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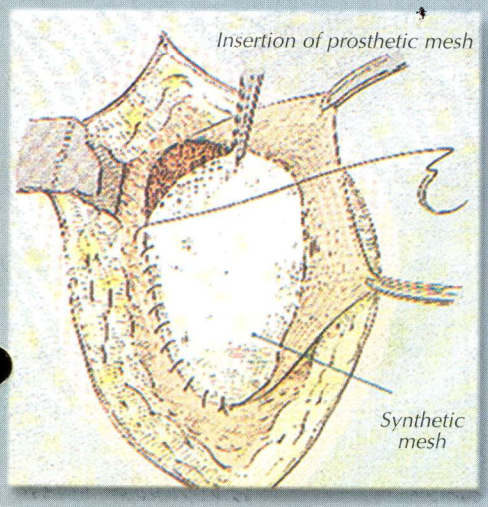
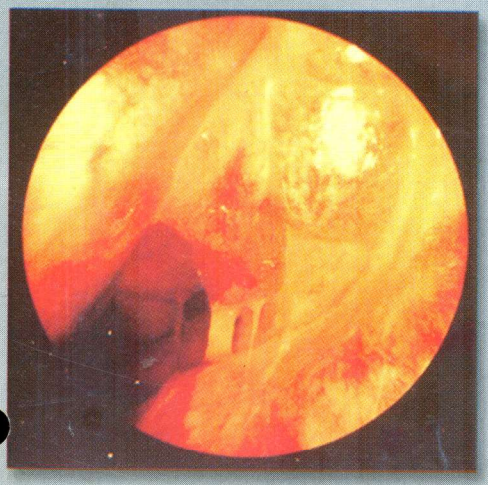
The ORION

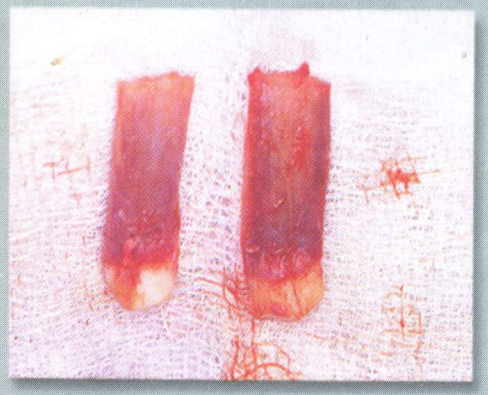
Medical Journal



MESH REPAIR OF HERNIA



RHINOSINUSITIS AND ENDOSCOPIC SINUS SURGERY



GENERAL PRINCIPLES OF BONE GRAFTING IN MAXILLOFACIAL SURGERY

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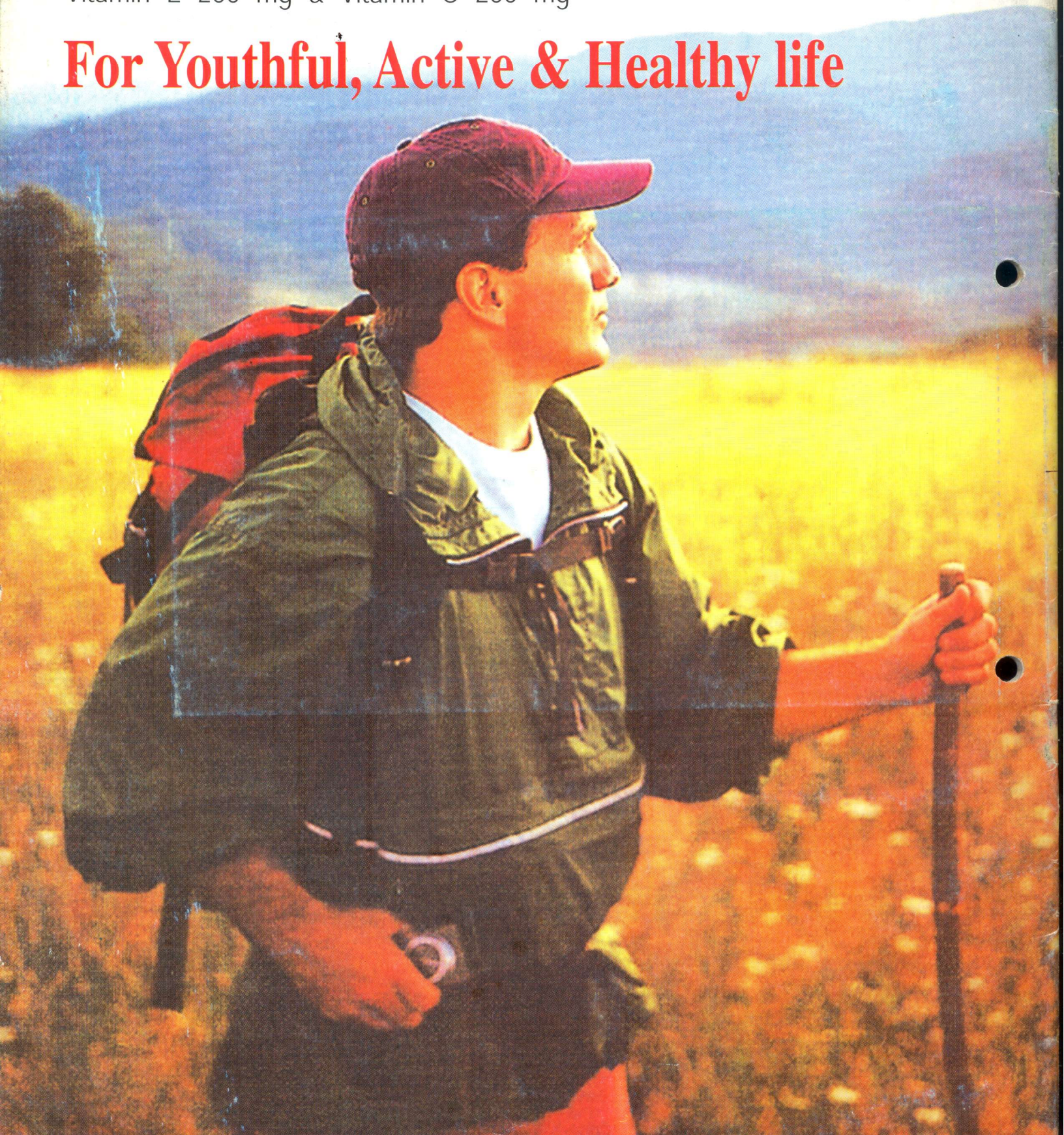

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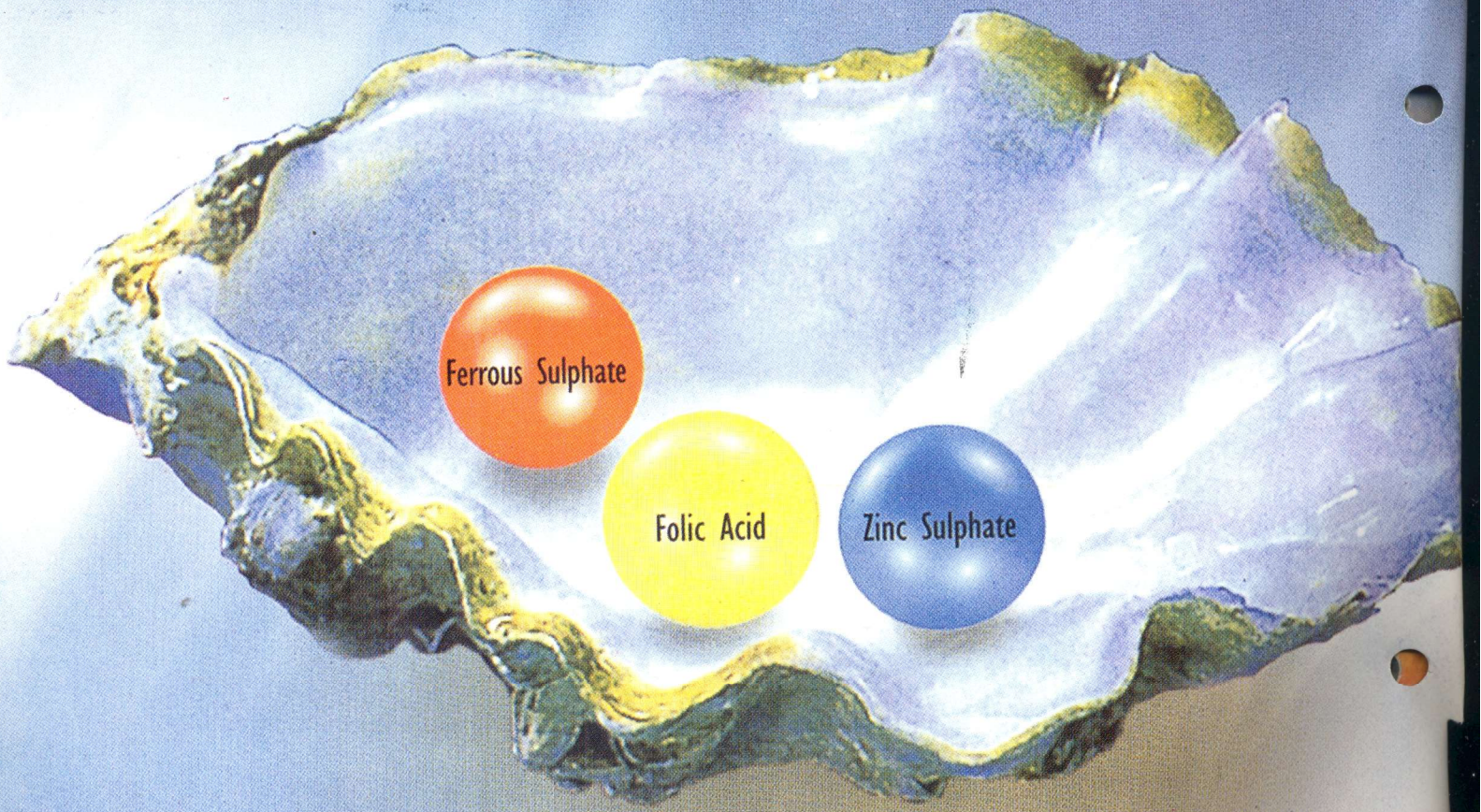

THREE IN ONE

The ORION Medical Journal

Contents

COVER ILLUSTRATION

Pictorial depiction of insertion of prosthetic mesh as done in mesh repair of hernia, endoscopic view showing polyp in the middle meatus as seen in the patient with rhinosinusitis and two costo-chondral ribs graft done in maxillofacial surgery.

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Editorial

We offer our thankful gratitude to the esteemed readers of "The Orion" with Eid Mubarak and New Year Greetings for continuous patronization, leading suggestions and inspirations. All these encouraged us to present this 8th Volume of "The Orion".

By constant supervision, advice and support of the honourable members of the Advisory and Review Board, we are moving towards our goal that is national and international achievement, acceptance and reputation.

We hope that leading topics in previous issue were subjects of wide discussion in doctors community and your overwhelming responses on those topics assured us that we are helping in updating the knowledge of the Medical Science among the professionals.

In this issue in view of the suggestions by our valued readers we decided to focus general surgery by topic "Mesh Repair of Hernia", ENT by topic "Rhinosinusitis and Endoscopic Sinus Surgery" and Dentistry by topic "General Principles of Bone Grafting in Maxillofacial Surgery".

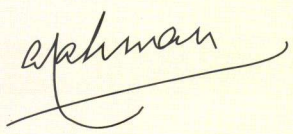
Hernia always carries a constant risk of developing complications, leading to serious consequences which demand prompt and proper management. Over the past decade many procedures are designed and practiced. Presently on the basis of effectiveness, *Shouldice Procedure* and *Mesh Implant Procedure* are considered as standard techniques of Hernia repair. For most cases of incisional Hernia mesh implantation and repair achieves excellent results.

Sinus disease is a very common cause of illness in our country and also in developed and developing countries of the world. Over 31 million people in USA suffer at some time from Sinus. In addition to the discomfort from the underlying disease, the cost of medications, and the lack of productivity during acute symptoms, those who develop chronic sinus disease experience health-related quality life decrements in the domains of general health perception and social functioning comparable to serious diseases, such as chronic obstructive pulmonary disease and angina pectoris.

Bone grafting in maxillofacial surgery deals with major surgery of jawbone tumour, oral cancers, temporomandibular joint, congenital facial defects, jawbone fracture etc. This branch of surgery has come up more recently with advanced surgical technique and bone grafting has become a regular job for maxillofacial surgeons in the reconstruction of acquired or congenital jaw defect.

Malnutrition is a major public health problem in the region of South Asia. The situation perhaps more pronounced in Bangladesh with 40-50% low birth weight, 53% children underweight and 55% children were stunted. We think, this situation of "silent emergency" calls for special attention.

We expect our efforts will be very much helpful for all concerned. Suggestions and recommendations from our dignified readers will be most welcome.



Dr. ATM Azizur Rahman
Chief Editor
and
Manager
Medical Services Department.

MSD News

As a part of it's activities Medical Services Department (MSD) of Orion Laboratories Ltd. (OLL) arranged a number of programmes in the last quarter of the new Millennium. The members of MSD worked harder to meet the requirements of valued readers.

SEMINARS

Seminar at Chittagong Maa-o-Shishu Hospital

A seminar on "Role of Zinc in Child Health" was held on November 08, 2000 at the conference room of Chittagong Maa-o-Shishu Hospital, Chittagong, The seminar was chaired by Dr. Nurul Islam Khan, Academic Director, Chittagong Maa-o-Shishu Hospital and Prof. A.S.M. Fazlul Karim, Chairman, Chittagong Maa-o-Shishu Hospital was the chief guest. All the doctors of the hospital were attended the seminar.

Seminar at Sylhet MAG Osmani Medical College Hospital

MSD also arranged a seminar on "Role of Zinc in Child Health" on November 15, 2000 at the Department of Paediatrics, Sylhet MAG Osmani Medical College Hospital (SMCH), Sylhet. The seminar was chaired by Prof. M.A. Matin, Head of the Deptt. of Paediatrics and Dr. Niranjan Kumar Paul, Principal, Sylhet MAG Osmani Medical College Hospital chief guest.

LAUNCHING OF NEW PRODUCTS

Pep-2 (Zinc Sulphate Syrup)

MSD of Orion Laboratories Ltd. has the pleasure to introduce the most essential and desired product of pediatricians Pep-2 (Zinc Sulphate Syrup 10mg/5ml) in a newer dosage of presentation. Considering the demands of Paediatricians Orion Laboratories Ltd. has launched the newer form of the product for the first time in Bangladesh. Now both Pep (4.05mg/5ml) & Pep-2 is available in the market.

Riz (Cetirizine BP 10 mg)

Orion has introduced Riz (Cetirizine BP 10 mg) the most economic brand of Cetirizine in Bangladesh. It is the most reliable drug to stop allergy with a single daily dose.

Bonec (Calcium Carbonate BP 1.25 mg)

Most recently, MSD of Orion Laboratories Ltd. is going to launch Bonec (Calcium Carbonate BP 1.25 mg). To treat the deficiency states and as a dietary calcium supplement Bonec is the only drug of choice.

SECOND COORDINATION MEETING OF THE REVIEW BOARD OF "The ORION"

Second Co-Ordination Meeting of the Review Board of "The ORION" was held on December 15, 2000 at Pan Pacific Sonargaon Hotel, Dhaka. The meeting was chaired by Prof. ANM Atai Rabbi, Chairman and Professor, Department of Surgery, BSSMU. Following eminent Medical Professionals of the Review Broad attended the meeting-

Prof. A. Z. M. Maidul Islam, MBBS, D.D. (Dhaka), A.E.L. (Paris), A.E.S.D & V (Paris) D.T.A.E (Paris), Chairman & Professor, Deptt. of Dermatology & Venereology, BSMMU, Prof. Ferdous Ara J Janan, MBBS, (Dha), MD (USA), FRCP (Edin), FIBA (UK), Professor of Medicine and Head of the Department, DMCH, Prof. Hasina Banoo, FCPS, Professor of Cardiology, NICVD, Prof. M. A. K. Azad Chowdhury, DCH (UK), MRCP (UK), MRCP (IRE), FRCP, Professor, BICH & Sr. Consultant, Dhaka Shishu Hospital, Prof. Abul Khair Mohammad Eshaque, D.Ortho., M.S. (Ortho.) Department of Orthopaedic Surgery, Rehabilitation Institute and Hospital for Disable. (Orthopaedic Hospital) Sher-e-Bangla Nagar, Dhaka, Bangladesh, G. H. Rabbani, MD. PhD. FACG, Scientist, Clinical Sciences Division, ICDDR,B, Prof. Khursheed Jahan, MBBS, MPH, PhD, Professor, Institute of Nutrition & Food Science, University of Dhaka, Prof. Kohinoor Begum, MBBS, FCPS, Professor of Obstetrics & Gyneacology, SSMC & Mitford Hospital, DR. A.B.M. Abdullah, MBBS (Dhaka), MRCP (UK), Associate Professor of Medicine, BSMMU, Dr. Mahbubur Rahman, MBBS, MSc, PhD. (Distinction), Associate Scientist, Laboratory Sciences Division, ICDDR,B.

The Honourable Members reviewed the articles collected for January, 2001issue of "The ORION" and finalized the selection. They also set a guide line for the Editors to continue the current standard of "The ORION".

Information for Authors

"The ORION" considers only original work that has not been published previously in print or electronic media. We especially welcome review articles that help our audience of busy primary care physicians solving common clinical problems. Because of our primary care focus, at least one of the authors must be a physician. The author (s) must have no financial interest in or connection with any product mentioned in the article or any competitive product. Material submitted must not be under consideration for publication elsewhere.

The text of clinical articles should not exceed 1,000 words (for double-spaced pages). Suggested order of presentation is cover page, text, summary reference list, tables, figure legends author affiliation (s).

The journal style is to use generic names for drugs. All elements of the article must be presented in the same type font, and manuscript should be printed in a letter-quality typeface. The right margin should not be justified. Number pages consecutively, starting with the cover page.

On the cover page, indicate the article title and designate a corresponding author, for each author, list full name, highest pertinent academic degree, title of current position, address, office phone and fax numbers. For the corresponding author, provide this information plus e-mail address and home phone number.

Send the original and four copies. If you used a computer to prepare your manuscript, send a disk along with the hard copies. Note the type of software on the disk label.

REFERENCE

Key sources must be properly credited and referenced. References should be current (past 5 years) and must not exceed 20. They should be cited in the text in numerically consecutive order. With the first page of each article referenced. Format reference as shown in these examples:

1. Prisant LM, Houghton JL, Bottini PB, et al. Unstable angina : pharmaceutical versus invasive therapy, Post grad Med 1994;96 (1) : 88-95.
2. Boucher RC. Cystic fibrosis, In Isselbacher KJ, Braunwald E, Wilson JD, et al, eds, Harrison's principles of internal medicine. 13th ed New york: McGraw-Hill, 1994 : 1194-7.

