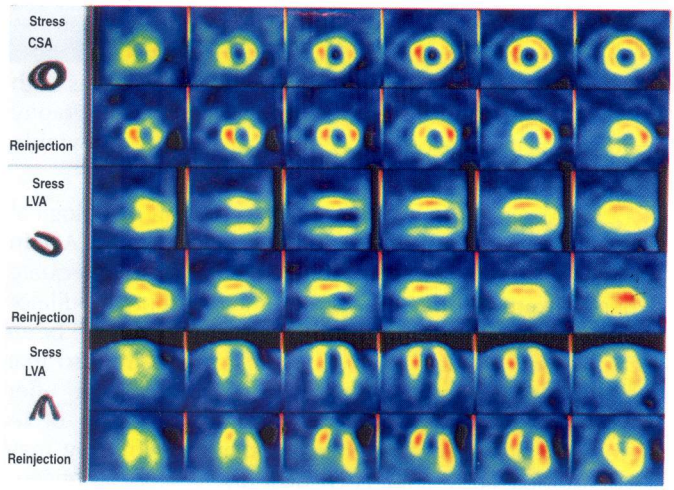
Case 2 : Significant reversible myocardial ischaemia in anterio-septal, infero-apical segments and reduction of muscle mass in the infero-septal segment



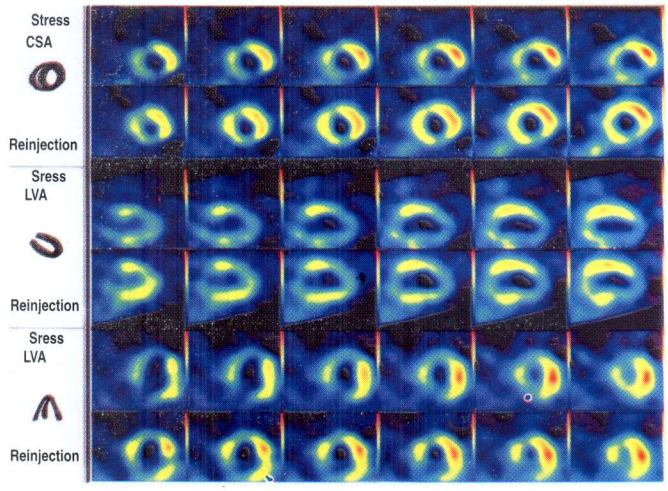
Case 5 : Significant reversible myocardial ischaemia at the anterior wall, non reversible ischaemia of the apex and infero-apical wall



Case 3 : Normal myocardium, low probability of acute cardiac event



Case 6 : Significant reversible myocardial ischaemia at the lateral wall with fixed inferior and apex defect



Case 7 : Significant reversible myocardial ischaemia in septum, inferior wall and apex

Discussion

Thallium-201 scintigraphy has played an important part in distinguishing ischemic from infarcted myocardium in patients with coronary artery disease (CAD). Since the uptake of thallium by the myocardial cell is an active process and depends on regional blood flow, it can be used as an index of both regional perfusion and myocardial viability .[6]

The initial uptake, or extraction of thallium in cardiac myocyte is directly proportional to regional blood flow. Thallium-201 is retained in the myocyte so long as sarcolemmal integrity and metabolic function remain intact. Over the ensuing hours, a process of exchange of thallium between the viable cells and the intravascular space goes on. Initially, hypoperfused areas have slower clearance of thallium compared to initially normal perfused areas. This results in the phenomenon of redistribution. Redistribution is defined as improvement or normalization of ischemic thallium perfusion defects with time. The presence of redistribution is a marker for myocardial ischemia and viability. On stress-redistribution imaging, fixed thallium defects were formerly equated with myocardial scarring. However many of these are "irreversible" defects did show improvement after revascularization. Thus, in patients with LV dysfunction, stress-redistribution thallium scintigraphy frequently underestimates the presence of viable myocardium and the potential for recovery.[7]

Myocardial scintigraphy associated with pharmacological stress has been widely used for the diagnosis of CAD in patients with chest pain unable to perform adequate dynamic exercise.[8-11, 12, 13] Among the different vasodilator pharmacological agents, adenosine has been recently used because of its short half-life (<2 min) so that patients do not experience prolonged ischemia after infusion, such as with dipyradamole, and because of its more rapid action so that echocardiographic imaging may be performed early after each dose increment.[14] Previous studies demonstrated good diagnostic accuracy of adenosine test associated with myocardial perfusion imaging in the detection of CAD.[8, 10, 13] Good agreement between adenosine and dynamic exercise myocardial perfusion scintigraphy with 201-TL.[7, 11] and 99mTc labeled agents[12, 14] also have been reported. Atrioventricular conduction block is particularly common with adenosine, but its duration is so brief that it is rarely necessary to give aminophylline[15] For patients with asthma who cannot exercise, dobutamine has been used as a stress agent for myocardial perfusion imaging, the mechanism of action of dobutamine is stimulation of beta-adrenergic receptors .[15]

The re-injection of a small dose of thallium immediately after redistribution imaging increases the intravascular concentration of thallium to allow more exchange between the myocyte and the intravascular space and provide uptake into regions with more severely reduced blood flow.[16]