TABLES

Tables should not duplicate the information in the text. Each should have a title and should be numbered consecutively according to its citation in the text. If a table has been published previously, include the complete reference as well as a letter granting permission from the previous publisher.

ILIUSTRATIONS AND PHOTOS

Illustrations and photos are welcome. All graphics must be numbered consecutively according to their citation in the text and must include short descriptive legends. For photos and x-ray films, submit glossy prints in duplicate. On the back, label the top and include the author(s) name and the figure number, colour images are use appropriate. Include a reference and permission letter if the figure has been published before. A signed release from the patient is needed for photos that show identifying features. Original illustrations are returned after publication.

AUTHOR PHOTOS

A photo of the author (s) in a clinical or office setting is welcome for publication with the article. Send a group shot for an article by more than one author.

REVIEW PROCESS

Authors are notified of receipt of their article. Each article goes through a careful peer-review process. Decisions about acceptance may take 6 weeks.

EDITING

Articles accepted for publication are edited to conform to the journal's style and format. An edited copy of the manuscript is sent to the corresponding author for approval. The author is responsible for all changes in the manuscript, including those of the manuscript editor.

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Mesh Repair of Hernia

M. Khademul Islam

WHAT IS HERNIA?

Hernia is a purely surgical problem. A baby may be born with hernia or it can develop any time during normal life span as a spontaneous development or as a late complication of surgical wound following abdominal operation. Basically hernia is a defect or localized weak area in the boundary of the abdomen through which internal structures tend to come out during strain. The commonest hernia encountered as a clinical problem is groin hernia, more specifically the inguinal hernia. Whenever someone talks about hernia without qualifying it, usually it is considered to be inguinal hernia.

WHAT ARE THE DANGERS OF HERNIA LEFT UNTREATED AND WHAT IS THE IDEAL TREATMENT?

As it is mentioned at the beginning, it is a purely surgical condition, no medical treatment can solve the problem of hernia. Save and except some cases of infantile umbilical hernia, which regress spontaneously by two years time all other hernias need to be repaired by surgical procedure. Except in elderly frail patient having direct inguinal hernia surgery is always advocated whenever a hernia is diagnosed. The reason is very straight forward, as a hernia carries a constant risk of developing complication. When a hernia becomes trapped and being prevented to recede back, the next consequence is obstruction (luminal obstruction of the trapped intestine) leading to asphyxiation or strangulation. Without prompt and appropriate measures, the asphyxiated gut dies down due to lack of oxygen (that is gangrene) and surgery at this stage is mandatory but always associated with high morbidity and mortality. On the other hand planned and elective surgical repair is almost unassociated with any major complication. Now the question is, which is the most effective method of repairing the hernial defect achieving cure with least possibility of recurrence. The effectiveness of any procedure of hernia repair is judged in terms of the incidence of recurrence of hernia. Though a recurrence of a hernia following repair may be due to multifactorial reasons, the technical aspect of a reparative procedure is one of the most important factor. The acquired hernias are always associated with attenuation of the local tissues to variable extent leading to development of a hernial sac (out pouching of the parietal peritoneum) protruding through the localized weak area. As the hernial sac enlarges it pushes the edges of hernial defect further away increasing the gap. The age of the patient, extent leading to development of a hernial sac (out pouching of the parietal peritoneum) protruding through the localized weak area. As the hernial sac enlarges it it pushes the edges of hernial defect further away increasing the gap.

Prof. Dr. M. Khademul Islam
MBBS, FCPS, Dip M Ed. (UK), FRCS (Glasgow), FICS
Member ELSA (Singapore), General & Laparoscopic Surgeon.
Professor of Surgery,
Sir Salimullah Medical College & Mitford Hospital.

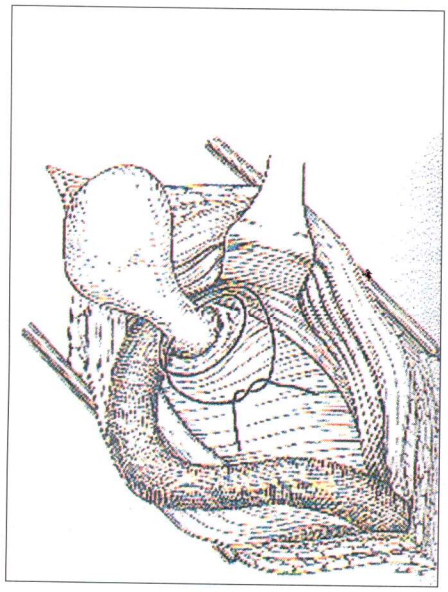
The age of the patient, extent of the tissue attenuation and the gap, the anatomical type of the hernia all are to be considered before selecting particular type of reparative procedure. Acquired inguinal hernias can be repaired by so many techniques with the attempt at restoring the altered anatomy and strengthening the attenuate tissues. Over the past decades many procedures are designed and practiced. Presently on the basic of the effectiveness, *shouldice procedure*[5] and *mesh implant*[2,4,6,7,8,9] *repair* are considered as standard techniques of inguinal hernia repair. Shouldice procedure is directed to repair of the fascia transversalis and narrowing of the deep ring reinforced by approximation of the conjoined tendon to the inguinal ligament. Shouldice technique is popular and widely practiced in North America and Canada. On the other hand mesh repair is the standard practice in UK. Besides inguinal hernia most of the cases of incisional hernias are best repaired by mesh implantation and the author's choice of procedure in big incisional hernias with excellent results obtained in more than hundred cases of mesh repair over the last eight years. In case of inguinal hernia repair the mesh may be implanted and sutured to the margin of the hernial defect as an isolated procedure or in case of bilateral hernias the mesh may be implanted preperitoneally by a lower mid line incision covering the both inguinal areas from within as well as covering the femoral ring with prevention of developing femoral hernia as well. So this technique[3] provides protection of both types of inguinal direct/indirect and femoral hernias by a single procedure. Like many abdominal operations, inguinal hernia repair is also being currently practiced laparoscopically[10] and in many centres of developed countries it has been standardized and made a regular practice with comparable results like that of standard open repair with less early postoperative morbidities. And again the basis of laparoscopic hernial repair is the placement of a mesh covering the hernial defect in the preperitonial space either transperitoneal or preperitoneal approach.

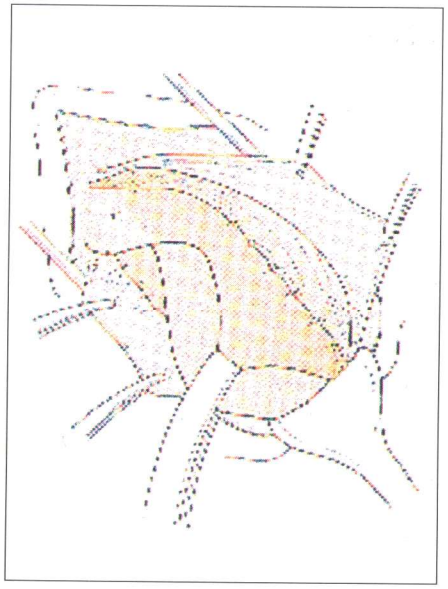
WHAT IS MESH AND FROM WHICH MATERIAL IT IS MADE OF?

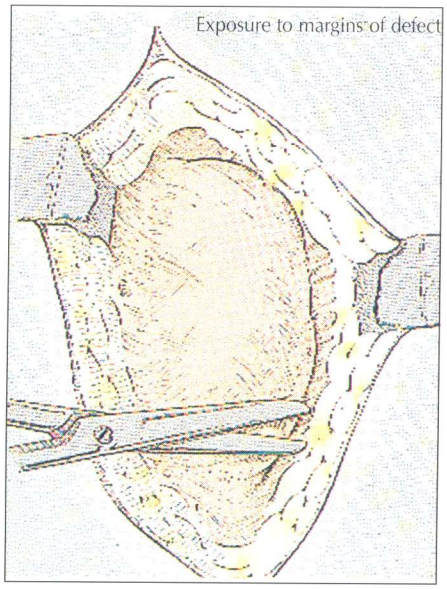
The mesh is a network made of polypropyline or marlex or PTEF. It has least tissue reactivity and well accepted by the tissues with least foreign body reaction. It is available in sterile pack of variable sizes.

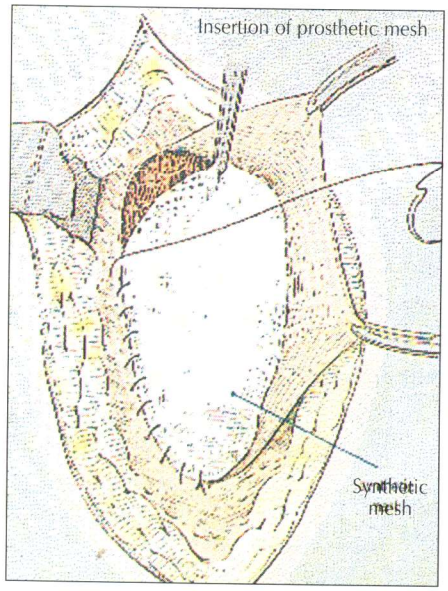
THE BASIC TECHNIQUE OF MESH REPAIR

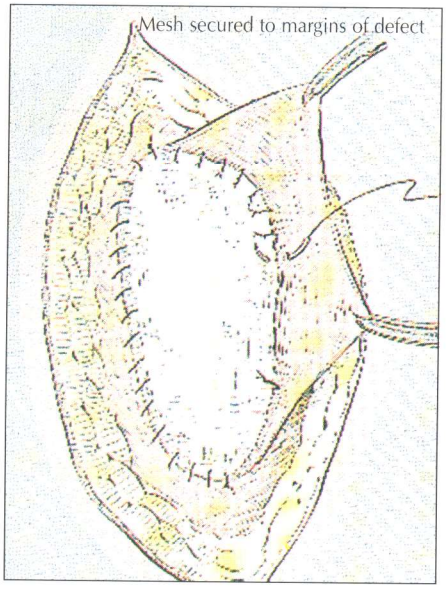
The hernial sac is isolated and transacted at the neck and ligated (herniotomy). The margins of the hernial defect are defined and the mesh[1,2] is tailored according to the extend of the defect. It is then sutured to the edge of the defect using polypropyline suture. In case of direct hernia[8,9] the sac is inverted and the hernial defect covered by implanting the mesh. In incisional hernia, the mesh may be implanted as "on-lay" technique over the inverted sac or "Sandwitched" in between double breasting incised sac.

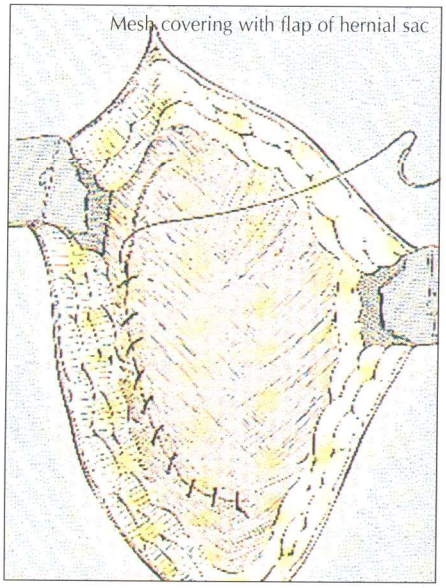












MESH REPAIR OF HERNIA

COMPLICATIONS OF MESH IMPLANT AND ITS PREVENTION

After all a mesh is a foreign body and like any other implants always carries certain amount of risk of foreign body reaction and liable to be complicated by infection. The risk is heightened in immuno-compromized patients. So prophylactic perioperative antibiotic is to be used always along with strict adherence to the aseptic and anti-septic rituals and meticulous surgical technique.

CONCLUSION

Mesh implant is now widely practiced as a standard technique and the author's choice of procedure for most cases of incisional hernias, recurrent inguinal hernias in elderly persons and in cases where factors like chronic strain is persistent like chronic cough etc. with potential risk of failure of simple anatomical repair.

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Rhinosinusitis and Endoscopic Sinus Surgery

Zaheer Al-Amin

INTRODUCTION

Sinus disease is a very common cause of illness in our country. Sinusitis is one of the most common health complaints leading to a physician office visit in the United States[1]. The nasal mucosa is continuous with that of the paranasal sinuses, so any inflammatory condition of the nasal mucosa usually also involve the paranasal sinuses as well. The term "Rhinosinusitis" is more appropriate than "Sinusitis" because the symptoms of sinusitis and rhinitis overlap to a large extent and both respond similarly to medical and surgical therapy. Similarly the upper respiratory tract (nose and paranasal sinuses) and lower respiratory tract (tracheobronchial tree and alveoli) are closely related from anatomical, physiological and pathological points of view. Chest disease is therefore frequently associated with rhinosinusitis and treatment of one frequently leads to significant improvement of the symptoms of the other.

Children less than 15 years and adults between 25 and 64 years of age are most frequently affected. Over 31 million people in the United States, nearly one in eight, suffer at some time from sinusitis[2]. General practitioner, medicine specialists, paediatricians, allergists and otolaryngologists see large number of patients with symptoms of facial pain, pressure, nasal drainage, nasal obstruction, and "sinus". In addition to the discomfort from the underlying disease, the cost of medications, and the lack of productivity during acute symptoms, those who develop chronic sinus disease experience health-related quality-of- life decrements in the domains of general health perception, validity, and social functioning comparable to serious diseases, such as chronic obstructive pulmonary disease and angina pectoris[3,4,5].

SYMPTOMS

Most common symptoms of rhinosinusitis include:

1. Nasal obstruction / blockage.
2. Mucoid or purulent rhinorrhoea, which may be anterior or if posterior, often referred to as "postnasal drip".
3. Facial pain / pressure.
4. Facial congestion/fullness.
5. Headache.
6. Hyposmia/anosmia.
7. Fever (acute rhinosinusitis only).

In addition patients may also complain of fatigue, low grade fever, (in other than acute rhinosinusitis), halitosis, dental pain, epistaxis, cough, ear pain/pressure/fullness.

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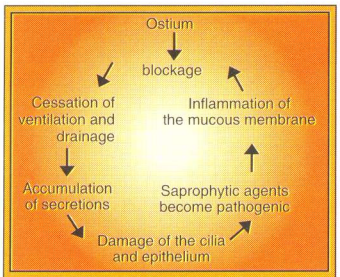
Consultant and Head of the Department,
Ear, Nose and Throat Diseases and Head and Neck Surgery,
BIRDEM, Dhaka.

CAUSES

Rhinosinusitis develops from an interaction of environmental and host factors:

1. **Most common cause** in all age groups is a viral upper respiratory tract infection, with oedema or inflammation of the nasal lining and the production of thick mucous that obstruct the paranasal sinuses and allow a secondary bacterial overgrowth *(figure :1)*



Naumann's vicious cycle, caused by obstruction of the ostium called infundibulum blockage.

2. Next in frequency is atopy (mucosal swelling that impairs sinus osteal drainage).
3. Third commonest cause is anatomical impingement on sinus drainage by various factors e.g. septal deviation, concha bullosa, paradoxical middle turbinate, agger-nasi pneumatisation, polyps etc.

Less frequent causes include

4. Mucociliary clearance abnormality-
   a. Primary : less common e.g. Kartagener's syndrome, Young's syndrome.
   b. Secondary : more common e.g. bacterial and viral infections of upper respiratory tract.
5. Immunity deficiency-
   a. Primary : Panhypogammaglobinaemia-
   b. Secondary : Acquired immune deficiency syndrome (AIDS), Hodgkin's disease, Sarcoidosis.
6. Granulomatous condition-
   a. Multisystem granulomatous disease : Wegener's granulomatosis, Sarcoidosis, Churg-Strauss syndrome, polymorphic reticulosis.
   b. Certain infective agents : Actinomycosis, invasive aspergillosis, blastomycosis, histoplasmosis, leprosy, rhinoscleroma, tuberculosis, syphilis.
7. Autonomic imbalance.
8. Hormonal : Rhinitis of pregnancy, women taking oral contraceptives high in oestrogen.
9. Iatrogenic-
   a. Rhinitis medicamentosa : patients using topical nasal decongestant for Prolonged period of time.
   b. Aspirin intolerance.
   c. Drugs acting on sympathetic nervous system : guanethidine, methyldopa, reserpine, isoprenaline, ergot alkaloids used for migraine.
   d. Anticholinesterases : Neostigmine.

PATIENT EVALUATION

All patients presenting with nasal and sinus problem should have a thorough evaluation:

1. Proper history taking and further investigations and referral, if necessary to exclude or to establish-
   a. Systemic conditions,
   b. Pathology around the sinuses e.g. Ophthalmological or Neurological, which might present with symptoms similar to that of sinusitis, like headache, pain around the orbit.
2. Thorough nasal and general head and neck examination :
   Nasal Endoscopy is very important in this respect. Both anterior and posterior rhinoscopy gives us only limited view of the nasal cavity and post-nasal space. They give little (if any) view of the areas around middle meati & turbinates and usually no view at all to any area above middle meatus. In the majority of cases of chronic sinus diseases, the pathology usually lies in the middle meatus in the region of the "Osteomeatal Complex" (functional unit that comprises maxillary sinus ostia, anterior ethmoid cells and their ostia, ethmoid infundibulum, hiatus semilunaris, and middle meatus–where frontal and maxillary sinuses, anterior ethmoid and bulla cells open and which lies in middle meatus) *(figure : 2 and 3)*. Only nasoendoscopy can give a good view of that area.

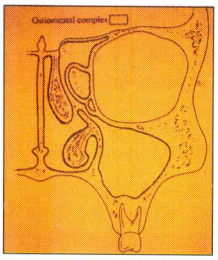


Fig. 2 : Osteomeatal complex is functional unit that comprises, a. maxillary sinus ostia, b. ant ethmoid cells and c. their ostia, d. ethmoid infundibulum, e. Hiatus semillunaris and, f. middle meatus.

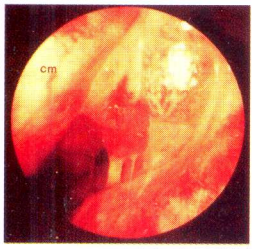


Fig. 3 : Endoscopic view showing Polyp in the middle meatus.

INVESTIGATIONS

A. Radiology

1. *CT Sinuses :*

- Mainly coronal, thin sections (5 mm) contiguous scans . Even thinner sections (3 mm) may be obtained anteriorly in the region of Osteomeatal complex.
- Axial cuts is useful to identify Onodi cells and their relationship to the optic nerve.

CT scan gives details of the pathology in the paranasal sinuses. It also shows in details the anatomy of the sinuses. The sinus anatomies vary remarkably from one nose to the other and even in the same nose from side to side. CT sinus is very important for the following purposes:

a. To have an idea of anatomical details of the sinuses.
b. To see whether there is any anatomical variant in those areas.
c. To see any pathology in minute details e.g. subtle areas of ostial obstruction, micropolyps, or mucosal thickening from infection or allergies *(figure :4)*.

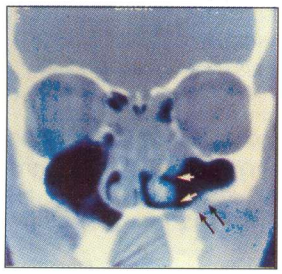


Fig. 4 : CT sinus of a patient with Caldwell-lue procedure and inf. meatal antrostomy-Inspite of that fact patient still has polyp in the middle meatus.

2. ***X-ray Sinus :*** Usually does not give sufficient information. In one series the correlation between plain X-ray and CT-scan of sinuses is as follows[6]:

a. Maxillary sinus : 70% correlation
b. Frontal sinus : 75% "
c. Sphenoid sinus : 80% "
d. Ethmoid sinus : 60% "

The correlation of interpretation of plain x-ray sinus between the radiologists and the surgeons and even between the radiologists themselves is very poor indeed.

3. ***MRI :*** Its poor delineation of the bony anatomy and higher cost as compared to CT, make MR imaging inappropriate in circumstances other than suspected cranial spread of infection.

B. Laboratory Tests

These investigations play a secondary role and, are usually done only if from the history and examinations, there is sufficient indications for performing these tests.

- Bacterial and fungal culture – in infection.
- In vitro IgE level, PRIEST & RAST tests, and intradermal skin test – in allergy.
- Nasal cytology.
- Mucociliary clearance and Ciliary beat frequency test.
- Mucosal biopsy.
- Blood tests : TC, DC, Hb%, ESR, urea & electrolytes, LFT, serum immunoglobulins.
- Rhinomanometry.

MICROBIOLOGY

Acute rhinosinusitis :

- Viruses upto 15% - rhinovirus, influenza and parainfluenza virus[5]
- Strep.pnuemoniae - 31% (range,20% to 35%)
- Haem. Influenzae - 21% (range, 6% to 26%)
- Anaerobes - 6% (range, 0 to 8%)
- Staph. Aureus - 4% (range, 0 to 8%)
- Strep.pyogenes - 2% (range, 1% to 3%)
- Moraxella catarrhalis - 2% (range, 25 to 10%)

Chr. Rhinosinusitis :

- Coagulase (-)ve Staph.species – 51% (range, 24% to 80%)
- S.aureus - 20% (range, 9% to 33%)
- Anaerobes - 3% (range, 0 to 82%)
- S.pneumoniae - 4% (range, 0 to 7%)
- Multiple organisms are much more common in chronic than in acute conditions and on average in 16% cases[7]
- Allergic fungal sinusitis - 2% to 7% of chronic cases[8,9]

TREATMENT

■ ***Systemic antibiotic :*** **Broad spectrum.**

A. In acute rhinosinusitis :

1. More than two thirds of infections are secondary to S.pneumoniae or H.influenzae, hence antibiotics should be selected for activity against these organisms.
2. Penicillin resistance varies from 2% to 30%.
3. Penicillin, cephalexin, erythromycin and tetracycline do not usually cover all the major organisms involved and in some community amoxicillin effectiveness is less than 70%.
4. Amoxicillin is still the favoured initial antibiotic of choice.

Others use amoxicillin-clavulanate, clarithromycin, cotrimoxazole, cefuroxime, ciprofloxacillin and levoflaxacillin .
5. Duration of treatment should be at least 10 to 14 days.
6. If initial regime fails then antral lavage or better, endoscopically guided culture and sensitivity should be undertaken, which should include both aerobic and anaerobic culture.

B. In chronic rhinosinusitis :
1. Antibiotic must cover S.aureus and
2. should be active against beta-lactamase producing organisms, which is more common in chronic diseases.
3. The need for anaerobic cover is also more important than acute cases.
4. Those most commonly used for initial therapy includes : amoxicillin-clavulanate,clarithromycin, cefuroxime, cipro-floxacillin and levofloxacillin (note not amoxicillin or cotrimoxazole). Duration of treatment should be at least 4 weeks.

C. In allergic fungal sinusitis : Fluconazole or itraconazole for 1 to 3 months after surgery is usually sufficient.

D. In immunocompromised patients or those who acquired infections in a hospital setting : culture and sensitivity at the time of initial therapy, rather than waiting for 5 to 7 days to see response to therapy, is mandatory.

■ **Topical nasal steroids :** are commonly prescribed to diminish nasal oedema particularly in patients with allergy. They fail to penetrate thick secretions well, so are not effective in acute rhinosinusitis and in chronic rhinosinusitis is less effective than in the uninfected patients. They are most effective when given in head downward and forward position (Mecca position) and must be prescribed for 4 to 6 weeks to have the maximum effect.

■ **Topical decongestant :** xylometazoline or oxymetazoloine, cannot be used for more than couple of days(may be as less as 3 days) without risking rebound congestion and usually only given during the first few days of treatment. Systemic decongestant : e.g. puedoephedrine, phenylpropanolamine are less effective than topical decongestant but can be used indefinitely.

■ **Antihistamines :** mainly used for patients with allergic rhinitis. Even the newer nonsedative antihistamines have improved patient tolerance, the anticholinergic activity of antihistamines increases the viscosity of nasal and sinus secretions and may lead to impairs drainage[5,10].

■ **Topical antihistamines :** Topical ipratropium is helpful in patients with non-specific watery rhinorrhoea and does not have the general effects of systemic antihistamines.

■ **Systemic corticosteroids :** for short term use only in patients with chronic rhinosinusitis who are also atopic or who have nasal polyps. Beware of its indiscrement use particularly in ignorant and lay patients.

■ **Hyposensitisation :** is more effective in children than adults, and usually of proven value in the treatment of single allergen (pollen or house dust mite) disease. It carries considerable risk of anaphylaxis and must be performed in centres well equipped to fight this type of emergency situations.

INDICATIONS FOR SURGERY

- Massive nasal polyposis
- Acute complicated rhinosinusitis
  - Subperiosteal or orbital abscess
  - Brain abscess or miningitis
  - Putt's puffy tumour
- Chronic rhinosinusitis refractory to full medical therapy
- Invasive allergic fungal rhinosinusitis
- Mucocoele or mucopyocoele
- Suspected tumour causing nasal or sinus symptoms
- CSF rhinorrhoea

Tradition open surgical approaches has been shifted dramatically in favour of the use of endoscopic sinus surgery over the recent years.

FUNCTIONAL ENDOSCOPIC SINUS SURGERY (FESS)

The technique emphasizes accurate evaluation and conservative surgery designed to restore normal drainage pathways of the paranasal sinuses for the treatment of chronic sinus diseases. The current interest in endoscopic sinus surgery stems from several developments.

First: has been the advent of compact, multiangled telescopes that allow excellent visualisation of the nasal cavity for examination and of the sinuses during procedures, including such areas as the maxillary ostium and the frontal recess.

Second: has been the great work by Messerklenger that most infections of the larger sinuses are rhinogenic, i.e., disease spreads from the nose to the paranasal sinuses. Although the clinically dominating symptoms may be due to disease inside the frontal or the maxillary sinuses, in most of the cases the underlying causes are not to be found in the affected sinuses themselves, but in the lateral nasal wall. There, normally very narrow clefts of the anterior ethmoid hold a key position for the normal function and the pathophysiology of the larger paranasal sinuses. They can be seen as "prechambers" of the dependent frontal and maxillary sinuses, providing ventilation and drainage for the latter. Many anatomical variants can stenose these prechambers even more and thus predispose these spaces to recurrent infections[11,12].

The development of a surgical concept aiming at the diseased area in the ethmoid prechambers instead of the secondarily involved larger sinuses was a logical consequence. When this technique replaced more radical sinus procedures in 1970, it was possible to see that even massive mucosal pathologies in the dependent frontal and maxillary sinuses could heal without surgery after the ethmoidal key areas had been cleared with usually very limited procedures.

Third has been computed tomography (CT) scan.

Prerequisite for FESS : Exact diagnostic identification of the conditions in the lateral nasal wall, which underlie acute or chronic recurring sinusitis, is essential.

We establish this by :
- A thorough nasal endoscopy and
- Coronal as well as axial CT of the sinuses.

Advantage of FESS :

- *Physiological :* it is based on the normal mucociliary activity of the sinuses.The mucociliary transport of mucous occurs in definite predetermined pattern. *(figure 5 & 6).*The transport will be always towards the natural ostium and a dependent opening like the intranasal antrostomy does not necessarily improve drainage.

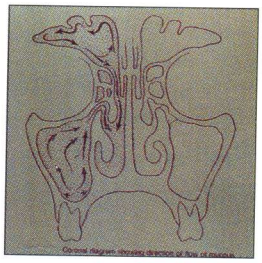


Fig. 5: Coronal diagram showing direction of flow of mucus blanket in frontal and ethmoid sinuses.

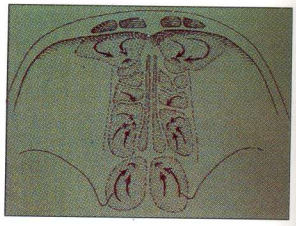


Fig. 6 : Axial diagram showing direction of mucus flow in frontal, ethmoid and sphenoid sinuses.

- *Functional :* it opens the normal channels of the sinuses rather than creating artificial fistula, which is the case in Inferior meatal antrostomy,or Caldwell-luc procedure.

- *Better access :* as endoscope is used, we can reach many areas which is difficult or sometimes impossible to reach with traditional surgery, with inflicting
- *Less trauma* to the body, so body's metabolic response to trauma is less and hence less morbidity, and better & smoother recovery from surgery.

ANAESTHESIA

Local :

- Premedication with Inj. Pentazocine and Phenergan with
- Titrated i.v. midazolam together with
- Local packing (2% lignocaine and 1:15,000 adrenaline) and
- Local infiltration (2% lignocaine with 1: 200,000 adrenaline).

General :

- Deep General anaesthesia with hypotension, together with
- Local packing and local infiltration (as above).

INDICATIONS

- Chr. Rhinosinusitis
- Dacryocysto-rhinostomy
- Optic nerve decompression
- Trans-sphenoidal hypophysectomy
- Diagnosis, biopsy and follow-up of sinus tumours
- Polypoid sinusitis
- Orbital decompression
- Closure of CSF leak
- Management of mucocoele

CERTAIN RELATIVE CONTRAINDICATIONS

- Absence of specific osteomeatal complex abnormalities.
- Oesteomyelitis involving the sinuses.
- Frontal sinus disease with stenosed internal os.
- Threatened intracranial and / or intracerebral complications.
- Inaccessible lateral frontal sinus disease.

FUNDAMENTAL STEPS IN FESS

Uncinectomy(Infundibulotomy) : To remove the uncinate process to gain access to the ethmoid infundibulum, to expose the frontal recess and to identify the frontal recess.
Middle meatal antrostomy: To open up the natural ostium of maxillary antrum.
Anterior ethmoidectomy: To remove the bulla cells and ant. ethmoid cells anterior to the ground lamella. Anterior base of the skull and the anterior ethmoid artery can be exposed.
Posterior ethmoidectomy : Ground lamella is penetrated and the posterior ethmoid cells are opened. Posterior base of skull and the posterior ethmoid artery, the orbital apex and the optic nerve can be exposed.
Spenoidotomy : Spenoid is opened through the natural ostium or less commonly from the posterior ethmoid cell. Pituitary gland can be reached through the roof of the sphenoid sinus.
Frontal recess surgery : To open up the frontal sinus.

TECHNIQUES OF FESS

Messerklinger technique (1985) :

- Anterior to posterior approach.
- Ideal for patients with limited disease, i.e. anterior ethmoid disease with or without maxillary or frontal sinus disease.

Wigand technique (1978) : e.g.Total sphenoethmoidectomy

- Posterior to anterior approach.
- Is ideal for patients with pansinusitis who has or is apt to fail, the more limited Messerklenger approach.

FOLLOW – UP

At least twice :

- Once during immediate post operative period for cavity toileting.
- Another in 2 to 3 months time to detect complications if any, and for functional assessment.

COMPLICATIONS

Major

- Orbital complications – haematoma formation Damage to the eyeball etc.
- Optic nerve damage.
- CSF leak.
- Intracranial complications.
- Major bleeding – Internal carotid artery Anterior & Posterior ethmoid artery.

Minor

- Synechia formation.

CONCLUSIONS

For both the physicians and the patients the diagnosis and management of chronic sinus disease is frustrating and challenging. With the proper evaluation of the patients through history, nasal endoscopy and CT scanning , a diagnosis can be made and proper treatment initiated. Functional endoscopic sinus surgery has proved to be a safe and efficient method of dealing with this difficult situation *(figure7).*

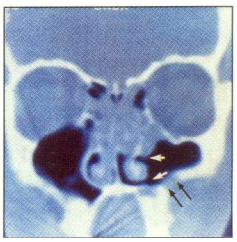


Fig. 7 : Coronal CT sinus showing OMC is blocked on the right and open on the left- patient could be badly symptomatic on the blocked side . Plain x-ray will fail completely to identify this pathology.

Numerous studies on the outcome of FESS have reported symptomatic improvement of between 80.1% and 97.5%, whereas improvement rate after conventional intranasal ethmoidectomy ranged from 44% to 83%[13,14,15]. Nasal endoscopy provides us an illuminated view of the nasal cavity and the sinuses during surgery, which not only help us to deal with the sinus problem accurately but also gives us an easy access to areas far beyond the nose and paranasal sinuses, like orbit, nasolacrimal duct, base of the skull, pituitary, to deal with the pathologies in those areas as well.

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General Principles of Bone Grafting in Maxillofacial Surgery

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INTRODUCTION

Maxillofacial surgery deals with major surgery of jaw bone tumour, oral cancers,temporomandibular joint , congenital facial defects, jaw bone fracture etc. This branch of surgery has come up more recently with advanced surgical technique and bone grafting has become a regular job for maxillofacial surgeons in the reconstruction of acquired or congenital jaw defect.The term grafts applies to the transplantation of living tissues and implant means transplantation of non viable tissues. Besides microvascular flap with bone may be grafted anastomosing with vessels. Numerous attempts have been made for long time to employ these procedures in the reconstruction of jaw after oncological surgery, destruction of a bone by accident, congenital defects, in the treatment of jaw deformity, TM joint abnormalities. Various types of bone grafts, such as- xenogenic bone grafts, autogenic bone grafts, allogenic bone have been successfully transplanted time to time by some authors. However the success of bone grafting is still a challenging issue in the maxillofacial surgery.

TYPES OF GRAFTS AND IMPLANTS

Grafts and implant substances are classified according to their immunological basis :

(1) *Autogenous bone grafts* or Autograft is composed of tissue taken from the same individual or from the host himself, (2) *Allogenic bone graft* composed of tissue taken from an individual of the same species who is not genetically related to the patient, (3) *Isogenic bone graft or Isograft or Homograft* or *Syngenesioplastic graft* where tissue is taken from an individual of the same species who is genetically related to the patient, (4) *Heterografts or Xenogenic graft* means tissue taken from a donner of another species eg. animal bone grafts to man cortical bone cancellous bone or mixed cortical cancellous slabs may be used. Such grafts can be applied as chips, flakes or shaped blocks.

More recently, facial or dental implants has become very popular. These implants are mostly made of titanium with a coating of calcium hydroxy appetite.

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CONDITIONS FOR SUCCESS IN BONE GRAFTING

There are certain factors which are very important to achieve successful bone grafting. Poor nutritional condition, improper stabilization of bone may affect the success of bone grafting. Besides absence of infection is essential to prevent the graft become infected before it has been revascularised and to constitute sequestrum. For this reason bone grafts can be inserted through skin incision rather than the mucous membrane of the mouth avoidance of wound contamination and antibiotic therapy. So the tissue should be free from infection, healthy and vascular.

The recipient site should have an adequate blood supply to ensure rapid invasion of the graft by granulation tissue and it adequate nourishment, otherwise the graft will fail. So, greate the proportion of cortical to cancellous bone, the more vascula must be the graft bed to ensure success. Besides ,an adequat area of contact between graft and bone end is an important fac tor. A good broad contact between the graft and recipient bon is essential for union of the graft. Ideally of the bone ends shoul be held firmly for immobilization together without movemer until union occur. In Bangladesh, there are not enough scope fo excellent stabilization of grafted bone using titanium mini plat and lack of excellent OT surgical atmosphere which may als ultimately affect the fate of bone grafting.

AUTOGENOUS GRAFTS

Autogenous bone graft is mostly used graft in Maxillofacia Surgery. The optimal bone graft material should be autogenou in origin because autogenous bone is a superior graft materia and in general autogenous bone grafting procedure in the mos successful type of procedure. Autogenous grafts are usuall employed to restore large area of lost bone following oncolog cal surgery or traumatically avulsed or the surgically resecte bone. Some surgeons have preferred to use rib grafts and other have preferred to take solid, one piece graft from the iliac cres and fabricating the transplant to the desired shape.

Photo-1. Large tumor of the mandible.

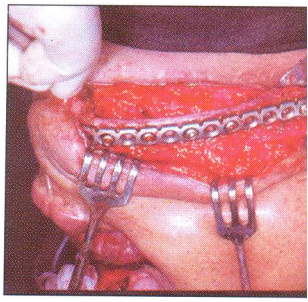

Photo-2. Autogenous bone graft supported by titanium reconstruction plate is fixed, after hemi mandibulectomy.

Photo-3. Post operative condition of the same patient.

Experimental studies have demonstrated the marked osteogenic potential of haemopoietic marrow. So marrow with accompanying cancellous bone can be transplanted autogenously to new bone formation in various types of osseous defects. This type of graft material is capable of actively inducting osteogenesis. This autogenous particulate marrow cancellous bone (PMCB) grafting have several advantages over solid one place autograft. It can be obtained easily by making only a small opening along the lateral surface of the crest rather than taking a large portion of the ileum, and complete healing is more rapid. But the impediments are the lack of development of a satisfactory method of containing the graft within the surgical site and preventing the in growth with fibrous tissue which has a tendency to insinuate between the individual particles of the graft material, produce a fibrous union. A recent application of the PMCB grafting principle to the treatment of deficient edentulous mandibular and also maxillary ridge has been the combination of marrow cancellous bone graft with a subperiosteal metal implant used for the attachment of semiburied posts for subsequent implant denture construction.

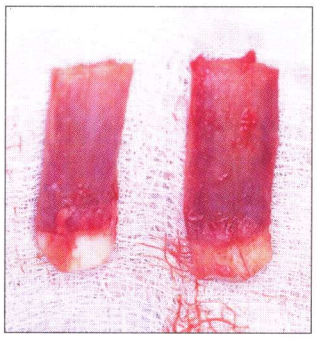

Photo-4.Two costochondral rib graft.