In one study, the reinjection of thallium significantly improved the ability to detect ischemic but viable myocardium in 49 percent of the regions that were interpreted as having irreversible, fixed abnormalities on redistribution imaging. The reinjection of thallium also enhanced the uptake of the isotope in 56 percent of the regions identified as having partially reversible defects by redistribution imaging. Thus, reinjection imaging identified as viable 101 of the 172 regions that conventional stress-redistribution imaging had identified as having persistent perfusion defects, greatly overestimating the extent and severity of myocardial fibrosis.[17]

Because of very small population of this report, which preclude any firm conclusion, but there was very good agreement with the others. In our series, thallium uptake with the viable myocardium was improved after reinjection and patients tolerated well with adenosine stress in all cases. In this group, two of them have only atypical chest pain with normal exercise ECG, 5 patient have CAD with history of myocardial infarction and angioplasty, stent in situ.

In recent years, studies have shown that 3-to 6-hrs redistribution myocardial perfusion imaging failed to detect reversibility of stress defects in patients who did have viable myocardium, indicated by improved regional function after revascularization [16-18]

These investigators also found improved detection of viable myocardium by observing amelioration of the severity of 201-TL-imaged defects between stress images and 4-hrs redistribution images, and between images acquired 10 min after reinjection of 201-TL and the redistribution images.[16-18]

The major advantage of the stress-redistribution-reinjection protocol is that it answer the clinical question of myocardial ischemia and viability in question with reversibility whether to be benefited after revascularization. The rest-redistribution technique pertains to the presence or absence of myocardial viability only. There also may be circumstances when the rest-redistribution study shows insignificant myocardial viability while the stress-redistribution-reinjection protocol brings it out.

References

1. Mark Y, Wei P, Jim W et al. Characterization of arbutamine: A novel catecholamine stress agent for diagnosis of coronary artery disease, Drug Development Research 1994;32: 19-28.
2. Marwick TH, Nemec JJ, Pashkow FJ, Stewart WJ, Salcedo EE. Accuracy and limitations of exercise echocardiography in a routine clinical setting, J Am Coll Cardiol, 1992; 19:74-81.

3. Mazeika PK, Nadazdin A, Oakley CM. Dobutamine stress echocardiography for detection and assessment of coronary artery disease, J Am Coll Cardiol, 1992; 19:1203-1211.
4. Ryan T, Williams R, Sawada SG Dobutamine stress echocardiography, Am J Cardiac Imaging 1991; 5:122-132.
5. DePuey EG, Rozanski A. Pharmacological and other nonexercise alternatives to exercise testing to evaluate myocardial perfusion and left ventricular function with radionuclides. Semn Nucl Med 1991;XXI(2):92-102.
6. Tamaki N, Takahashi N, Kawamoto M et al. Myocaridal tomography using technetium-99m-tetrofosmine to evaluate coronary artery disease, J Nucl Med 1994; 35:594-600.
7. Beller GA. Mayocardial perfusion imaging with Thallium-201, J Nucl Med 1994; 35:674-680.
8. Verani MS, Mahamarian JJ, Hixson JB, Boyce TM, Staudacher RA. Diagnosis of coronary artery disease by coronary Vasodilatation with adenosine and 201TI Sintigraphy in patients unable to exercise, Circulation 1990;80-87.
9. Gupta NC, Esterbrooks DJ, Hilleman DE, Mohiuddin SM. Comparison of adenosine and exercise 201TI single-photon emission computed tomography myocardial perfusion imaging, J Am Coll Cardiol 1992; 19:248-256.
10. Iskandrian AS, Heo J, Nguyen T, et al. Assessment of coronary artery disease using single-photon emission computed tomography with 201TI during adenosine-induced coronary hyperemia, Am J Cardiol 1991; 67:1190-1194.
11. Nishimura S, Mahamarian JJ, Boyce TM, Verani MS. Equivalence between adenosine and exercise 201TI mayocardial tomography: a multicentric prospective, crossover trial, J Am Coll Cardiol 1992;20:265-275.
12. Cuocolo A, Soricelli A, Pace L, et al. Adenosine 99mTc-methoxy isobutyl isonitrile myocardial tomography in patients with coronary artery disease comparison with exercise, J Nucl Med 1994; 35:1110-1115.
13. Nicolai E, Cuocolo A, Pace L, et al. Adenosine coronary vasodilatation quantitative 99mTc methoxy isobutyl isonitrile myocardial tomography in the identification and localization of coronary artery disease, J Nucl Cardiol 1996;3:9-17.
14. Wilson RF, Wyche K, Christensen BV. Zimmer S. Laxson DD. Effects of adenosine on human coronary arterial circulation, Circulation 1990; 82:1595-1606.
15. Cerqueira MD, Verani M, Schwaiger M, Heo I, Iskandrian A. Safety Profile of adenosine stress perfusion imaging: Results from the adenoscan multicentre trial registry, J Am Coll Cardiol 1994; 23:384-389.
16. Rocco TP, Dilsizian V, McKusick KA, Fischman AJ, Boucher CA, Strauss HW. Comparison of thallium redistribution with rest reinjection" imaging for the detectction of viable myocardium, Am j Cardiol 1990:66:158-163.
17. Dilsizian V, Rocco TP, Freedman NM,Leon MB, Bonow RO. Enhanced detection of ischemic but viable myocardium by the reinjection of thallium after stress-redistribution imaging, N Eng J Med 1990;323:141-146.
18. Dilsizian V, Perrone-Filardi P, Arrighi JA, Bacharach SL, Quyyumi AA, Freedman NMT, et al. Concordance and discordance between strees-redistribution-reinjection and rest-redistribution thallium imaging for assessing viable myocardium, Circulation 1993; 88:941-952.