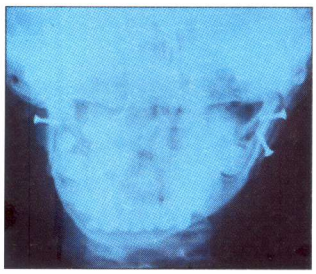

Photo-5. Two rib were fixed with screw to ramus after condylectomy in TMJ ankylosis.

However, the problem have been associated with autogenous bone grafting use post-operative sequele of infection, exfoliation and sequestration, varying rates of healing , root resorption and rapid recurrence of the defects.

Autogenous bone graft is widely used in Bangladesh. Maxillofacial surgeon often use bone from illiac, rib, tibia or cranial bone with a variable success rate.

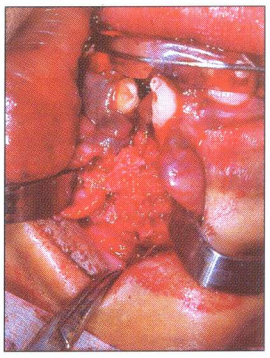

Photo-6.Cancellous bone grafted in alveolar cleft.

ALLOGENIC GRAFTS

Tissue Bank has been formed in recent years in Dhaka and proving limited scope of using allogenic graft mostly for general orthopedic surgery. Obtaining donor materials for autograft purpose necessitates inflicting surgical trauma of another parts of the body of the patient. Obviously it would be to the patients as well as the therapists advantage, if a suitable substitute could be utilized for grafting purpose that would offer similar potential for repair and not require the additional surgical removal of donor material from the patient. But allografts are foreign to the host and therefore have the potential to provoke immune response and immunosuppression is essential. Attempts have been made to suppress the antigenic potential by radiation, freezing and chemical treatments.

Allogenic bones can be treated by physical or chemical agents. Banking of allogenic bone by cryobiological methods by use of cooling,freezing or freeze-drying can be done and they can be prepared in various anatomical forms to the needs of different oral surgical procedures.

Cryobiologically present bone implant do not survive, so the assistance on the part of implanted material to osteogenic process of the host is purely passive. Such transplanted of the host grow to reconstruct at the host defect. They are more completely revascularized , resorbed and remodelled than the allogenic bone grafts that have been deproteinized, boiled or authorized drastically treated. The relatively large personnel requirements necessary for the performance of aseptic autopsies and the processing and storing of bone product are essential here.

Photo-7. Allogenic bone graft stabilized by titanium mini plate.

The remodelling rate of allogenic bone graft is slow and it permits the graft to maintain the desired contour for longer period post-operatively. But a slight trauma could completely dislodge the graft from the host bone leading to sequestration of the graft and failure of the procedure. If the surrounding musculature is conducive to good revascularization of the host bone and the graft recipient site is an optimal one ,the desired surgical result will be obtained readily. Banked allogenic graft may be subjected to various surface decalcification procedures

as well as enzymatic treatment.The purpose is to render the surface of the graft more amenable to remodelling and eventual replacement of new host bone. By this process the rate of resorption and remodelling of the surface altered matrix of the osseous implant will be increased. Completely decalcified allogenic bone can be used in situation in which normal regeneration has been assisted by the implant or in which osteogenic potential of the growing bone in young individuals has been a major factor in the bone regeneration of a favourable graft recipient site.
In maxillofacial surgery, allogenic bone crystals are being used in cyst cavity after enucleation or in stabilizing teeth, with variable results.

COMPOSITE GRAFTS

a) *Composite autogenous hard and soft tissue grafts :* Recent improvement in technique of microvascular surgery with improved surgical optics has made possible the restoration of lost bone and concomitant soft tissues . These are known as composite because they contain both hard tissue i.e.bony structure and accompanying soft tissue mass usually muscle and accompanying skin. The grafts are either taken from the chest wall and contain the autogenous rib with the blood vessels intact or from the iliac crest with superior iliac circumflex artery attached. Here the arterial system is anastomosed on the tissue transfer to the lost bone. Venous system are also anastomosed if available. But here the islands of grafted bone in the centre of the soft tissue mass frequently doesn't undergo complete vascularization.
Microvascular flap or grafting is still not well established in Bangladesh. It needs special skill and expensive equipments.

b) *Composite alloplast and allograft :* This type involves autogenous bone tissue and alloplastic material such as metal. Here the metal is not only surrounded the particular grafts but actually sit in the centre of the graft.The purpose of the metal is to serve as attachments for subsequent implant denture posts after the graft has sufficiently remodelled and matured.

c) *Composite allograft and autograft :* Research studies indicate that a promising graft material may be the combination of acceptably preserved allogenic bone and autogenic bone. The use of surface decalcified allogenic bone combined with autogenous PMCB has produced and acceptable composite graft material. The advantage are the amount of autogenous tissue may be reduced to a minimum to regenerate a given area of lost bone, and a lessening of post operative morbidity.

HOMOGRAFT

It is very much similar to autograft. An immune response will be elicited by the graft and vast majority of the original cells within the graft die. Then there will be invasion of the cancellous bone spaces by granulation tissue and necrotic soft tissue is removed. Here the calcified matrix of the graft will not be destroyed by the host's response. Further more, this matrix is capable of exerting an inductive influence on the invading granulation tissue resulting in osteogenesis.

Photo-8.Calcium hydroxy apetite bone crystals in dental surgery.

XENOGRAFT

In Bangladesh oral surgeons have started using bone crystals of bovine source to strengthen loose teeth. However the ultimate success of the xenograft remain unpredictable.

Calf bone(Boplant), treated by detergent extraction,sterilized and freeze dried, has been used for the treatment of osseous defects. Kiel bone is calf or ox bone denaturated with 20% H_2O_2, dried with acetone and sterilized with ethylene oxide. Anorganic bone is ox bone from which the organic material has been extracted by means of ethylene diamine, it is then sterilized by autoclaving. These materials have been tried and discarded because following a first transfer of tissue there is initial acceptance followed by rejection within a few days by acute inflammatory reaction. If a second same transplant is done it will be rejected more rapidly.

CONCLUSION

Autogenous bone grafts taken from iliac crest or ribs have become a common practice to reconstruct mandible, maxilla, nasal bridge, TM joint with variable degree of success. Microvascular surgery using soft tissue and bone anastomosing with vessels may be a better method, however, it needs special skills & expensive equipment.

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Outcome of Pregnancy with Heart Disease

Farida Yasmin[1], Sayeda Akter[2] , Nasima Begum[3] , Syaba Akter[4].

OBJECTIVE

To evaluate the impact of cardiovascular disease on outcome of pregnancy.

SETTING

Shaheed Shahrawardi Hospital in Obstetritics and Gynaecology Department.

DESIGN

Prospective study (May, 1998 to May, 1999).

Total number of patients were forty five, forty cases were primigravida, three were second gravida & two were forth gravida. Mean age of them was 21yrs with standard deviation 3. Among them forty-two patients (93%) had mitral stenosis (acquired), two (4.4%) atrial septal defects (congenital) and one (2,2%) had heart disease secondary to hyperthyroidism.

- *91% of them were symptomatic.*
- *9% asymptomatic.*
- *88% of them are Surgically corrected followed by medical treatment.*
- *12% medically managed.*

Outcome measured in terms of morbidities and mortalities of mother and baby before, during and six weeks following delivery.

RESULTS

Out of forty five cases with different types of cardiac disease with varying degrees of severity there was no maternal mortality except few morbidities and there was two (4.40%) intrauterine growth retardation and one (2.2%) perinatal death, remaining babies were healthy in follow-up visit and there was no congenital anomaly.

CONCLUSION

Close antenatal follow up and monitoring by a team and planned hospital delivery can reduce the mortality and morbidity with these high risk.

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INTRODUCTION

Heart disease in pregnancy is a cause for concern for obstetrician(De swiet,1984 & 1976). In the developed countries, circulatory disorders in pregnancy have become more important as other causes of morbidity & mortality have declined due to economic prosperity, better nutrition, improved medical care and social conditions. In the third world countries, conditions have not improved to the same extent. While the direct causes of maternal mortality are still more predominant in the developing countries, heart disease is the major indirect cause of maternal mortality. Because of its adverse effects on both the mother and the fetus. Mother may suffer from pulmonary edema; C.C.F, pulmonary embolism, subacute bacterial endo-cardities, peripartum cardiomyopathy, any one of these complications may cause death of the mother. Baby may also suffer from prematurity, IUGR, and even intrauterine death may occur due to decompensated maternal cardiac status. Fortunately, the incidence of this serious condition is low, about 1% in the range of 0.2-4.1%. Rheumatic heart diseases has been the main cause of heart lesions in pregnancy. The most dominant of the rheumatic heart lesions has been mitral stenosis (up to 80%) followed by aortic stenosis (10 %), mitral regurgitation (6.6%) and aortic regurgitation (2.5%). The improvements in cardiovascular surgery has improved the prognosis of congenital lesions & many women, even with several defects, are now reaching the childbearing age. The other conditions like coronary heart diseases and arrhythmias are only rarely seen in pregnancy. The ischemic heart diseases in pregnancy is approximately one per 10,000 deliveries (0.01%) and acute myocardial infarction is 7.5 per 10,000 deliveries.

Pregnant women with cardiac disease fall into two categories:-

1. Diagnosed heart disease and under treatment before becoming pregnant.
2. Those with previously undiagnosed heart disease.

In both cases, natural history of the underlying cardiovascular disease and the circulatory changes peculiar to pregnancy are important considerations in the management. The quality of management and the course of the disease in preceding years have important impact on potential risks and actual complications occurring during pregnancy. Chronic rheumatic and congenital heart diseases require continuous medical supervision for life. The pregnancy should be considered as a transient physiological state with hemodynamic implications in the course of chronic illness. It should be managed in such a manner that the actual disease should not worsen at the end of this transient state.

Alterations seen during pregnancy are-markedly raised blood volume, rise is progressive and inconsistent, cardiac output increase by 30% to 50% and achieved by increase in stroke volume and heart rate, there is decrease in peripheral

resistance, fibrinogen level increase by 5o%, platelets adhesiveness increase and fibrinolytic activity depressed.

Anatomic and physiologic changes that occur in normal pregnancy closely simulate those of organic heart. After proper evaluation of the patient functional status should be assessed at first visit, because prognosis depends on the cardiac reserve rather than types of heart disease.
In case of severe type of heart disease patient should be hospitalised at diagnosis and the option for therapeutic abortion could be considered, provided duration of pregnancy less than 12 weeks. Corrective surgery is usually done in the nonpregnant state but if medical treatment fails, recurrent pulmonary edema and hemoptysis develops, patient refuses termination, mitral valvotomy is the option. Open heart surgery is not contraindicated in pregnancy if it is an emergency. Patients having prosthetic valves and cases of cardiomyopathy of pregnancy need anticoagolants .

Relief of pain has its advantage in cardiac patients because it decreases the hemodynamic burden, morphine and its derivatives have been traditionly advocated in cardiac patients. In the majority of cases the anaesthesia of choice is epidural blockade administered by experienced person. Few studies also showed carefully controlled general anaesthesia causes less hamodynamic fluctuation than spinal anaesthesia(william et al, 1975).

Adaption of small family should be seriously considered for cardiac patient-because many clinician still believe that every pregnancy has so many nails in the coffin of a women with heart disease(webster,1913, chesly 1980). Combined oral contraceptives carry the risk of thromboembolism, hypertension, hyperlipidemia and hypercoagulability, although the risk is less with newer generation low dose pills. Permanent sterilisation is the method of choice with the completion of family, IUCD do not have any adverse effect on cardiovascular system, but carry the risk of infection.

METHODOLOGY

This was a prospective study. Forty five patient with different types of cardiac diseases were evaluated. Mean age of them was 21years with standard deviation 3. Forty patients are primigravida, three patients are 2nd gravida, two patients are—4th gravida. Out of them forty two patients (93%) had mitral stenosis (acquired), two (4.4%) atrial septal defects (congenital) and one (2.2%) had heart disease secondary to hyperthyroidism. Forty patients (88%) were surgically treated, 38 patients had closed mitral valvotomy for mitral stenosis and two patients had correction of atrial septal defect, before pregnancy; five patients(12%) showed clinical symptoms first time during pregnancy. Surgically corrected patients(40) are under regular antenatal care from very early weeks of pregnancy with interval of two to four weeks and as per needs with cardiac consultation in each visit. Undiagnosed cases presented with symptoms during midtrimester, subsequently they visited as per advice. According to the functioning classification used by the New York Association of Heart (NYAH), our patients were of following categories:

65% of cases are of GII heart disease
26% of cases are of GIII and IV.
9% of cases are of GI

All relevant investigations were done which includes:

- Blood T.C, D.C, E.S.R, HB%.
- Urine R/E, C/S.
- Blood sugar random.
- ASO Titre—in indicated cases.
- VDRL.
- Blood group and Rh factor.
- ECG.
- USG of abdomen for pregnancy.
- X-ray chest P/A view.
- Echo cardiogram.
- T3, T4, TSH, antithyroid antibodies—in indicated case.

PRINCIPLE ADOPTED TO MANAGE THOSE PATIENTS

- A— Limitation of activities to reduce oxygen demand.
- A— Correction of anaemia.
- A— Prophylactic antibiotic.
- I— Treatment of intercurrent diseases.
- D— Dietary adjustment.
- D— Diuretic.
- D— Digitalis.
- D— Delivery.

HOSPITALIZATION

Patients with G1 disease admitted at 38 weeks, GII at 34 weeks, GIII & GIV at diagnosis.

DELIVERY

- Planned hospital delivery.
- 93.4% patients starts natural labour at term.
- 6.6% patients need elective caesarean section at term (under epidural block) for cephalo-pelvic disproportion.
- 71% (out of all) patients delivered vaginally under closed supervision.
- 22.4% need emergency caesarean section due to failure to progress of labour (under G/A).

MANAGEMENT DURING VAGINAL DELIVERY

- Psychotherapy.
- Appropriate analgesia in first stage of labour(I/M inj pethidine).
- Augmentation of labour(with I/V oxytocin and ARM).
- Fluid restriction to avoid overloading of systemic circulation.
- Oxygen in indicated cases (followed up with pulse oxymetry).
- Episiotomy invariably.
- Conventional management of third stage avoiding I/V—ergometrine injection if not essential.
- I/V oxytocin infusion following labour in indicated cases.

POST-NATAL MANAGEMENT

- Limited activity but early ambulation to avoid thromboembolic risk.
- Oxytocin infusion following LUCS for 12hrs or more accordingly.
- Continuation of pre-pregnant medication.
- Exclusive breast feeding if three is no contraindication.

DISCHARGE CRITERIA

- Convalescence from pregnancy.
- Return of cardiac status to pre-pregnant level.

Total hospital stay of
GI patients—4weeks (before and following delivery),
GII patients 6 weeks,
GIII & GIV patients 10 weeks.

ADVICE DURING DISCHARGE

- Rest.
- Continuation of drugs used before pregnancy.
- Oral iron and calcium supplementation.
- Exclusive breast feeding if not contra indicated.
- Barrier contraceptive (where applicable)or sterilisation.

FOLLOW UP VISIT

- First visit at 6th weeks following delivery.
- Any emergency immediate consultation.
- Corrective surgery in indicated cases.

RESULT

Those cases diagnosed before pregnancy and treated medically or surgically were booked cases, under regular care done jointly by obstetrician, and cardiologist during antenatal period, and at labour help from anaesthesiologist and neonatal care by neonatologist was taken as per need. Out of 45 cases 31 patients(71%) delivered vaginally and 14 patients (29%) delivered abdominally under general anaesthesia / epidural blocked. Forty patients (88%) discharged from hospital two weeks following delivery and five (2%) patients were discharged after three weeks following delivery.

Progression of disease, which varies from mild to severe form and asymptomatic patient to symptomatic form and only 9% of patients remained static. Following delivery one patient developed pulmonary oedema which improved with treatment, two patients had post partum haemorrhage needed I/V oxytocin infusion and also needed I/M ergometrine and fresh blood transfusion slowly. One patients had cardiac arrhythmia and emergency digitalization was needed. All patients were free from other types of pregnancy induced morbidity except one who suffered from urinary tract infection. Two newborn were of intrauterine growth retardation due to decompensated cardiac status of mother. One baby died in utero at term due to high fever of mother for urinary tract infection. There was no congenital anomaly of baby.

There was no maternal mortality. Although the prognosis is good in patients with rheumatic heart disease in pregnancy in our study group, many clinician still believe that every pregnancy was so many nails in coffin of a women with heart disease (Webster,1913,Chesly1980).

DISCUSSION

The cardiovascular dynamics of all women change profoundly in pregnancy and are tolerated remarkably well by women without heart disease and those with minimal or no symptoms. However, women with an altered cardiovascular system have limitations to adapt to these stresses of pregnancy, labour and perperium placing both the mother and fetus at risk.
Sporadic fatalities will be seen in all forms of heart disease in pregnancy, mortality is most likely in those conditions were pulmonary vascular blood flow can not be raised (Jewett,1979),e.g Eisenmenger's syndrome where mortality varies from 30%-50%. In case of primary pulmonary hypertension maternal mortality is 50%(Morgan Jones & Howitt, 1965, Sinnenbeg, 1980). One fatality has also been recorded in corpulmonale (Rush et al,1979). In contrast, in Fallot's tetralogy where the pulmonary vascular resistance is normal, the reported mortality varies between 4%-20%(Moran Jones and Howitt, Jacoby,1964). The maternal mortality is said to be high in Marfan's syndrome (Hall 1979) and classic forms of Ehers Danlos syndrome (Pearl&Spicer, 1981) and dissecting aneurysm of coronary arteries (Jewett, 1978). Recently pyeritz (1981) suggested that dilatation of the aorta to more than 40mm(as determined Echographically) should be the limit at which pregnancy is contraindicated. The mean survival time in the pregnant group studied by Chesley (1980) was no less than in the nonpregnant group. It means that pregnancy does not affect long term survival of a woman with rheumatic heart disease providing that she survive pregnancy itself.

The fetal outcome in rheumatic group is usually good but in cyanotic congenital heart disease, the babies are usually growth retarded (Baston.1974) and the fetal loss including abortion may be as high as 40% (Gleicher et al, 1979), in the tetralogy of Fallot, the fetal loss rate may be as high as 57% (Copeland et al1 1963). In contrast, the fetal results in 40 pregnancies following 27 cases of total correction of Fallot's Tetralogy were excellent (Singh et al, 1982). Uncorrected coarctation of aorta has also been associated with a 13% fetal loss rate (Burwell&Metcalfe, 1958) and intrauterine growth retardation (Benney et al, 1980) presumably because of placental insufficiency.

CONCLUSION

Though patients with heart disease is high risk for both mother & fetus, the present study showed that team management by cardiologist and obstetrician, providing appropriate care during pregnancy and labour in a specialised centre can bring excellent outcome. Complications were more in women of age above 30yrs and those who did not avail the appropriate care during prepregnant state and also during pregnancy. So, emphasis must be given to motivate the patient to come for regular antenatal care and to get hospital admission and care according to the need/ advice.

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Convulsion in Children - Clinical Approach

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INTRODUCTION

Convulsions in children are relatively more common than in adults. The clinical presentation of an episode of a convulsion depends on the maturity of a child's brain and her/his threshold level to convulsion. Majority of the convulsions in children are of tonic-clonic nature. Therefore, a careful evaluation is necessary so that the underlying cause can be detected.

DETAILED HISTORY OF THE CHILD WITH CONVULSION

- Mode of onset of convulsion, character, duration, any similar previous history (chronic/recurring).
- Triggering factors- fever, toxic substance or drug, metabolic disturbance.
- Family history of convulsion, inborn error of metabolism.
- Peri-natal/Natal history-birth asphyxia, jaundice, birth trauma, central nervous system (CNS) infection e.g. meningitis, encephalitis etc.
- CNS status-cerebral palsy, mental retardation (learning difficulty), any post-convulsive state.

Diagnostic work-up

A) Acute/Non recurring	B) Chronic/recurring
i) with fever	i) with fever
ii) without fever	ii) without fever

CONVULSION IN INFANTS AND OLDER CHILDREN

Usually more organized and is of specific pattern.

A) Acute/Non-recurring
   (i) with fever : febrile convulsion, infections e.g. meningitis, encephalitis.
   (ii) without fever : poisoning including medicinal overdose, metabolic disturbance e.g. hypoglycaemia, hypocalcaemia and electrolyte imbalance, head injury, brain tumour, epilepsy.

B) Chronic/Recurring :
   (i) with fever : recurrent febrile convulsion, recurrent meningitis.
   (ii) without fever : epilepsy.

FEBRILE CONVULSION

Predominantly tonic convulsion accompanied by fever affecting 3-4% of children. Idiopathic epilepsy might be triggered by fever also.

A) Simple febrile convulsion

- Age : 6 months to 5 years.
- Character : generalized convulsion.
- Duration : usually less than 15 minutes
- Usually not repeated in the same illness.

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B) Complex febrile convulsion

- Age : less that 6 months or more than 5 years.
- Character : unilateral or focal.
- May be repeated in the same illness.
- Common in female or child with Cerebral Palsy (CP).

Note :

- *In febrile convulsion inter-ictal eletro-encephalogram (EEG) is normal.*
- *Neither rate of rise nor height of temperature has any correlation in characterization of the initial seizure.*

Febrile convulsions are usually benign. But severe, prolonged or recurrent febrile convulsion can result in the development of subsequent epilepsy, neurological disability or mental suboptimality.

Two percent (2%) of children with febrile convulsion develop subsequent epilepsy.

Risk factors for development of epilepsy

- Abnormal neuro-developmental state.
- Complex febrile convulsion.
- Family history of epilepsy in parent or sibling.
- First convulsion before 1 year of age.
- Recurrent febrile convulsion-if more then three times.

C) Recurrent febrile convulsion

Fifty percent (50%) of children with febrile convulsion may have repeated or recurrent febrile convulsion.

Risk factors for recurrence

- non-compliant patients.
- first seizure before 18 months.
- complex initial seizure.
- family history of febrile convulsion or epilepsy in 1st degree relative.

RECURRENT MENINGITIS

Congenital dermal sinus.
Communication with para-nasal sinus or middle ear.
(post traumatic skull fracture).
Immuno-suppressed child).

TREATMENT OF ACUTE CONVULSION

- Diazepam 0.2 to 0.3 mg/kg i/v (maximum 5 mg for infants and 10 mg for older children).
- If vein is not accessible give per rectally 5 mg/kg body wt. followed by phenobarbitone 5 to 6 mg/kg 12 hourly.
- Repeat diazepam and to continue as 1 to 2 mg i/v over 30 minutes (not more than 1 mg/kg/minute).
- or phenobarbitone 10 mg/kg at a rate of 30 µg/minute i/v.
- or paraldehyde 0.3 ml/kg given rectally mixed with an equal amount of mineral oil in a glass syringe (not to exceed 5 ml in a child or 10 ml in teen-agers).

CHRONIC/RECURRING CONVULSION WITHOUT FEVER : EPILEPSY

Clinical Suspicion

Symptoms are episodic, involuntary, altered consciousness or responsiveness, abnormal motor activity, change of behaviour, sensation or autonomic function.

Features

- abrupt onset.
- stereotyped episodes.
- impaired consciousness except simple partial seizure.
- brief duration.
- rapid recovery.

Clues

- developmental delay-static/progressive.
- family history.
- physical examination:
  skin-tuberous-sclerosis, neurofibromatosis, Sturge Weber syndrome, focal neurological deficit, signs of increased intracranial pressure (ICP).

Risk factors for recurrence

- Central nervous system (CNS) abnormality: psychomotor retardation.
- EEG, paroxysmal abnormal EEG shows generalized spikes and waves, partial seizure.
- Family history : seizure in sibling or 1st degree relative.
- Early onset, late diagnosis and of poor control.

TO EXCLUDE PSEUDO-SEIZURE

psychogenic, migraine, fainting, vertigo, breath holding attacks.

Characteristic of pseudo-seizure (psychogenic)

- episode is characterised by screaming, talking, crying, occurs in presence of others.
- motor movements-thrashing nature.
- no injury, no incontinence of urine or faecal soiling.
- recovers completely without objective evidence of post-ictal lethargy or confusion .
- interictal EEG is normal even with hyperventilation, photic stimulation and sleep.

PROGNOSIS

- fit predisposes to fit, hence if the fit is controlled earlier with anti-convulsant the prognosis is better.
- shorter the duration of epilepsy before treatment better the chance of long term remission.
- good prognosis: normal patient (no neurological deficit), early diagnosis, early control.

TREATMENT

- counselling and explanation.
- diagnosis.
- compliance.
- side effects.
- restriction of activity till the period of greater risk of recurrence i.e. up to 1 year.
- initial single most effective drug.

Duration-

a) 2 to 3 years seizure-free status.
b) planned withdrawal for 6 months.
c) EEG before stopping.
d) if single fit during withdrawal continue for another 6 months than withdrawal in 1 year.
e) if again there is a fit after withdrawal continue treatment for further 2 to 3 years.

NEONATAL CONVULSION

Neonatal convulsions are common and are of varied patterns and characteristics. This unique nature of neonatal seizure is sometimes difficult to identify. Unlike older infants newborns do not show well organized, generalized tonic-clonic seizures.

SUBTLE SEIZURES : Usually manifest as rhythmic eye deviation or blinking, lip smacking or apnoea followed by generalized tonic, multi-focal clonic, focal clonic and myoclonic seizures, mostly due to infection like septicaemia or meningitis.

Onset between 0-3 days

Perinatal complications :

- Birth asphyxia with hypoic ischaemic encephalopathy.
- Birth injury with contusions, intracranial haemorrhage.
- Metabolic problems e.g. hypoglycaemia, hypocalcaemia, less commonly hypo or hypernatraemia.

CONGENITAL MALFORMATIONS AND DEVELOPMENTAL ANOMALIES

Onset between 4-10 days or afterwards-

- Infections e.g. tetanus, meningitis, encephalitis, septicaemia.
- Metabolic problems e.g. hypoglycaemia, hypocalcaemia, hyper bilirubinaemia (kernicterus).
- Pyridoxine deficiency/dependency.

JITTERINESS

Abnormal movements in the neonates may sometimes be confused with a a predominant type of movement disorder in neonates called jitteriness. This jitteriness in not a seizure and not an aminious sign of brain pathology. It is a tremulous type of movement which may be due to conditions like cold exposure, hypocalcaemia, hunger etc.

Jitteriness can be readily distinguished from convulsion with the following points :

- jitteriness is not accompanied by abnormalities of gaze or extra-ocular movements.
- it is extremely stimulus sensitive, seizures are not.
- dominant movement in jitteriness is tremor, but in seizure it is clonic jerks.
- rhythmic movements of the limbs in jitteriness can be stopped by flexion of the affected limp not convulsive movement.

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Ectopic Pregnancy : New Horizons

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INTRODUCTION

Ectopic pregnancy may be defined as implantation of fertilized ovum out side the normal uterine cavity. It may occur in tube (95%), the uterus (intramural, angular, cervical or in rudimentary horn), the ovary, the broad ligament or else where in the peritoneal cavity. The common site in the tube is the ampulla, followed by the isthmus. In the ampulla, the pregnancy is often expelled, whilst in the isthmus, the tube usually ruptures. Multiple ectopic pregnancy may occur including both tubes, as well as a combined intra uterine and extra uterine pregnancy (heterotopic pregnancy).

Ectopic pregnancies continue to prove to be quagmirish for an average clinician. It has performed implication with regards to future reproductive performance. Many procedure have influxes into the diagnosis and management, some are seems to be obsolete today. It is therefore worth while seeing the new horizons of ectopic pregnancies.

INCIDENCE

Current incidence of ectopic pregnancy has been placed between 0.25 to 1% of all pregnancy. By all pregnancies it is meant as the sum of reported live births, legal induced abortions and ectopic pregnancies (Stabile and Arudzinx Kas 1994). Presently ectopic pregnancy is reported to be accounting for 11.5% of all maternal deaths in UK. It is an important cause of maternal mortality in first trimester. (Cacciatore et al 1990)

The incidence of ectopic pregnancy is rising today. This rise is both real as well as apparent. The real rise seems to be due to increased incidence of PID, sexually transmitted disease (STD), contraception methods like IUCD and progesterone only pills and modern methods of infertility treatment like assisted reproduction technique. The apparent rise could be because of better diagnostic facilities such as βhCG estimation and high-resolution ultrasonography.

ETIOLOGY

The most likely cause of ectopic pregnancy is salpingitis due to chlamydia, gonococcus, tubercular and other infection. It is seen that promptly and correctly treated salpingitis does not add to the incidence of ectopic pregnancy. Untreated salpingitis usually causes infertility but incomplete treatment causes damage to tube with narrow passage allows smaller sperm but prevent the transport of the large blastocyst which can be trapped in blind pockets formed by adhesion of the endosalpinx leads to ectopic. Other causes includes

a) An intrauterine device in situ much increases the frequency of ectopic pregnancy relation to intrauterine gestation and also more implantation in unusual sties such as the ovary.

b) Use of the progesterone only pill.

c) Tubal surgery, whether performed on a tube that is morphologically normal (reversal of tubal ligation) or abnormal (post salpingitis reconstruction surgery). d) The procedure for embryo transfer could raise the chance of ectopic by the direct extension of embryos through the tubal ostium by hydrostatic forces. E) abnormal embryogenesis.

CLINICAL PRESENTATION

The clinical feature of ectopic pregnancy are not similar, 75% with subacute, 25% or less with acute symptoms. The common presenting features are lower abdominal pain, delayed menses followed by vaginal bleeding or brown discharge and syncope. The vaginal bleeding or discharge is due to shedding of the decidua or 'decidual cast' when the pregnancy fails.

The classic symptoms and sign of a ruptured ectopic make the diagnosis obvious. Symptom and sign before rupture are non specific. The most important criterion for the clinician is to "think of ectopic" as urged by Zlantnik (1986). The suspicion is high if patient has a history of pelvic inflammatory disease [PID], a previous ectopic pregnancy, tublal surgery or a IUCD.

DIAGNOSIS

The problem of ectopic pregnancy is essentially a diagnostic one. The emphasis today is on the early diagnosis of a tubal pregnancy before tubal rupture for this would significantly reduce maternal mortality, morbidity and also improve the future fertility. Newer treatment moralities like medical management or expectant management and even conservative surgery can be possible in ectopic pregnancy diagnosed earlier.

Investigations

Human chorionic gonadotrophin-The sensitive enzyme linked immunosorbant assay (ELISA) detect βhCG more than 90% of patient of ectopic pregnancy while radio immunoassay (RIA) detect 100 percent. In the circulation of nearly all patients with an ectopic gestation βhCG is present but the level is lower. In early normal pregnancy the serum βhCH level double about every two days (48 hours) while in abnormal pregnancies including ectopics the βhCG levels don't increase at this rate. It is recommended by Kader and colleague (1981) that if βhCG increased by less than 66% over 48 hours in given case then other procedure should be performed to rule out ectopic pregnancy. Level of βhCG in intrauterine pregnancy are described in table I.

Table - I

βhCG level versus days of conception in intrauterine pregnancy

Days from conception	βhCG level IU/L
15	200
18	400
21	800
24	1600
27	3000
30	600
42	50000

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Ultrasonography - Ultrasonography is valuable in the assessment of patients with bleeding in early pregnancy. Its use is more informative if it is combined with serial βhCG measurements. A intrauterine gestational sac is seen with trans-vaginal sonography (TVS) 12-14 days after biochemical detection of implantation (βhCG more than 10 I.U/L). This time interval is longer using Trans-abdominal sonography (one week after the missed period). At this time the βhCG level is approximately 1000 I.U/L. Ultrasonography finding of ectopic pregnancy shown in the table no-II.

Table No II

Ultrasound features of ectopic pregnancy

Trans abdominal	Live embryo in adnexa (10-12%) Pseudogestational sac in uterus Empty uterus + adnexal sac + fluid in pouch of Douglas
Trans vaginal	Live ectopic intact tubal ring with heart action (20%) Tubal abortion : poorly defined tubal ring + fluid in pouch of Douglas Ruptured tube : fluid in pouch Douglas

Colour Doppler - Trans vaginal colour Doppler can help to characterise the nature of the adnexal mass thus permitting preoperative diagnosis when the ectopic embryo and its characteristic heart beat cannot be seen. Ectopic pregnancy in such cases is seen an ectopic colour flow usually very prominent and randomly dispersed in side the solid part of the adnexal mass and clearly separated from ovarian tissue and corpus luteum.

Culdocentesis - Needling of the pouch of douglas and the finding of non-clotting blood will indicate an ectopic pregnancy after rupture.

Dilatation and curettage - The finding of a decidual reaction or the Arias Stella reaction can not always establish the diagnosis of ectopic pregnancy.

Laparoscopy - this is likely to be most valuable aid for the gynaecologist presented with clinical problem of the "suspected ectopic".

TREATMENT

Laparotomy followed by salpingectomy of the affected side has been a standard modality of treatment of ectopic pregnancy for many years. However with the introduction of modern diagnostic means, the vast majority of ectopic pregnancies are detected prior to rupture and thus treatment of ectopic pregnancy is changing very fast.

Surgical management - Surgery still remain the treatment of choice for most cases. However the laparoscopic surgery remains the line of choice for both ruptured and unruptured ectopic pregnancy provided vital signs are stable. Laparotomy is indicated in massive intra abdominal bleeding and extensive intra abdominal adhesion. Laparoscopic treatment of tubal pregnancy offers numerous advantages such as reduced operating time, hospital stay, cost, earlier return to activity, improved cosmetic result and morbidity. Linear salpingostomy is the most widely used procedure when the tube is intact. The term salpingostomy is used when the tube is left open to heal by secondary intention. Radical surgery like salpingectomy is absolutely indicated in irreparable damage tube. However the debate now rests on choice of technique either conservative or radical. It was believed that conservative surgery gives better fertility rates subsequently. Current literature suggested the irrespective of the surgical technique used, the condition of contra lateral tube is the most significant factor in terms of future fertility, besides the women's own fertility potential (Verrnegh M et al 1992). Thus modern concept is for doing a salpingectomy rather than conservative surgery in management of ectopic pregnancy.

Non surgical management - This sorts of management of ectopic pregnancy has been fascinating as it obviates the need of surgical intervention. The key to successful non-surgical management is a proper selection of cases. Non surgical management is divided in to two groups medical and expectant management.

Drugs like methotraxate, actinomycin - D, mifepristone etc, alone or in combination are used. Many results has been tried like systemic injection or by local injection of drugs into the gestational sac either laparoscopically, transvaginally or by transcervical cannulation. Patients are chosen on the basis of the size of gestational sac (less than 4 cm), an unruptured tube without active bleeding, serum βhCG levels of less than 1500 IU/L and sonographically non viable pregnancy. The success rate of medical treatment is about 80-90%. Approximately 2/3 rd cases tube remain patent. After the procedures, conception rate is 80% and recurrent ectopic pregnancy is 11% (Stovall et al 1991).

Expectant management has limited to those sub group of patient who have minimal symptoms have falling βhCG levels and over a period of time shows demising size of sac on TVS. Potential disadvantages of expectant management include continued peritoneal irritation and subsequently adhesion formation, tubal occlusion, infertility and rarely secondary abdominal pregnancy. There is no particular advantage to the expectant approach in term of future fertility, where as prolong hospitalisation and surveillance has distinct disadvantage (ylastato P et al 1992).

CONCLUSION

Influx of endosonography and endocrinal assays of βhCG has changes the clinical picture of ectopic pregnancy dramatically in recent years from an emergency and a life threatening condition in most cases to a much more benign condition with milder presentation. Medical management give good results in carefully selected cases. Surgical intervention is now the method of choice but preferable one is laparoscopy.

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Role of Dyslipidaemia in Cardiovascular Diseases and the Therapeutic Benefits by the Appropriate Drugs

Hasina Banoo

INTRODUCTION

Coronary artery disease is an important cause of mortality and morbidity in most industrialized nations and is gaining importance as a major disease in developing countries as well. Dyslipidaemia or hyperlipidaemia has been clearly established as a major risk factor for development of coronary artery disease and progression of atherosclerotic lesion. The level of the lipids and the lipoprotein a {LP(a)} in the blood has a close relation to the severity of coronary artery disease (CAD) and predict the response to lipid lowering treatment. Prevalence of CAD, in South-east Asia is going to be the major cause of death by the year 2015 and atherosclerosis is the major cause of under lying CAD. An increase in mortality by 103% in males and 90% in females from 1985 to 2015 is expected.

Coronary artery diseases (CAD) is both preventable and modifiable. Between 1965 to 1990 CAD mortality rate is fell by 60% in Japan and Finland and 50% in Australia, Canada, France and U.S.A. This decline was marginally contributed by preventive, modifiable factors & therapeutic advances. Dyslipidaemia is recognised as the major risk factor for CAD all over the world but it differs from other population among the Indian-Asian (Indian Subcontinent) abnormal lipid profile characterised by not only increase in low density lipoprotein cholesterol (LDL-c) but even their inherent atherogemicity and also markedly increase triglyceride (TG) levels and decrease high density lipoprotein cholesterol (HDL-c). For the last 30 yrs, the circulating LDL-c is regarded as the central issue in atherogenesis. By lowering the LDL-c by statin therapy only 35% of coronary events can be prevented. Other atherogenic factors like TG or Lp (a) or low HDL-c may be involved in the progression of atheroscloretic process.