Omphalocoele - A congenital umbilical defect : A case report

Amin M R[1]

The ORION 2004 ; 17 : 156

Baby of Salina born with an umbilical defect called Omphalocoele, was admitted in Pediatric Surgery Department of BSMMU at the age of 2 days. She was delivered in a private clinic by Caesarian section & subsequently referred to our hospital. The baby was full term with birth weight 2.5kg passed meconium, but the umbilical area was replaced by whitish membrane. The umbilical cord is situated at its top. The intestine was visible through the transparent sac.

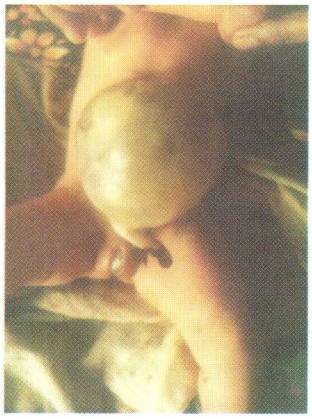


Fig. 1: Before operation

Omphalocoele is the most common presentation of congenital exterior wall defects with out skin covering. In this defect the umbilicus fails to close and is covered by whitish gelatinous membrane and peritoneum from superficial to deep. The cord is situated either at the top of the sac or at the corner of the sac. The sac may be intact but it may be ruptured permanently, during birth process or after delivery. The small omphalocoele contains only the coils of intestine but the large sac contains liver or spleen in addition to the coils of intestine but not the stomach. Gastroschisis is a near similar congenital anterior abdominal wall defect with out any covering sac. The mortality and morbidity rate in these defects is very high due to sepsis, prolonged starvation, respiratory insufficiency and also due to other associated anomalies. However, in the last decade with the use of staged surgical repair with silon prosthesis coupled with better pre & post operative care, the outlook of the these babies have improved.

These defects may be diagnosed antenatally with the help pf ultrasonography. If antenatally diagnosed , Caesarian Section in a specialized hospital is preferable. The initial management of each patient included care of the defect and general management of the patient. The exposed viscera or the intact sac was covered with normal saline soaked gauze or sterile plastic bags to avoid the loss of heat, fluid and electrolytes Nasogastric suction, intravenous fluid and combination of antibiotics in parenteral route and parenteral nutrition were given. Through assessment of the patient was done to find out any associated anomalies which were duly noted. These defects with intact sac can be managed both non surgically or surgically. Surgery offered the scope to correct the associated anomalies like malrotation atresia or internal hernia. Considerable judgement must be exercised in selection of the procedure to repair defects. Too tight closure with creation of abdominal crowding should be avoided. The membranous sac was excised totally.

1. Dr Md. Ruhul Amin, MBBS, MCPS, FCPS, MS
Post Fellowship training in paediatric surgery and urology (Japan)
Associate professor, Department of Paediatric surgery
BSMMU, Dhaka

Abdominal survey done, the parietal wall stretched manually to enlarge the abdominal cavity. In some cases flank-relaxing incision was given to avoid skin tension. Some surgeons make cutaneous flap by subcutaneous release incision just to cover the defects. In this case we used decron mass to make a silo pouch. The consequences of the tight closure are increased intra abdominal pressure leading to respiratory embarrassment wound dehiscence and necrosis of the skin flaps. This can be avoided by making a pouch of silon sheets, which are gradually reduced as a staged procedure. The abdominal wall enlarged gradually in a short period of time to accommodate the viscera.

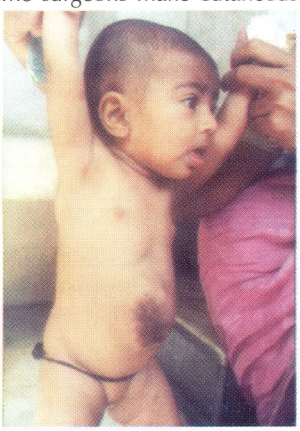


Fig. 2 : After operation

References

1. Gross RE : A new method for surgical treatment of Large omphaloceles. Surgery 24 : 277-292. 1948
2. Allen RG, Wrenn Jr El : Silon as a sae in the treatment of omphalocele and gastrochisis J Pediatr Surg 4 : 3-8, 1969
3. Hoyme HE, Higginbotton MC, Jones Kl : The vascular Pathogenesis of the gastrochisis : Intrauterine interruption of the omphalomesentric artery. pediatrics 98 : 228-231, 1981.
4. Shaw A : The myth of gastroschisis. J Pediatr Surg 10 : 235-244, 1975
5. Trsfs CP, Velie EM, Oechsli FW, et at : A Population- basedstudy of gastroschisis : Demographic, Pregnancy, and Lifestyle risk Factors, Teratology 50 : 44-53, 1994
6. Torfs CP, Katz EA, Bateson TF, et al : Maternal medications and environmental exposures as risk factors for gastroschisis, Teratology 54 : 92, 1996

Launching of New Products

Orion Laboratories Limited has recently introduced the following thirteen new products in the market

Enliven

Imatinib INN 100 mg

A New Light, A New Hope

Enliven (Imatinib Mesylate) is a protein- tyrosine kinase inhibitor, an anticancer product. Orion is the first Pharmaceutical Company in Bangladesh to manufacture this type of product. It is indicated for the treatment of patients with Philadelphia chromosome positive Chronic Myeloid Leukemia (CML) in blast crisis, accelerated phase, or in chronic phase after failure of interferon alpha therapy. Enliven is also indicated for the treatment of patients with c-kit (CD117) positive unresectable and /or metastatic malignant gastrointestinal stromal tumors (GIST). Enliven is significantly more effective in treating CML than other anticancer therapies, shows better hematological and cytogenetic response and exhibits improved and favorable survival rate. It is presented in the form of 100 mg capsule. The recommended oral dose for Enliven is 4 capsules per day for patients in chronic phase CML and 6 capsules per day for patients in accelerated phase or blastic phase. MRP TK 100.00 / capsule.

Angimet

Trimetazidine Dihydrochloride INN 20mg tablet

Trimetazidine - the only cardiac metabolism enhancer

Angimet (Trimetazidine) is the only cardiac metabolism enhancer, an anti-anginal drug.It is indicated in prophylactic treatment of episodes of angina pectoris and sequelae of infarction, heart failure, adjuvant symptomatic treatment of vertigo and tinnitus and adjuvant treatment of decline of visual acuity and visual field disturbances. It is presented in the form of 20 mg tablet. The usual adult dose is one tablet 3 times per day. MRP TK. 3.00/tab.

Vextra

Valdecoxib INN 10 mg & 20 mg tablet.

2nd generation cox-2 inhibitor

Vextra (Valdecoxib) is the newest addition to the group of NSAIDs known as selective cox-2 inhibitor. It is indicated for the symptomatic relief of pain and inflammation in osteoarthritis, rheumatoid arthritis and for the treatment of primary dysmenorrhoea. Vextra is also indicated to relieve dental pain and pain after oral surgery. Vextra is presented in the form of 10 & 20 mg tablet. The usual dosage of vextra for relief of pain and inflammation 10 mg once daily and for the treatment of primary dysmenorrhoea 20 mg twice daily. MRP Vextra 10:TK 3.00/tab. and Vextra 20 : TK. 5.00/tab.

Truso

Cefixime USP 200 mg cap. & 100 mg/5 ml syrup.

3rd generation oral cephalosporin

Truso (Cefixime) is a 3rd generation cephalosporin antibiotic. It is indicated for the treatment of upper and lower respiratory tract infections, uncomplicated and complicated urinary tract infections, acute otitis media, gonococcal urethritis and typhoid fever.Truso is presented in the form of 200 mg capsule and powder for suspension 100 mg / 5 ml. The usual dosage is one capsule once or twice daily for 7-14 days and suspension for children 1-2 tea spoon full once or twice daily according to the age and severity of infections of children. MRP TK. 35.00/ cap. and 160.00/ phial.

Linozid

Linezolid INN 400 mg & 600mg tablet.

The first Oxazolidinone antibiotic discovered in the world

Linozid (Linezolid) is a synthetic oxazolidinone anti-infective agent that is structurally unrelated to other anti infectives. FDA approved this drug against multi drug resistance infections. It is indicated for the treatment of Nosocomial pneumonia, Community acquired pneumonia, uncomplicated or complicated skin and skin structure infections and vancomycin resistant enterococcus faecium infections. Linozid is presented in the form of 400 and 600 mg tablet. The usual adult dosage of Linozid is 400 mg-600 mg 12 hourly for 10 - 14 days. MRP. Linozid 400 : TK. 60.00/tab. and Linozid 600 : TK. 85.00/tab.

Frulac 40

Spironolactone BP 50 mg and Frusemide BP 40mg tablet

A logical combination of diuretics

Frulac 40 has been launched which is the line extension of Frulac. MRP TK. 8.00/tab.

U4

Flupenthixol 0.5 mg & Melitracen 10 mg tablet.

The perfect Mood Elevator

U4 (Flupenthixol & Melitracen) is a neuroleptic with anxiolytic and antidepressant product. It is indicated for the treatment in various types of anxiety, depression and apathy. These include psychogenic depression, depressive neurons, marked depression, psychosomatic affections accompanied by anxiety and apathy, menopausal depressions, dysphoria and depression in alcoholics and drug addicts. U4 is presented in the form of tablet. The usual adult dosage is one tablet twice daily. MRP TK. 3.25/tab.