TYPES OF LIPIDS WHICH ARE CLINICALLY IMPORTANT

1. Total cholesterol 2. High Density Lipoprotein cholesterol (HDL-c) 3. Low Density Lipoprotein (LDL) 4. Intermediate Density Lipoprotein (IDL) 5. Triglycerides 6. LP-a.

Table – 1 : Categories of Elevated Lipid Profile

Category	Total cholesterol Mg/dl	LDL cholesterol Mg/dl	HDL Mg/dl	TG Mg/dl	LP(a) Mg/dl
Desirable	<200 (5.2)	<130	>35	<201	<15
Borderline–High	200-239(5.2-6.2)	130-159		201-400	>20
High	>=240 (6.2)	>=160		>401-600	>25

DYSLIPIDAEMIA

Abnormality of plasma lipids and lipoprotein may be of genetic or familial (primary) or arise as a consequence of endocrine, hepatic or renal disease.

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Primary

Primary hyperlipidaemias include familial/polygenic hypercholesterolemia, familial combined hyperlipidaemia and familial hypertriglyceridaemia as well as rare dislipidaemias such as dysbetalipoprotinaemia.

Secondary

Common causes are –
1. Untreated diabetics 2. Hypothyroidism
3. Nephrotic syndrome and 4. Alcohol abuse

DYSLIPIDAEMIA AND DIFFERENT DISEASES

1. Dyslipidaemia and Cardiovascular Disease

Cholesterol

Significant relationship has been demonstrated between hypercholesteraemia and CAD. The incidence of Myocardial Infarction (MI) is five times higher with CAD, which increases 25 times higher if the patient also have elevated levels of total cholesterol (TC). Both primary and secondary prevention trials have shown reduction of cardiovascular mortality, morbidity and need for revascularization by lipid lowering and statin group of drugs. But the total cholesterol level among the South Asian peoples 75% is usually remains within normal limit i.e. below 200mg/dl, level of serum cholesterol even lower than 150mg/dl has been reported among Bangladeshi with CAD.

LDL cholesterol (LDL-c)

Raised LDL-c has been recognised a primary risk factor by National Cholesterol Education Programme (NCEP). But level of LDL-c not always shows significant differences between with or without CAD. Oxidative modifications of LDL cholesterol (LDL-c) is the crux of atherosclerosis. Population with low LDL-c has a very low incidence of CAD.

A) Effect of LDL cholesterol

Elevated LDL levels appeared to be involved with all stages of atherogenesis. It causes –
- Endothelial dysfunction.
- Plaque formation and growth.
- Plaque instability and disruption.
- Secretion of Various inflammatory mediators and chemoattractants.
  - LDL is also potent mitogen for smooth muscle cells.
  - Induce apoptosis in macrophages.
  - Induce development of metalloproteinases and other enzymes that participate in connective tissue matrix degradation.

B) Effect of HDL cholesterol

Numerous prospective epidemiological studies have demonstrated a continuous inverse relationship between HDL cholesterol level and incidence of CHD. The total cholesterol to HDL cholesterol ratio (4.5:1) is a better predictor of coronary heart disease than the HDL cholesterol level alone. However the national cholesterol education programme has elected to treat the individual lipoprotein levels rather than the ratio. Several studies have demonstrated that low HDL is associated with endothelial dysfunction. It is speculated that HDL-c attenuated the atherogenecity of LDL-c.

Lipoprotein a

Lipoprotein a {LP(a)} is a powerful independent risk factor for premature atherosclerosis and multivessel CAD. It is a subfraction LDL-c but 10 times as atherogenic as LDL.

There are studies in Indian settled abroad that indicate high prevalence of LP(a) associated with premature coronary artery disease. The risk of premature CAD in women increases more than 100 folds when TC/HDL-c ratio is 6 and LP(a) is more than 55 mg/dl, compared with TC/HDL-c ratio of 4 and LP(a) of less than 15mg/dl.

C) Effect of Hypertiglyceridaemia

There is growing evidence that hypertriglyceridaemia is a marker of increased risk for CAD; in fact it can serve as a marker for several atherogenic factors. A simple way to interpret the clinical significance of elevated serum TGL concentration is to consider it as a marker for the atherogenic factors. The association between a high serum TGL and other atherogenic factors theoretically would exist at three levels. First a high TG level would be a marker for raised concentration of atherogenic TG rich LDL. Second an elevated serum TG could be a marker for other lipoprotein abnormalities with which they frequently coexist namely abnormally small particles of LDL's and low serum concentration of HDL.

2. Diabetes & Dyslipidaemia

The risk of coronary heart disease (CHD) death & serious nonfatal CHD events are markedly increased in diabetic patients relative to non-diabetic subjects. Furthermore, clinically manifested CHD has a worst prognosis in a diabetic patient than a non-diabetic subject. The excessive CHD risk in diabetic patients is in part explained by adverse effects of diabetes on serum lipids and other general cardiovascular risk factors but a large part of the excessive risk is evidently caused by enhancing effects of diabetic state itself on atherogenesis and / or thrombogenesis.

Adverse effects of diabetes on S. lipids are more pronounced in NIDDM than IDDM. Dyslipidaemia also causes insulin resistance. Three major conditions are important in the dyslipidaemia that characterizes insulin resistance :-

- Increase TG level. ● Deceased HDL cholesterol level.
- Compositional changes in LDL cholesterol.

Insulin resistance and hyperinsulinaemia enhance alteration in the vasculature leading to atherosclerosis. In addition hyperlipidaemia, hyperglycaemia, hypertension, smoking and homocystine, damage the endothelium, leading to an imbalance in endothellial production of vasoconstrictors versus vasodilators.

Clinical trail in-patients with the dyslipidaemia characteristic of insulin resistance illustrate the potential benefit of successful treatment of dyslipidamia. Both weight loss and exercise can improve the insulin resistance and associated dyslipidaemia. In patients with type II DM certain anti-diabetic therapies can improve the lipid profile by improving insulin resistance.

3. Dyslipidaemia and Hypertension

High plasma cholesterol levels are frequently seen in patients with systemic hypertension. Recent experimental and clinical studies have demonstreted strong correlation between high plasma cholesterol levels and impaired endothellium dependant vascular relaxation. The hypercholesterolaemia contribute to increase the vascular reactivity and systemic hypertension. Hypertension may interact with risk factors in the development of atherosclerosis in coronary and cerebral blood vessels.

4. Dyslipidaemia and Peripheral Vascular Diseases

Deposition of lipid materials in the blood vessels like carotid artery and other peripheral vasculature causes formation of atherosclerotic plaque, which interferes the blood circulation in the respective portion of the body. As a result there may be ischaemic cerebral stroke, TIA and other peripheral vesicular diseases.

5. DYSLIPIDAEMIA AND CEREBROVASCULAR DISEASES

Dyslipidaemia has become and important risk factor for stroke. Recent CARE trial showed a significantly lower incidence of stroke in paravastatin treated group. So statin therapy is now considered as a mode of primary prevention for stroke.

TREATMENT OF DYSLIPIDAEMIA

Reduction of cholesterol is just one part of a program to reduce cardiovascular disease. Other measures including smoking cessation, hypertension control should be addressed properly. If the decision to treat a patient with an lipid lowering drug is made, the clinician must select an appropriate argent based on the

Safety, Efficacy, Cost, Effects on lipid level, Set a goal for treatment

As with all therapies for chronic conditions the therapeutic goal is best approached slowly and steadily, watching carefully for side effects and encouraging continued compliance with non pharamacologic measures but at first, we have to stratify the patients into different risk group.

1. PRIMARY PREVENTION

Primary prevention is for those groups of persons who don't have clinically manifest coronary heart disease but might have catastrophic cardiac event in future. They could be classified into three groups –

a) High Risk group

Persons without clinical coronary heart disease whose risk for major coronary events equal that of patients with established coronary heart disease can be said to have coronary heart disease risk equivalent. This group of people is called high-risk group. For these patients, aggressive risk reduction therapy should be introduced. This group includes – (1) Non-coronary forms of atherosclerotic disease, (2) Type 2 diabetes & (3) Multiple risk factor patients.

b) Intermediate risk group:

Those with two or more risk factor are considered to be at intermediate risk of coronary artery disease.

c) *Low risk group*

Patient having less than 2 risk factors compromise the low risk group

Table – 1 : Primary Prevention.

Smoking goal	Complete cessation		
Blood pressure goal	<140/90 (130/85 in type II DM)		
Glucose goal	Near normal glucose HBAC (7%)		
Antiplatelet therapy	Aspirin 80 mg/day		
Life habit	Diet: NCEP/AHA Step II diet Body wt. Goal: body mass 21-25 lg/min Exercise: moderate intensity exercise (30-60 min) 3-4 times/week		
	High Risk	Int. Risk	Low Risk
Primary lipid goal	<100 mg/dl	<130 mg/dl	<160 mg/dl
Lipid level to start diet therapy	<100 mg/dl	<130 mg/dl	<160 mg/dl
Lipid level to start drug therapy	<130 mg/dl	<160 mg/dl	<190 mg/dl

2. SECONDARY PREVENTION

Secondary prevention is for those, who already have clinically manifest coronary heart disease. The group has the same treatment guide line as for the high-risk group of primary prevention including treatment for then underlying cause.

TREATMENT PLAN

1. Diet therapy

Most treatment algorithms recommend diet therapy as the initial step for all patients with high cholesterol. The three recommended regains are as follows –

Nutrient	Step I diet	Step II Diet	Mediterranean Diet
Total fat	<30% of Calories	<30% of Calories	<4% of Calories
Saturated fat	<10% of Calories	<7% of Calories	<10% of Calories
Polyunsaturated	<10% of Calories	<10% of Calories	<10% of Calories
Monounsaturated	<10% of Calories	<10% of Calories	<20% of Calories
Carbohydrate	50-60% of Calories	50-60% of Calories	40-50% of Calories
Protein	10-20% of Calories	10-20% of Calories	10-20% of Calories
Cholesterol	<300 mg/dl	<200 mg/dl	<300 mg/dl
Total Calories	For desirable weight (For over weight patients)	For desirable weight (For over weight patients)	For desirable weight (For over weight patients)

2. Drug Therapy

a. Statin group

These agents work by inhibiting the rate limiting enzyme HMGCO A reductase inhibitor in the formation of cholesterol. Recent CARE & LIPID trial have shown significant reduction in stroke, MI and mortality. These agents are an exiting advance with relatively few side-effects and are now the drugs of first choice. The beneficial effects of statin on clinical events may involve non lipid mechanism that modify endothelial function, inflammatory response, plaque stability and thrombus formation. It also inhibits platelet aggregation and maintains a favourable balance between prothrombotic and fibrinolytic mechanism.

B. Fibrate group

They act by activating plasma lipoprotein lipase & thus removing cholesterol from blood. These agent are preferable, when there are high blood triglycerides. Fibrate changes the LDLc structural size (increases the LDLc particles size)

C. Nicotinic Acid

It reduces synthesis and secretion of VLDL particles from liver, with secondary reduction of LDL and increases in HDL level. Nicotinic acid also increases the LDLc particles size, and prevents easy filtration of ox LDL in to arterial wall.

D. Bile acid binding resin (Cholestyramine)

These resins work by binding bile acid in the intestine, resulting reduction in enterohepatic circulation. This causes live to increase production of bile acid using hepatic cholesterol. So plasma cholesterol level decreases.

E. Probucol

This probably causes increased excretion of cholesterol in the bile and also reduces amount of oxidized LDL thus preventing progression of atheroma.

Table – II: Selection of Lipid modifying drug

PRIMARY PREVENTION
- Premenopausal women: Statin, Niacin, resin.
- Men (35-75 yr.): Statin, Niacin, resin.
- Post menopausal women: Statin, Niacin.

SECONDARY PREVENTION
- Men: Statin; Niacin, Combination.
- Women: Statin, Niacin, Combination.

BENEFIT OF LIPID LOWERING THERAPY

Several secondary prevention trial have shown that LDL lowering therapy can reduce mortality after myocardial infarction. This was first shown in the scandinavian simvastatin survival study (4S) in high-risk group. The cholesterol and recurrent event (CARE) and the long-term intervention with paravastation in Ischaemic heart disease (LIPID) study, further supported the benefit in patients with average cholesterol group. Primary prevention trial have also shown significant benefit both in a high risk group in west of Scotland coronary prevention study group (WOSCOPS) and in a low risk population in AFCAPS trial. More than 80% individual in AFCAPS study, who did benefit would not have qualified for these therapy under existing guideline. The impressive result of the AFCAPS study raises the important question of whether the NCEP treatment guideline should be broadened.

NEW PARADIGM IS BASED ON THE FOLLOWING OBSERVATIONS

1. *85% of myocardial infarctions develop at sites of relatively less severely occluded, lipid-rich plaque, which rupture, followed by thrombosis and spasm.*
2. *Coronary atherosclerosis is diffuse and subject to plaque rupture throughout the length of the epicardial coronary artery.*
3. *Coronary atherosclerosis alters endothelial and vasomotor function of the microvasculature, causing altered patterns of perfusion on rest / stress perfusion images as a sign of early coronary atherosclerosis.*
4. *The diagnostic accuracy of coronary arteriography for diffuse coronary atherosclerosis is poor (as low as 10%) compared with intracoronary ultrasound.*
5. *Vigorous cholesterol lowering markedly decreases the rate of cardiac events and mortality more than invasive procedures that do not alter long-term survival or cardiovascular events.*
6. *New techniques for interpreting PET perfusion images and absolute flow measurements reflect the presence of diffuse coronary atherosclerosis, endothelial dysfunction, and their changes with vigorous cholesterol lowering therapy.*

CONCLUSION

The available cholesterol lowering therapies could be more beneficial if they were better utilized. Our current guidelines and prescribing practice have not resulted in widespread use of these important preventive therapies. So educational message about guideline and benefits of cholesterol lowering therapy should be incorporated in our national health program to expand patient-physician activities in coronary artery disease prevention.

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Child Malnutrition: Magnitude of Problem, Diagnosis and Management

Iqbal Kabir

SUMMARY

Malnutrition is a major public health problem in the region of South Asia. The situation perhaps more worse in Bangladesh with 40-50% low birth weight, 53% of under five children are underweight and 55% are stunted. This situation of "silent emergency" calls for special attention. Bangladesh Government in association with other international organizations initiated Bangladesh Integrated Nutrition Project (BINP) to combat the malnutrition situation. The project provides food supplementation to all severely malnourished children under 2 years of age and targeted pregnant and lactating mothers. With the success of preliminary results of BINP, the Government of Bangladesh will launch a National Nutrition Program for next ten years to improve the malnutrition situation.

Although, it is a governmental effort, the problem of malnutrition perhaps is multi-factorial and need involvement of various sectors and people of different disciplines. The purpose of this review is to identify the problem and provide practical guidelines for the health professionals for correct diagnosis and management for malnutrition.

INTRODUCTION

Magnitude of Problem

Malnutrition remains a significant public health problem in developing countries including Bangladesh. Malnutrition is one of the leading causes of childhood morbidity and mortality. According to WHO report about 10.4 million under-5 children die each year in the developing countries and about 50% of them are malnourished. In a recent publication of UNICEF, it has been estimated that about 60% of all children under five-year in Bangladesh are malnourished. About 53% of the children under-5 are underweight and 55% are stunted. The problem of protein energy malnutrition (PEM) is related to several factors that include; insufficient food supply, poor dietary habits, malabsorption of foods during infection, food withholding, and recurrent infections due to diarrhoea, respiratory infections, and malaria. Nevertheless, about 40-50% of babies are born as low birth weight that can never attain adequate growth during the later part of their life.

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Inappropriate breastfeeding and untimely complementary feeding practices are also major factors for poor nutritional status in children less than two years. Although, UNICEF/WHO are recommending exclusive breast-feeding until about six months and starting of complementary food at six months and continued breast feeding up to two years, the rate of exclusive breast feeding remained low with 15-20%. Appropriate complementary foods are usually started either too early or too late. Therefore, a significant number of infants become malnourished. They are also at higher risk of having diarrhoea, ARI and other infections. Moreover, these children are more likely to die before their first birth date.

Beside protein energy malnutrition (PEM), other forms of micronutrient deficiencies such as iron deficiency anaemia, vitamin A deficiency, iodine deficiency disorder (IDD) and zinc deficiency are also highly prevalent in Bangladesh. It is therefore, pertinent to address these issues if an effective nutrition intervention programme is undertaken to combat malnutrition in Bangladesh.

Country Programs and GoB initiatives

Considering the magnitude of the problem and potential adverse effects on human resource, Bangladesh Government has initiated Bangladesh Integrated Nutrition Project (BINP) since 1996. The major components of the project to provide supplementary foods to severely malnourished children less than two years, pregnant women with BMI < 18.5, and continue this supplementation to lactating mothers during first six months. This project has been started initially in 20 thanas and further expanded to a total of 60 thanas. The food supplementation is provided through a Community Nutrition Centre (CNC) with a population of approximately 1000-1500. This project is on-going for last four years and is expected to finish by December 2001. A mid term evaluation showed substantial improvement in reducing rate of severely malnourished children (from 18% to 6%), moderate reduction in proportion of low birth weight.

Observing the success with BINP, Bangladesh Government is planning to launch a countrywide programme " National Nutrition Program (NNP) to be started in 2001. The additional components in this new programme include; urban nutrition, adolescent nutrition, newly-married couple strategy and more emphasis on behavioural and communication changes (BCC).

DIAGNOSIS OF MALNUTRITION

Precise evaluation of nutritional status is difficult. Severe malnutrition is apparent, but mild deficiency may be overlooked even after careful physical and laboratory examinations. The diagnosis of malnutrition depends on accurate dietary history, on evaluation of present deviations from average anthropometric parameters, such as bogy weight, height, mid arm circumference and skin fold thickness,

Anthropometry (measurement of nutritional status)

Weight and height are probably the two important measurements that can be taken to assess the nutritional status of a population. Like all measurements, however, they are subject to bias and errors in recording if they are not properly standardized. Few steps are necessary to obtain good measurements.

- Train the health personnel in the proper methods of using the measuring apparatus and scale.
- Adjust the scales regularly before each measuring session.
- Check for observer errors regularly.

Body weight: Body weight of the child should be measured on a standard scale, either nude or with minimum cloths. At least three measurements should be taken and an average of three should be recorded.

Length

For children less than two years recumbent length (crown-heal length) has to be measured. This is usually carried out on a wooden length board. The child is laid on the board, which is itself, a flat surface. The head is positioned firmly against the fixed headboard, with the eyes looking vertically. The knees are extended, usually by firm pressure applied by the assistant, and the feet are flexed at right angles to the lower limbs. The upright sliding footpiece is moved to obtain firm contact with the heels and the length read to the nearest 0.1 cm.