Noak

Aceclofenac 100mg tablet.

An NSAID, friendly to cartilage

Noak (Aceclofenac) is a phenylacetic acid derivative and related to diclofenac. It is indicated for the symptomatic treatment of pain and inflammation in osteoarthritis, rheumatoid arthritis and ankylosing spondylitis and primary dysmenorrhoea. Noak is presented in the form of 100 mg tablet. The maximum recommended dose is 200 mg daily in two divided doses. MRP TK. 3.00/tab.

Tropaz

Pantoprazole INN 20 mg & 40 mg tablet.

More target specific

Tropaz (Pantoprazole) is chemically a novel substituted benzimidazole derivative. It is indicated for the treatment of duodenal ulcers, gastric ulcers, reflux esophagitis, eradication of Helicobacter pylori, Zollinger-Ellison syndrome, ulcer induced by NSAIDs, GI bleeding from stress or acid peptic diseases and prophylaxis for acid aspiration syndrome during induction of anesthesia. Tropaz is presented in the form of 20 mg and 40 mg tablet. Usual dose of Tropaz is 40 mg once daily or 20 mg tablet twice daily for 4-8 weeks. MRP Tropaz 40 : TK. 5.00 /tab. and Tropaz 20 : TK. 3.00 /tab.

Rispa

Risperidone 1 mg & 2 mg tablet.

A new generation antipsychotic

Rispa (Risperidone) is a new generation of antipsychotic. It is indicated for the treatment of acute and chronic schizophrenia, psychoses and other psychotic conditions, in which positive symptoms (such as hallucinations, delusions thought disturbances, hostility, suspiciousness) and /or negative symptoms (such as blunted affect, emotional and social withdrawal, poverty of speech) are prominent. Rispa is presented in the form of 1 and 2 mg tablet. The usual adult dosage is 1-2 mg tablet once or twice daily. MRP Rispa 1 : TK. 1.50 /tab. and Rispa 2 : TK. 2.00 /tab.

Aneron

Iron polymaltose complex

Friendly road for a smooth journey

Aneron (Iron polymaltose complex) is an iron preparation. It is indicated for the treatment of iron deficiency anaemia and prophylactic therapy of iron deficiency to cover the recommended daily allowances (RDA). Aneron is presented in the form of syrup 50 mg/5ml. The usual dosage is 1-2 tea spoon full three times daily immediately after meal. MRP Aneron 100 ml: TK. 30.00/phial and Aneron 200 ml: TK. 50.00/phial.

Heptamin

Iron,Folic acid, Vitamin B-complex and Vitamin C

A perfect supplement for pregnancy and lactation period

Heptamin is a preparation of iron, folic acid, vitamin C and vitamin B complex. It is indicated for the treatment and prophylaxis of iron, vitamin B complex and vitamin C deficiency, especially during pregnancy and lactation. Heptamin is presented in the form of capsule.The usual adult dose is one capsule daily. MRP TK. 3.00/ cap.

Deslor

Desloratadine 2.5 mg/5 ml syrup

Nonsedative antihistamine for children

Deslor syrup has been launched for children, which is the line extension of Deslor tablet. It is indicated for the relief of the nasal and non-nasal symptoms of allergic rhinitis (seasonal and perennial). Deslor is also indicated in treatment of chronic idiopathic urticaria. It is presented in the form of syrup 2.5-mg/5 ml. The usual dosage for children is 2.5 ml to 5ml once daily. MRP TK 25.00/phial.

MSD NEWS

MSD personnel of ORION Laboratories Limited spent a auspicious schedule in last quarter of the 2003, in organizing scintific seminars / Clinical meetings as a part of their Continued Medical Education (CME) Program.

Launching Program and Clinical Discussion on Imatinib mesylate (Enliven), First ever blood cancer drug manufactured in Bangladesh

Venue : Pan-Pacific Sonargaon Hotel, Dhaka

From left to right : Mr. Quamrul Hassan, Assoc. Prof. Dr. A. B. M. Yunus, Prof. Dr. M. A. Rashid Prof. M. A. Hadi, Mr. Ebadul Karim

Orion Laboratories Ltd. arranged a launching program and clinical discussion on Enliven at The Pan Pacific Hotel Sonargaon on Wednesday, 10th September 2003, where renowned doctors including cancer specialist were present. Mr. Ebadul Karim, Executive Director, Orion Laboratories Ltd. welcomed the participants. Imminent Prof. Dr. M. A. Rashid, President Bangladesh Society of Hematology, chaired the occasion. Vice - Chancellor of BSMMU and president BMA, Prof. M. A. Hadi was present as the Chief guest on the program. Dr. A. B. M. Yunus, famous blood cancer specialist and Assoc. Prof. dept. of Hematology, BSMMU, while briefing various aspect of Imatinib mesylate (Enliven) in his key note speech, said that launching this drug is a blessing for the blood cancer patients of Bangladesh. Mr. Quamrul Hassan, Vice President (Marketing) Orion Laboratories Ltd. thanked all doctors to make this program fruitfull.

Seminar on' Modern management of Post-menopausal Osteoporosis and Natural treatment for degenerative joint disease'

Venue : Hospital Conference Room, Mymensingh Medical College and Hospital

A scientific seminar was sponsored by Orion Laboratories Ltd on 'Modern management of Post- menopausal Osteoporosis and Natural treatment for degenerative joint disease` on thursday, 14th August 2003 at Hospital Conference Room, Mymensingh Medical College and Hospital, Mymensingh. Associate Prof. Dr. Zinnat Ara Noor, dept. of Gynea & Obs MMCH, chaired the session and Prof. Dr. M. Zubaid Hossain, Head of the dept. of Gynea & Obs, Community based medical college hospital, Mymenshingh was also present as Chief guest of this occassion . Dr. Khaleda Jahan, IMO, Gynea unit -2, MMCH and Dr. Shahnaz A/R Gynea unit-1, MMCH lit their views on modern management **(Ralox)** of post-menopausal osteoporosis and Dr. Kanchan Sarkar, HMO, Gynea unit-2, MMCH, present his paper on natural treatment **(Glucart)** for degenerative joint diseases.

Scientific Seminar on 'Heart Failure'

Venue : Lecture Room, D-Block, BSMMU

From left to right : Dr. D.M.M.F. Osmany, Dr. Chowdhury Meshkat Ahmed, Dr. Md. Abu Salim, Dr. Syed Ali Ahsan, Dr. Mahabubur Rahman, Prof. K.M.H.S. Sirajul Haque, Dr. Sajal Banerjee, Dr. Amanur Rahman, Dr. Neena Islam, Dr. Abdullah Al Jamil

A Scientific Seminar was sponsored by Orion Laboratories Ltd. on 'Heart Failure' on Sunday, 16th November, 2003 at Lecture room, D-Block, BSMMU, where Prof. K. M. H. S. Sirajil Haque, Prof. and Chairman, dept. of Cardiology, BSMMU, chaired the session. Dr. Amanur Rahman present his scientific paper on Pathophysiology of heart failure. Dr. Neena Islam and Dr. Md. Abu Salim lit their views on Management of Heart Failure and advancement in the management of Heart Failure respectively. Dr. Md. Abu Siddique, Dr. Sajol Banerjee, Assoc. Prof. of Cardiology, BSMMU, Dr. Md. Aftabuddin , Dr. Syed Ali Ahsan, Assoc. Prof. of Cardiac Surgery, BSMMU, Dr. Mahabubur Rahman, Assoc. Prof. Vascular Surgery, BSMMU, were present as panel of expert. They expressed their valuable opinions on **Angimet** that **Angimet** is not only the drug of choice in case of Angina, MI and heart failure, but also Angimet is highly recommended for the hypertensive patient with one / two risk factors like hypertension with diabetes, elderly hypertensive patients, hypertension with high lipid profile and / or with smoking.

Intern Doctors Reception Program

Venue : Sir Salimullah Medical College Hospital, Dhaka

Orion Laboratories Limited Congratulate the Intern doctors of Sir Salimullah Medical College Hospital and arranged a grand gala reception program on 30th August, at Olympia Palace Restaurant, Dhaka. Dr. Abul Khair Bhuiyan, Director, SSMC&H, chaired the occasion and Dr. AMSM Sharfuzzaman, Vice Principal, SSMC&H was also present as a special guest on the occasion .

Venue : Dhaka National Medical College Hospital, Dhaka

Orion Laboratories Limited arranged a grand gala intern doctors reception program of Dhaka Nation Medical College hospital on 26th August 2003 at Olympia Palace Restaurant, Dhaka.

Venue : Bangladesh Medical College Hospital, Dhaka

Orion Laboratories Limited arranged a grand gala intern doctors reception program of Bangladesh Medical College Hospital on 14th September 2003 at Young King Chinese Restaurant, Dhaka. Brig. General Dr. Fariduddin Bhuiyan, Hospital Director, Bangladesh Medical College Hospital, chaired the Occasion. Prof. M. A. Zaman, Principal and Professor of Cardiology, Bangladesh Medical College Hospital was present as a special guest on the occasion .

Venue : Faridpur Medical College Hospital, Faridpur

Orion Laboratories Limited arranged a grand gala intern doctors reception program of Faridpur Medical College Hospital

The rest of the MSD NEWS is given on page...143

Medi News

Zinc: A medicine for the 21st century

Zinc is among the most important of the trace elements in human nutrition. The remarkable ability of this metal to participate in flexible and easily exchangeable ligand binding with organic molecules underlies the extraordinary extend to which zinc has been incorporated into an impressive range of biological systems. This has undoubtedly been assisted by the relative safety of this element, especially its lack of oxidant properties (in sharp contrast to iron and copper), which facilitates its transport within the body and its metabolism in individual cells as well as its utilization biologically. It is, indeed, ubiquitous in sub-cellular metabolism. Zinc is essential for gene expression and nucleic acid metabolism which accounts in part for its importance for cellular growth and differentiation, in which it may actually have a regulatory role. Its ligand binding properties are utilized effectively at the catalytic site of a wide range of enzymes. Zinc also has many structural roles in biological membranes, cell receptors (for example, for hormones including testosterone), enzymes and other proteins. One much-quoted example is the "zinc finger" that is present in certain transcription proteins that are vital for gene expression.