Height

For older children, more than two years, a vertical measuring rod or stadiometer can be employed. The child should stand on a flat surface by the scale with feet parallel and heels, buttock, shoulder and back of the head touching the upright. The head should be held comfortably erect, with lower border of the orbit of the eye in the same horizontal plane as the external canal of the ear. The arms should be hanging loosely at the sides. The headpiece of the measuring device, which is usually a metal bar or wooden block, is gently lowered and placed on the top of the head firmly. At least three measurements should be taken and average of three should be recorded.

CLASSIFICATION OF MALNUTRITION

Anthropometric

Gomez classification: This classification is based on ideal weight-for-age, which is derived from a reference growth chart National Centre for Health Statistics (NCHS). This classification has three categories; 1) First degree or mild, 2) second degree or moderate, and 3) third degree or severe malnutrition.
The calculation is being done as percent of 50th centile of NCHS, which is obtained by measuring the actual body weight of the child and dividing it by the median body weight from the NCHS growth chart.

1) First degree malnutrition: weight-for-age, 76-90% of NCHS median
2) Second degree malnutrition: weight-for-age, 60-75% of NCHS median
3) Third degree malnutrition: weight-for-age, < 60% of NCHS median

Waterlow classification

Underweight : Underweight is a measure of malnutrition according to the weight-for-age. It indicates a deficit in body weight for child of the same age and sex.
Stunting : Stunting is a measure of malnutrition according to the height-for-age. It indicates reduced growth in height/length compared to the expected height for a child with same age and sex. Stunting is usually end result of chronic energy deficiency.
Wasting : Wasting is a measure of malnutrition according to the weight-for-height. It indicates deficit in body weight for a child with same height and sex. Wasting usually indicates acute energy deficiency.

Clinical classification

This is also called Welcome classification and categorized as 1) Kwashiorkor, 2) Marasmus, and 3) Marasmic-kwashiorkor. Clinical classification is based on weight-for-age, but added on presence of pedal edema.
Kwashiorkor: Kwashiorkor is defined as child having weight-for-age > 60% of NCHS median with edema. Usually other clinical signs such as hepatomegaly, typical skin rash and hyperpigmentation, friable discoloured hair.

Photgraph of a child with Kwashiorkor showing Swelling leg and hyper pigmented skin.

Marasmus: is defined as a child having weight-for-age < 60% of NCHS median without edema. The patient with classical marasmus has obvious gross loss of muscle, particularly of the buttocks and loss of subcutaneous fat. The pinched look of the face gives an "old man" look.

Photgraph of a child Showing loose skin with loss of subcutaneous fat.

Marasmic-Kwashiorkor: is defined as a child having weight-for-age < 60% of NCHS median and with pedal edema.

MANAGEMENT OF SEVERE MALNUTRITION

Management of severe malnutrition can be divided into three phases; acute phase, rehabilitation phase and follow-up phase.

Acute phase: In a recent study at ICDDR,B a standardized management protocol has been found to be effective and reduced the mortality by nearly half. (Lancet, 1998). The principles of the acute phase treatment are to stabilize the patients and correct dehydration, electrolyte imbalance, hypoglycemia, and more importantly treatment of infections.

Infections: Usually an underlying infection is present in most severely malnourished cases. Because of poor inflammatory response, the usual physical signs of infections are not obvious, infections expresses itself as apathy, drowsiness, hypothermia, hypoglycemia and death. A broad-spectrum antibiotic coverage should usually be started. An easily digestible liquid diet should be started as soon as possible and at regular intervals, to prevent hypoglycemia.

If the child is dehydrated and has diarrhoea, oral rehydration solution (WHO-ORS) can be given. Although, some authors recommends a low sodium and high potassium containing ORS, which has been shown to be effective. The child should also receive a micronutrient-vitamin syrup as most of the children with severe malnutrition have multiple nutrient deficiency.

DIETARY MANAGEMENT

Children should be started with a semi-soft diet and total energy should not exceed 80-90 kcal/kg/day. Because the amount of food that the intestine, liver, and kidney can handle is limited. Therefore, the diet must be divided into many small feeds at frequent intervals. The diet should contain all the essential nutrients (minerals, vitamin, protein, energy, and fat).

REHABILITATION PHASE

The appetite is used as a barometer of progress. The return of appetite means the infections are under control and there is no major electrolyte imbalance. The duration of the acute phase is usually about 5-7 days. After which the amount of diet and energy should gradually be increased up to 150-180 kcal/kg/day to attain catch-up growth. The child should be offered the food frequently and encouraged to eat more. During this period a home based diet such as khichuri with added oil can be offered to the child. It usually takes about 2-3 weeks to attain a growth that child can be discharged and asked to come for follow-up.

Follow-up: The child should be asked to come at least every fortnight to come for follow-up at a day care follow-up centre. The child should be monitored for growth and development and any illness should be reported. Mothers or caregivers also should be given health and nutrition education with regards to proper caring practices.

CONCLUSION

The problems of malnutrition are multifactorial and deserve concerted efforts by various sectors, the society as a whole, at medical, social, ethical, moral and political levels. Malnutrition amongst children and the elderly is the most common serious illness in the world today. The legacy of childhood malnutrition is to be seen in adult who is stunted physically and mentally. More recent studies indicate that childhood malnutrition is a risk factor for many chronic diseases in adulthood.

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Antioxidant as Antibacterial : A Hypothesis

Belal Mahmood[1], Cyrus Sakiba[2], M. A. Rahim Chowdhury[3]

INTRODUCTION

Vitamin E is the form of alpha - tocopherol ($C_{29}H_{50}O_2$). It includes the following d - or dl- alpha tocopherol ($C_{29}H_{50}O_2$)d or dl-alpha tocopheryl acetate $C_{31}H_{52}O_3$. It contains not less than 96.0% and not more than 102.0% $C_{29}H_{50}O_2$ $C_{31}H_{51}O_3$,$C_{33}H_{54}O_5$.[1]

The absorption of vitamin E from the gastrointestinal tract is dependent on the presence of bile on normal pancreatic function and upon the dose. It enters the blood stream via chylomicron, in lymphatics and is distributed in all tissues and stores in adipose tissue[1,8]. Some vitamin E is metabolized in liver to glucoronides of tocopheroic acid and its y - lactone and is excreted in the urine, but most of the dose is slowly released in the bile. Vitamin E appears in breastmilk but is poorly transferred across the placenta. The daily requirement of Vitamin E has not been clearly defined but it is probably 3 to 20mg[1,2]. The requirement increases with increased dietary polyunsaturated fatty acids. Vitamin E is widely distributed in food. The richest source are vegetable oil specially wheat germ oil. Sunflower and cottonseed oil, cereals and eggs are also good sources. It does not appear to be destroyed by cooking processes[1,3]. The primary role of Vitamin E (Fat Soluble Vitamin) is the prevention of oxidation of polyunsaturated Fatty Acids (PUFA). Vitamin E reacts with free radicals which are the cause of oxidative damage to cell membrane, without the formation of another radical in the process[1,8].

TOXIC EFFECTS OF FREE RADICALS

During normal metabolism of Oxygen in the body, most of it entering cell- leaves as carbon dioxide. 95% of remaining Oxygen converts to water with addition of 4 electron. Only 5% undergo addition of one electron so become unpaired and result in formation of free radicals[11].

These agents are Singlet Oxygen (0^-), Superoxide anion radicals (0^-_2) and hydroxyl radicals (OH^-). These compounds sometimes with some common metals like copper, Iron and cobalts attack on important group of tissues, constituents notably lipids, and causing[1] lipid peroxidation in the human body. The mechanism involved in this process is called 'Oxidative Stress'. Following the stress there is tissue necrosis[11].

FREE RADICALS AND BACTERIA

In Bacteria there is aerobic and anaerobic respiration. This mechanism is maintained through electron transport. The typical electron transport is shown as follows[10].

Flavoprotein → Coenzyme Q_{10} → Cytb → Cytc → Cyta → 0_2

It is oxidation-reduction process which determines the final product including energy production. This process is catalyzed by flavoprotein and cytochrome. In aerobic respiration molecular Oxygen is the final electron recipient, where as in Anaerobic process Oxygen is absent and other organic/inorganic molecule is the final electron recipient. In view of the previous information Aerobic Micro - Organism produce CATALASE an enzyme that breaks down the hydrogen peroxide to water and Oxygen.[9,10]

$$2H_20_2 \longrightarrow 2H_20+0_2$$

Most anaerobic micro organism lack Catalase and Peroxidase. As a result reduction of Oxygen results in the production of free radicals. These compounds are very toxic to the bacterial cell. The most important component is Superoxide anion 0^-_2[9,10].

All aerobic bacteria poses the enzyme Superoxide dismutase which scavenges the Superoxide radical.

$$0^-_2 + 0^-_2 + 2H^+ \xrightarrow[\text{Dismutase}]{\text{Superoxide}} H_2O_2 + O_2$$

Moreover the presence of catalase in these aerobic organisms prevents accumulation of the toxic H_20_2 formed from O^-_2. One explanation for the sensitivity of obligate anaerobes to Superoxide radical (O^-_2) can be very toxic because it can be converted to hydrogen peroxide, which is dangerous as well (reaction shown above).

Strict anaerobic bacteria do not produce enzyme Superoxide dismutase. Moreover the enzyme peroxidase destroys any peroxide produced by the Flavoprotein enzyme. H_2O_2 production is destroyed by Flavoprotein, Peroxidase or NADH Oxidase,

$$NADH+H^+ + H_2O_2 \xrightarrow{\text{Peroxidase}} NAD + 2H_2O$$

The ideal anaerobic electron transport system is nitrate respiration in which nitrate is used as the terminal electron acceptor, and the product is finally reduced[1].

$$NO_3 + H_2 \xrightarrow{\text{Reductase}} NO_2 + H_2O \xrightarrow{\text{Reductase}} NO + H_2O$$

NO_2/NO are highly toxic to the growth of the Bacteria and therefore are bactericidal.

So far, Metronidazole (bactericidal) is ideal for anaerobic infection. It acts as 'Electrons Sink'. The nitro group of this drug accepts electron from Flavoprotein, thus depriving the Bacteria from required electron. Eventually the end product is toxic to the DNA synthesis of the Bacteria. Recently, Alpha-Tocopherol is receiving lot of attention regarding is role as "Lipid Peroxidation inhibitor."

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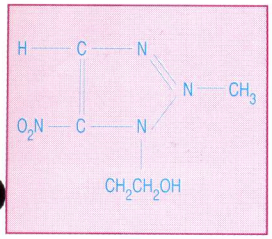
This Lipid Peroxidation is initiate at the Lipid bi-layer within the cytoplasmic membrane, which consists of fatty acids[10].

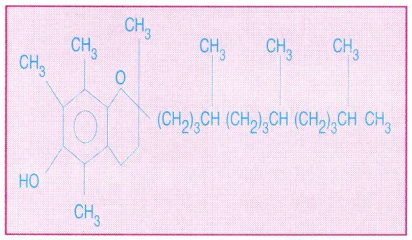
This Fatty Acids are involved in electron transport and oxidative phosphorylation in aerobic Bacteria. From studies it is evident that α-Tocopherol blocks the chain reaction of lipid peroxidation by trapping intermediate peroxyal radicals[13]. It would therefore be interesting to explore the influence of α-Tocopherol upon cytoplasmic memberne of anaerobic bacterial.

The following are the molecular structure of metronidazole and α-Tocopherol.

Metronidazole :



α-Tocopherol



The α tocopherol has remarkable similarity with Quinones (Coenzyme Q_4) both of which are lipid soluble. Coenzyme Q act as electron acceptor and donor, throughout the respiratory chain[10,12]. Therefore probably Vitamin - E can compete with Quinones and thus by competitive antagonism the ATP synthesis is inhibited inside the Bacteria.

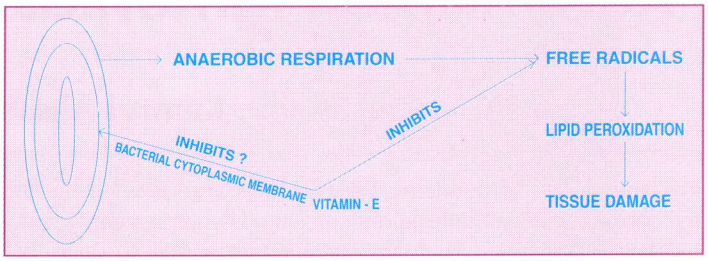
ANTIOXIDANT AND BACTERIA

Bacterial cell, in particular anaerobic bacteria lack enzymes such as catalase, Superoxide Dismutase and Peroxidase. As a result- free radicals, which are, produced, are not metabolized and continue its toxic effects both on bacterial cell and in human system.

In Clinical condition like anaerobic "Septicaemia" there may be enormous generation of these potential toxic radicals and Vitamin - E may neutralize these toxic compounds. Previous studies show that *Helicobacter pylori* is believed to be associated with production of reactive Oxygen molecules which leads to Oxidative Stress in gastric mucosa[5]. Studies have also shown that during chlamydia infection in male genital tract, there is excessive reactive Oxygen-production[4]. Moreover experiments have demonstrated that group B Streptococci, E-coli and pseudomonas Aeruginosa, probably by their production of reactive oxygen species can cause Lipid Peroxidation of lung tissue[6]. α–Tocopherol was found to decrease lipid peroxidation in this study and in other investigations as well[6,7].

These information suggest that there is close link between Bacteria, Free Radicals and lipid peroxidation. Presumably the bacterial toxin are converted into free radicals and membrane phospholipids present in the Bacteria would also generate highly reactive substances. Eventually these toxic products are accumulated in the human system. The detrimental effects of free radicals originated either from bacterial cell or human tissue, can effectively be controlled by α-tocopherol.

HYPOTHETICAL MODEL OF a-TOCOPHEROL ACTION



ANAEROBIC BACTERIA

CATALASE SUPEROXIDE DISMUTASE PEROXIDASE	ABSENT

CONCLUSION

In view of this hypothesis, there is partial explanation about the role Vitamin - E on bacterial infection. Antibiotics like Clindamycin and Metronidazol are ideal Antimcirobial agents for anaerobic infection. Anaerobes of clinical importance are Anaerobic Streptococci, Bacteroides, Clostridium, Veillonella and Actinomyces.
Resistance to Metronidazol has been reported particularly in Anaerobic Bacteria and this may be important in developing countries, where there is frequent use of this drug.
Currently α-Tocopherol is receiving more attention as anti-infections therapy. It would therefore be interesting to note the effects of α-Tocopherol on bacterial growth at various incubation times. On the basis of its antimicrobial properties, further research is needed in order to establish the synergistic action of Vitamin - E and Metronidazol. It is therefore our speculation that Antioxidants may act as Antibiotic in view to justify the present hypothesis.

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Xeroderma Pigmentosum (XP) - A Case Report

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We report a case of Xeroderma Pigmentosum who attended our BIRDEM Skin OPD with the complaints of multiple painful, ulcerated hyperpigmented nodules and plaques with exudation, crusts and gradually spreading from face to scalp, body for last 12 years. Initially the lesions were macular and started to appear on her sun exposed areas at the age of 5 yrs. The hyperpigmented lesions gradually spreaded and on exposure to sun light there was peeling of her skin with erythema and burning. Later on she developed multiple soft painful nodular swelling with ulceration on face and scalp which were operated several times but results were delayed and improper healing. Chemotherapy and local radiotherapy were also given. She had no ophthalmological or neurological complaints except photophobia. Several biopsy specimens were taken from different sites which confirmed Basal Cell Carcinoma, Squamous Cell Carcinoma, Seborrhoeic Keratoses and Solar Keratoses. Different modalities of treatment including curettage and cautery on big lesions, cryotherapy on small lesions and topical application of 5 Fluro-uracil were given. Improvement was not satisfactory with re-appearance of new lesions. Finally on radiation therapy, the big lesions improved. Our observation is that it's rare disease in our population. We have reviewed the case with all classical complications of Xeroderma Pigmentosum.

Fig. 1 : Showing large surgical scar, actinic Keratoses as well as multiple hyperpigmented nodules & plaque.

INTRODUCTION

Xeroderma Pigmentosum (XP) is a rare autosomal recessive disease characterized by photosensitivity, pigmentary changes, pre-mature skin aging, neoplasia and abnormal DNA repair. Some patients with Xeroderma Pigmentosum have, in addition, neurological complications. XP has 8 different (A-G) and XP variant subtypes on the basis of various chromosomal localization. XP occurs with an estimated frequency of 1:2, 50000 in USA and Europe. It is more common in Japan (1:40,000). Male and female ratio is almost equal. There is no data regarding incidence of XP in our population.

Fig. 2 : Showing large crusted ulcer (s.s.c) on the middle of scalp.

CASE REPORT

A 45 years old non diabetic, normotensive house wife having one son hailing from Dohar, Nowabgonj, Dhaka attended on October 24, 1999 with the complaints of - Multiple painful, ulcerated hyperpigmented nodules and plaques with exudation and crust and gradually spreading from face to Scalp, body - for 12 years. She started erythematous macular lesions on face, upper limbs, chest and back at the age of 5 years. There was no burning, no itching or no relation to sun exposure. She started peeling off her skin with erythema and burning while exposed to sun. But there was no eruption or vecsicles or blister. The hyperpigmented lesions gradually spreaded without significant complaints.

12 years back, she developed soft painful nodular swelling with ulceration (6x8 cm) on her forehead, which was operated in Holy Family Hospital and discharged with proper healing. After about 4 months, there appeared new lesions on her face and upper part of body. She was operated 4 times on several occasions within 10 years on several sites, which had delayed improper healing. one year after first operation, local radiotherapy was given with total 15 exposure with satisfactory regression.

Fig. 3 : Showing several large hyperpigmented scbo. Kerototic lesions front & below the ear as well as multiple macular hyperpigmented lesions.

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Then she consulted dermatologist. Many topical medication including antibiotic, anti-fungal and steroid as well as repeated cryotherapy were given.

On July 16, 1998 she was admitted in a private clinic with multiple, small ulcerated nodules on scalp and body including a big ulcer on right supraauricular region. She was given chemotherapy consisting of MTX (50 mg), Leucovorin (15 mg), Bleomycin (15 mg) on several occasions.

She came to BIRDEM on October 24 1999 with infected, painful multiple nodules with ulceration, swelling, exudation and crust having offensive smell on scalp, face, chest, back and upper arms. She had no ophthalmological or neurological complaints except photophobia. She had positive family history of same disease. Her brother died in the same disease at the age of 50 yrs.

Our provisional diagnosis was Xeroderma Pigmentosum with Basal cell carcinoma, Squamous cell carcinoma, Melanoma, Sebo. Keratoses and Solar Keratoses. Under systemic antibiotic cover 3 biopsy specimens were taken from different sites for histopathological confirmation which revealed Solar Keratoses, Pigmented Sebo. keratoses, and Pigmented B.C.C Previously, S.C.C was confirmed histologically from operated specimen.