Because of zinc's vital roles in cellular growth and differentiation, and probably for several other reasons, zinc is especially important at times of the human life cycle, for example early childhood and during the reproductive cycle, that are associated with rapid prenatal of postnatal growth. It is also needed especially by tissues that turnover rapidly such as the immune system and bone marrow, which is likely to go a long way towards explaining in general terms why a salient feature of zinc deficiency is gross and multifaceted impairment of normal host defence mechanisms. These disturbances of immune function are likely to underlie some of the most serious consequences of zinc deficiency, which are of special concern in infants and young children, specifically the susceptibility to infections, notably infections of the respiratory system, diarrheal disease and parasitic infections. Similarly, the rapidly turning over mucosal lining of the gut is compromised by zinc deficiency which, by several putative mechanisms, leads to or/and aggravates diarreal disease.

At one or, more likely, several levels, the zinc requirement for normal cellular growth and differentiation may underlie the impairment of physical growth that is a hallmark of zinc deficiency in childhood and may also contribute to impaired function of the developing brain of the zinc-deprived young child for which evidence continues to accumulate. In general, though, the biochemical correlates of the clinical features of zinc deficiency still lack adequate definition. Better ability to link clinical features of zinc deficiency with progressive advances in knowledge of the biology of zinc is one factor that will accelerate optimal treatment and prevention of human zinc deficiency.

Other factors that have and continue to hamper progress include the non-specific nature of the deleterious effects of zinc deficiency on human health and development. For example, though zinc deficiency is now recognized as a major factor contributing to diarrheal disease and its associated morbidity and mortality, it is clearly only one of numerous etiologic factors. Hence, clinical features of zinc deficiency do not give the same strong clue to the existence of this deficiency as, for example does hypochromic anemia to iron deficiency. As a further major challenge to the detection of zinc deficiency, laboratory assays only give limited help. Though careful recent data analysis has shown that relatively low circulating levels of zinc in blood plasma do help to identify populations who are likely to benefit from zinc supplements, no index has been identified that is sufficiently sensitive and reproducible to reliably detect individuals who are suffering from mild to moderate zinc deficiency. As the global extent of zinc deficiency becomes increasingly apparent, these problems become more vexing. Though zinc is regarded quite correctly as a relatively "safe" metal, it is also becoming increasingly apparent that the optimal physiologic range of intake and body content is not so broad as had been thought and the adverse consequences of excess can be of much greater concern than had been appreciated. Hence, it is important not only to be able to identify those individuals or populations who are likely to benefit from increasing intakes of bioavailable zinc but to achieve a better idea of optimal intervention strategies.

www.ZINC WORLD.com

Hope for better malaria vaccine

Human trials of a new type of malaria vaccine are planned for next year after encouraging results in mice. Oxford University scientists are using a combination of techniques to boost the effectiveness of their vaccine, which will be tested on volunteers. Research published on Tuesday revealed that their formula, carried into the body on a virus, produced a strong immune response in mice. No fully effective malaria vaccine has yet been produced by scientists. The disease is caused by the parasite Plasmodium, carried by mosquitoes and endemic in many countries of the world. It remains an important cause of early death and a significant risk to travellers, who currently face lengthy courses of antimalaria tablets prior to travel.

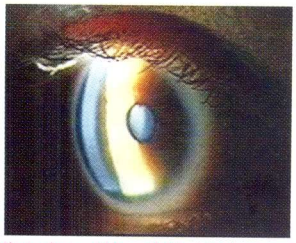
Malaria kills millions each year

Scientists hope to prevent dangerous infection by pre-training the body's immune system to attack the parasite as soon as it appears in the liver. To do this, a vaccine presents samples of protein chemicals found in Plasmodium, which are taken up by the immune system and prime it to respond aggressively when the parasite arrives and the same proteins are identified. However, this has proved difficult because there are many different varieties of Plasmodium, each with subtly different proteins, the majority of which are capable of evading any vaccine which focuses only on one protein. To overcome this, Dr Eric Prieur and his colleagues managed to join up a string of several different proteins taken both from the surface coat of Plasmodium, and other locations in the parasite. This raises the chances that any variety of Plasmodium encountered will carry one or more of these proteins, triggering an immune attack.

bbc.com/health

Eye microchip could save sight

Scientists are developing an electronic eye implant which they believe could help millions of people to see again. The microchip works by stimulating cells around the retina. This in turn stimulates cells in the brain, helping people to see once more. Tests on animals have shown that the tiny microchip can restore sight. US Government scientists, who are spearheading the project, believe they could have a human implant within three years. The microchip, which acts as an artificial retina, would be surgically implanted into the eye. The electronic device stimulates surrounding cells that have not been damaged. This enables sight to be restored. The 4mm microchip is attached to a type of silicone called polydimethylsiloxane (PDMS). This substance is flexible and can conform to the curved shape of the retina without damaging surrounding tissue. Researchers at the University of California, who are also involved in the project, have already successfully tested the implant on three dogs. They are now working with scientists at the Lawrence Livermore National Laboratory to develop a microchip that could be used on humans. The implant needs to be strong to withstand surgery and to be biocompatible - able to withstand the physiological conditions of the eye. The researchers are now working on what they are describing as a second generation implant. This will have a greater number of electrodes and electronic chips. It will also be stronger to prevent it from curling or folding. The prototype implants contain 16 electrodes, allowing patients to detect the presence or absence of light. The artificial retina project's "next generation" device would have 1,000 electrodes and hopes to allow the user to see images. The scientists believe the implant could help people who are losing their sight or who are registered blind to see properly again.

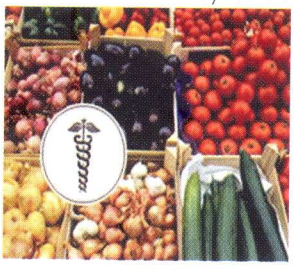


The implant could be available within three years

bbc.com/health

More TV means fewer veggies for teens

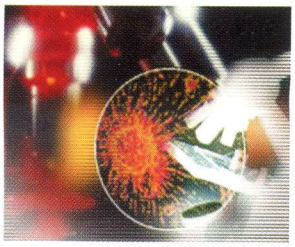
The more television children watch the less fruit and vegetables they eat, probably because the advertising they see leaves them craving junk food instead, a study said Monday. Children surveyed for the study who spent more time watching television ate 0.16 fewer servings of fruit and vegetables for every extra hour watched. That additional hour a day of TV watching added up to one less nutritional serving every six days. Heavy television viewing by children has been linked to eating more junk food, getting less exercise and obesity, but this was the first study to show that TV watching led to lower consumption of nutritious fruit and vegetables, said the report, which was published in the journal Pediatrics. At the start of the survey in 1995, the children, who averaged 12 years of age, ate an average of 4.23 servings of fruit and vegetables per day, which was below the government-recommended five daily servings. The rising epidemic of childhood obesity in the United States and other industrialized nations has been linked to cardiovascular disease in even young children, and to an accumulation of health problems later in life. American children spend more time watching television than engaging in any other activity except sleeping, averaging 22 hours of viewing a week, the report said. They are exposed to 20,000 TV commercials a year, or 150 to 200 hours worth.



CNN.com/health

Vitamin D cuts colon cancer risk

A diet rich in vitamin D appears to protect people from developing potentially cancerous growths in the colon, a study of more than 3,100 veterans found. Patients who consumed the amount of vitamin D contained in daily servings of milk and fish were 40 percent less likely to develop polyps than those who got little or no vitamin D. Diets high in calcium have been linked with a reduced colon cancer risk, and vitamin D is needed to help the body absorb calcium. The study appears in Wednesday's Journal of the American Medical Association. It involved mostly men ages 50 to 75 who underwent routine colon cancer screening exams called colonoscopies between 1994 and 1997. The exams, in which a long flexible tube is snaked through the rectum into the entire large intestine, can detect and remove abnormal growths. Advanced polyps were found in 299 participants and colon cancer was detected in 30 participants. Participants who reported consuming more than 645 international units of vitamin D daily were 40 percent less likely to have advanced polyps than those who consumed little or none of the vitamin. Experts generally recommend about 200 to 800 IUs of vitamin D a day for adults. Food sources of vitamin D include some types of fish and fortified milk. For example, one tablespoon of cod liver oil has 1,360 IUs; 31/2 ounces of salmon have 360 IUs; and a cup of fortified milk contains 100 IUs. Supplements are frequently combined with calcium and often contain at least 200 IUs, Lieberman said.



CNN.com/health

Shared razor may have spread HIV

HIV may have been passed between two sisters who shared a razor to shave their legs, scientists said today. The report, in the journal Aids, is described as a "sobering" reminder that the disease can be spread in unusual ways. In this case, an 18-year-old girl from Australia caught the disease on the first occasion she had sex. Her 16-year-old sister later tested positive for the virus when she donated blood. Both teenagers had a particular subtype of the virus which is very rare in Australia, making it highly likely that one had infected the other. The older girl was unaware of her HIV infection until doctors began to investigate how her younger sister-who had never had sex - had contracted the virus. Extensive questioning by doctors revealed only that the pair shared a bathroom, and perhaps occasionally had used the same razor to remove body hair. HIV can be spread through contact with blood or other body fluids from an infected person, so it is possible that the 18-year-old nicked her leg with the razor, left blood on the blade, which was then passed into a similar cut by 16-year-old.

bbc.com/health

Everything changes, but...

Tested & Trusted...

Maprocin

Ciprofloxacin

... still a drug of choice

The only FDA approved

fluoroquinolone

Indicated in-

Typhoid fever

Infectious diarrhoea

Bone & joint infections

Procap

Omeprazole

Total protection from ulcerative complications

- Most effective in reflux oesophagitis
- Excellent healing rate in resistant ulcer
- Safe in long term use
- Comparatively safe

ORION LABORATORIES LTD.

In Search of Excellence