We advised her to avoid sun exposure with use of sun blocking cream for lifelong. 5 Fluro-uracil was applied topically on Solar Keratotic lesions till clear once. Curettage and cautery was done on big lesions and cryotherapy was given on small lesions. Improvement was not satisfactory with appearance of new lesions. Finally on radiation, the big lesions improved. She was advised for follow up regularly. But she did not attend properly.

Fig. 4 : Showing multiple pigmented maculopapular lesions of varying size and intensity as well as some nodular lesions on the back.

DISCUSSION

XP is a hereditary disorder in which photosensitivity is associated with distinct clinical and cellular phenotypes. XP involves DNA repair and replication deficiencies that predispose homozygous individuals to a 1000 fold increase in nonmelanoma and melanoma cancers on sun exposed skin surface. Genetically different forms of XP have been identified by cell fusion. The classical form of XP ranges from group 'A' to 'G'. Genetic and molecular analyses have revealed that the repair of ultraviolet induced DNA damage is impaired in classical form of XP patients owing to mutations in genes that form part of a DNA repair pathway known as nucleotide excision repair (NER). In contrast the cells belonging to the variant class of XP are NER proficient and are only slightly more sensitive than normal cells to the killing action of UV light radiation.

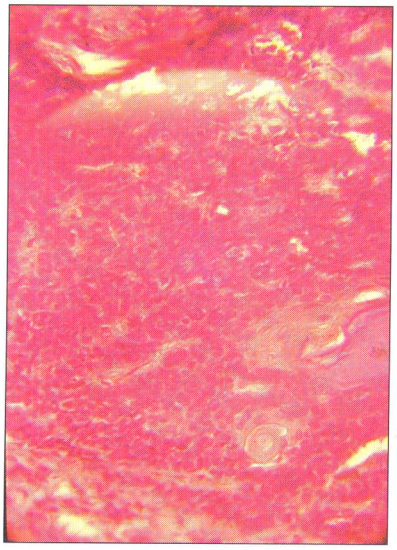

Fig. 5 : Showing basal cell carcinoma cells of different shapes and sizes, The peripheral cell layer of the tumour masses shows a palisade arrangement of the nuclei.

XP occurs in all races. There is little information on its clinical picture, frequency and types of malignant lesions in individuals of Bangladeshi population. Our common people even the general physicians are not aware about the disease. That is why our patient was late to consult proper clinician. She attended with multiple complications of XP. About her management, different modalities of treatment including aggressive chemotherapy and radiotherapy were applied. But it was difficult to control recurrence of lesions.

Management of patients with XP is based on early diagnosis, life long protection from UV radiation exposure and early detection and treatment of neoplasm. It is advisable to have a night job and consanguinity of marriage should be discouraged.

About XP complementation groups (A-G) and variant, we could not specify the group in our patient. Because the molecular level investigations are not available in our country. However at this moment, proper observation and awareness about XP among general population and physicians should be emphasised.

Fig. 6 : Showing hyperkerotosis, papillomatosis as well as cystic inclusions of horny materials of seborrheic Keratoses.

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Medi News

News from Internet/Journals

MEDICINE

ACE INHIBITORS ARE SAFE FOR HEART FAILURE IN PRIMARY CARE

Despite firm evidence of their effectiveness, angiotensin converting enzyme inhibitors are under used for patients with heart failure in primary care, and doctors remain concerned about potential side effects. Mason et al. analysed individual patient data from the studies of left ventricular dysfunction and found that less than 2% of patients who received a test dose of enalapril experienced side effects severe enough to stop treatment. Angiotensin converting enzyme inhibitors can be started safely in primary care and remain highly cost effective when the costs of diagnosis and starting treatment are included.

A PROTEIN'S HEALING POWERS

Millions of older people every year develop wounds, such as diabetic ulcers and bedsores, that just don't heal. These wounds are not only painful but costly to treat. A protein found in several bodily fluids, however, may eventually provide some relief. According to a report in the October issue of the journal *Nature Medicine*, research conducted on mice demonstrates that a protein called secretory leukocyte protease inhibitor (SLPI, or "slippy") is critical in healing normal wounds. Furthermore, topical application of SLPI to nonhealing wounds reversed tissue destruction and promoted healing.

Previous investigations had suggested that SLPI plays a role in mending wounds, revealing that the protein has antibacterial, antiviral, anti-inflammatory and antifungal properties. The new study sought to identify SLPI's role more specifically. To that end, researchers at the National Institute of Dental and Craniofacial Research-genetically engineered a line of mice that lack the SLPI gene. These knockout mice, they observed, exhibited greatly compromised wound healing, increased inflammation and increased activity of an enzyme known as elastase, which destroys tissue. "SLPI appears to be a component of innate or natural host defence that maintains a balance between protective inflammatory responses and overzealous or uncontrolled inflammation that can lead to tissue destruction and failure to heal," reports principal investigator Sharon Wahl.

Given that SLPI is found in saliva, among other fluids, the researchers suggest that the wound-licking behaviour of many animals may be nature's way of administering SLPI. And research conducted in recent years showed that SLPI in saliva can inhibit HIV-1 infection. Whether topical application of SLPI can help chronic human skin wounds should become apparent in a clinicall trial, which is currently being planned.

HELICOBACTER PYLORI LINKED WITH VITAMIN B12 DEFICIENCY

New research has given further support to a suggested link between *Helicobacter pylori* infection and vitamin B12 deficiency.

Investigators previously found that both pernicious anaemia and food-cobalamin malabsorption-the most common causes of vitamin B12 deficiency, especially in older people-were associated with chronic gastritis and might be associated with *H. pylori* infection.

To test this in more detail, gastroenterologists prospectively studied 138 patients with macrocytic anaemia and vitamin B12 deficiency that did not have a classic cause, such as pernicious anaemia or postgastrectomy state, and who had *H. pylori* confirmed by gastric biopsies.

H. pylori infection was eradicated with a triple-therapy regimen and eradication was confirmed by further gastric biopsies after four weeks. All patients were followed up at three-month intervals for up to five years.

None of the patients infected with *H. Pylori* received vitamin B12 replacement unless the *H. pylori* could not be eradicated.

A total of 77 (55.8 percent) patients were infected with *H. pylori*. eradication was successful in only 31 cases (40.3 percent). In all patients with *H. pylori*, serum vitamin B12 levels, macrocytosis and anaemia were normal within six months of the infection being vanquished.

Although multi-stage Schilling and auto-antibody tests were not performed, and the histological findings of the gastric biopsy were not reported, the findings did support a relationship between *H. pylori* infection and vitamin B12 deficiency, the authors concluded.

They suggested that eradication *H. pylori* infection might correct vitamin B12 levels and improve anaemia by reversing gastric atrophy related to the infection.

POTATO VACCINE AGAINST HEPATITIS B

Given the choice between a needle in your arm and a few lunches of (raw) potato chips containing a vaccine, which would you prefer? Though still far from reality, edible vaccines have come a small step closer: in *Nature Biotechnology*, Hugh Mason, Charles Arntzen and their colleagues from New York State report that a hepatitis B protein produced in potatoes leads to an immune response in mice. They also improved the technique for making the protein in potatoes.

The scientists fed mice three doses of raw potatoes containing the hepatitis B surface antigen (HBsAg) and also gave them cholera toxin, an adjuvant that stimulates the immune response. After three weeks, the mice developed antibodies against hepatitis B; this response declined within weeks. But when the mice were injected with a low dose of a commercial vaccine at this point ("low" meaning not enough to make them immune), the antibodies came to very high levels. Thus, the potato vaccine had probably created memory cells that the injection activated.

In the second part of their study, the researchers tested various methods to increase the yield of HBsAg production in potatoes. Sufficient yield is a crucial factor for successful edible vaccines because the stomach and intestines digest most of the useful protein before it can reach the immune system. The greatest improvements resulted when the scientists used a different signal sequence-called polyadenylation signal-at the end of the HBsAg gene. This signal might stabilize the messenger RNA from which the protein gets translated.

The next step will be to test the effects of the potato hepatitis vaccine in humans. This testing has already been done with edible vaccines against the Norwalk virus and against pathogenic forms of *E. coli*- both of which cause diarrhoea. Ultimately, a cheap plant vaccine for hepatitis B could help the two billion people who are infected, many of them in developing countries.

THERE ARE A FEW 'SAFE" DAYS IN MENSTRUAL CYCLE

It is usually assumed an average woman is fertile between days 10 and 17 of her menstrual cycle. But researchers at the National Institute of Environmental Health Sciences have demonstrated what some accidentally pregnant women may have long suspected : Only about 30 percent of women actually have their fertile window entirely within that time span.

In fact, the researchers found, there is hardly a day in the menstrual cycle during which some women are not potentially fertile. Women in this study were of prime reproductive age (most between 25 to 35), when the menstrual cycles are most regular. Because teenagers and women approaching menopause have less regular cycles, their windows of fertility might be even more unpredictable.

Describing data from nearly 700 menstrual cycles of 213 healthy North Carolina women, NIEHS' Allen J. Wilcox. M.D., Ph.D., statistician David Dunson, Ph.D., and epidemiologist Donna Day Baird, Ph.D., reported in

the *British Medical Journal* (Vol. 321, pp 1259-1262) that the timing of women's fertile window "can be highly unpredictable, even if their cycles are usually regular."

Dr. Wilcox, a physician and chief of epidemiology at NIEHS, said, "If the average healthy couple wants to get pregnant, they are just as well off to forget 'fertile windows' and simply engage in unprotected intercourse two or three times a week." As for those seeking to use the cycle to avoid pregnancy, the odds are not good.

"Our data suggest there are few days of the menstrual cycle during which some women are not potentially capable of becoming pregnant - including even the day on which they may expect their next menses to begin," according to the new scientific report.

With cycle day one being the day of the actual onset of menstrual bleeding, the researchers showed that 2 percent of women were starting their fertile window by day four, 17 percent by day 7. More than 70 percent of normal women were in their fertile window before day 10 or after day 17, leaving few universal "Safe" days for such natural birth control systems as the "rhythm method." Even women who regard their cycles as "regular" had a 1 to 6 percent probability of being fertile on the day their next period was expected.

To obtain precise fertility information, the study required that the women volunteers provide daily urine samples that the researchers could test for estrogen and progesterone. An abrupt change in the ratio of these hormones marks the event of ovulation. This signal was used to identify days of ovulation during 696 menstrual cycles.

In previous reports, Wilcox and colleagues had shown that the fertile window spans six days, ending with the day of ovulation. In the new report they find that sporadic late ovulation occurs even in women who say their cycles are usually regular. Because of these late ovulations, the researchers show, 4 to 6 percent of women are potentially fertile in the fifth week - more that 28 days after the start of their cycle.

Having intercourse during a fertile day does not always produce a pregnancy, which also depends on the viability of the sperm and egg, the receptivity of the uterus and other factors that vary widely among couples.

NEW TEST PROVIDES BETTER DIAGNOSTIC LOOK AT SICK HEARTS

SPRINGFIELD, Massachusetts (AP) - A new diagnostic technique can give doctors a better look into the heart wall and tell them more accurately which heart attack patients will benefit from bypass surgery or angioplasty, a study has found.

The technique, known as contrast-enhanced magnetic resonance imaging, can see through the entire thickness of the heart wall - typically four-tenths of an inch-and tell doctors which tissue can be saved and which is dead. The common scanning techniques now in use can read only the surface.

The new technique "is sensitive that we can pick out heart attacks in people who didn't even know they had one," aid Dr. Raymond Kim, who led the study.

The researchers at Northwestern University and Siemens Medical System, both in Chicago, studied 50 patients with coronary artery disease. Their findings were reported in *New England Journal of Medicine.*

The new technique combines traditional magnetic signal tests and a common dye with new software to yield more sensitive readings.

The researchers divided the heart images into 72 segments. In 78 percent of segments with no indication of dead tissue, heart function improved with a bypass or angioplasty, which send more blood to the heart.

In segments where more than 75 percent of the tissue looked dead, just 2 percent pumped more strongly after bypass or angioplasty.

"The data are exciting and quite promising," said Dr.George Beller, a University of Virginia cardiologist who wrote an accompanying editorial.

However, he said more research is needed on sicker patients. Kim said the enhanced MRI technique may come to replace the widely used imaging techniques of echocardiography and tomography for many patients.

NUTRITION

WHAT'S GOOD ABOUT GARLIC AND EGGS

Three recent papers in two journals point out the power of certain foods to ward off disease. In the October issue of the *American Journal of Clinical Nutrition,* Lenore Arab and her colleagues at the University of North Carolina at Chapel Hill (UNC-CH), describe the results of a meta-analysis that reviewed 300 papers looking at the effects of garlic on cancers of the digestive system. In all, they found that people who regularly consumed garlic-raw or cooked-face half the risk of stomach cancer and a third the risk of colorectal cancer as people who ate little or none. The same doesn't hold for garlic supplements. Although they say that the meta-analysis by *Nature* may overstate the benefits of garlic somewhat, the findings were consistent. And earlier work has shown that allium, a compound found in garlic, at least partially protects animals against cancers.

Steven H. Zeisel, also of UNC-CH, relays the protective effects of choline in a supplemental section of October issue of the Journal of the *American College of Nutrition.* "Research with animal models shows that if you don't have enough choline during pregnancy, the brain doesn't develop normally and the babies are born either with defective memory or lower memory capabilities that last throughout their lives," Zeisel says. So he tested the flip side of the coin, giving rates choline in utero or during the second week of life. He found that these animals indeed had better than average memories for life, functioning that is most likely improved-thanks to developmental changes in the hippocampus.

Choline is readily available in eggs, which are also a rich source of luetin and zeaxanthin. Another paper in the same journal issue explains how these carotenoids may help protect the eyes from oxidative damage, thereby reducing the risks of cataracts and age-related macular degeneration. Luetin and zeaxanthin are also found in certain vegetables, such as spinach, but eggs are a particularly good source because their lipid matrix makes the carotenoids easier to absorb. "Although additional research studies on the relationship between egg consumption and diseases of the eye are necessary," says the paper's author, Jeffrey Blumberg of Tufts University, "these findings show promise as a key to decreasing the risk of leading eye diseases."

NEUROSCIENCE

IS YOUR BRAIN THINKING ON ITS FEET?

Sometimes feel like you just weren't ready? Well, may be your brain wasn't. Researchers at the University of Pittsburgh School of Medicine say they have found the part of the brain that makes sure you are prepared to deal with the unexpected. According to their new study, presented this week at the annual meeting of the Society for Neuroscience, the dorsolateral prefrontal cortex (DLPFC)-a part of the frontal lobe, which is responsible for higher cognitive functions like organizing and problem solving-becomes active when a person gets ready to execute a task. Furthermore, the greater the activity in the DLPFC, the better the person actually performs.

To uncover this correlation, the researchers, led by Cameron Carter, used functional magnetic resonance imaging (fMRI) to monitor their subjects' brain activity as they solved different cognitive problems. In the initial test, the participants were asked either to read a word or to name colour of the ink it was written in. Sometimes the text and colour contradicted, so that the word red, for example, was written in blue. Simply reading the word was easy, but when the test takers were asked to name the colour instead, their DLPFCs became very active.

In a second experiment, the researchers looked at how test takers coped with switching tasks. They discovered that those who knew to expect the unexpected had higher activity in their DLPFCs than those who didn't. By the same token, the DLPFC remained inactive when people performed repetitive tasks. "The DLPFC seems to look forward to what the brain needs to do next in order to perform the task better," Carter said. " We found that people whose brains can activate the DLPFC quickly as they get ready to do a task perform much better than those whose brains can't."

The scientists also found that another brain area related to performance, the anterior cingulate cortex (ACC), became active during the first test. In earlier work Carter discovered that the ACC keeps the brain alert to possible mistakes-exactly what was needed in the colours versus words scenario. "The bottom line is that although many regions of the brain work together and participate in executive functions, different regions appear to make unique contributions to the process," Carter explained. The scientists hope that this research will lead to a better understanding of the pathways the brain uses to perform cognitive functions, which in turn might help to explain and possibly treat such psychiatric disorders as schizophrenia.

Health in the Light of Islam

Health occupies a very lofty and high position in Islam. Islam puts greater importance on good and sound health of man. It is because a man is a combination of soul and body. When a man believes in The Omnipotent Allah who has created him and made him *Khalifa*-His representative on this planet, he becomes a *mumin*. A *mumin* has to undergo a long journey starting from this world-terminating to the world hereafter where he will meet with his creator and live there an eternal life, full of bless, peace and happiness. Prophets of The Allah were sent to mankind to prepare them and make them capable of that eternal life. As the body is a carrier of soul, without which soul's journey to heaven is not possible, so the human body occupies second position next to *Iman (faith)*. *The prophet Muhammad* (peace be upon him) said, "Two great blessings The Allah has bestowed on man-the time and good health." Great Scholar in Hadith literature Hazrat Abdullah bin Mubarak narrates this Hadith in his famous book "Kitabuzzohud" in the very beginning. *The Prophet Muhammad* (peace be upon him) again said, "The strong mumin is beloved to The Allah more than a *mumin* who is physically weak." So Islam does not like that its followers should neglect this vital aspect of their lives. Under any circumstances a *mumin* can not be careless and unmindful about the most precious time allotted to him and health he is blessed with. He must make best use of these two things. *The Prophet Muhammad* (peace be upon him) said, "Take advantage of five things before another five things-your youth before you become old, your health before you become sick, your wealth before you become poor, your free time before your are occupied by your worldly activities and your life before your death".

Medi Tips

Speedy suturing in children	When only two or three stitches are needed to close a laceration in a child (and speed is a virtue), you will find it helpful to shorten the length of suture material so that you can control the needle better. Less time is then spent pulling through extra unneeded material, and less tangling and interlocking occur.
Avoiding pitfalls of fecal occult blood testing	Fecal occult blood testing is designed for screening asymptomatic persons over age 50 for colorectal neoplasms. To minimize the incidence of false-positive and false-negative results, the following steps are necessary. • For 3 days before and during testing, patients should avoid eating red meat, fruits such as cantaloupe, and vegetables such as broccoli, turnips, radishes, and cauliflower, Vitamin C, aspirin and nonsteroidal anti-inflammatory drugs should also be avoided. • Two samples of each of three consecutive stools should be tested within 4 to 6 days. Obtaining specimens by digital rectal examination in hospitalized patients has a high false-positive rate and should not be done.
Homemade nasal spray	Saline solution sprayed into the nose removes irritants, allergens, and excessive mucus. Patients can avoid the expense of repeatedly purchasing saline solution by putting homemade solution into an empty commercial spray bottle. The solution is made by mixing 1/2 tsp of table salt with 8 oz of warm water.
Significance of missing heel jerks	Bilateral absence of heel jerks, particularly when other reflexes are present, strongly suggests peripheral neuropathy. To make an accurate assessment, a high-quality, round neurologic hammer of adequate weight is used, rather than a lightweight, triangulated hammer.
Otitis externa solution	If otitis externa is taking a long time to heal and a whitish, mildew-like substance is seen, you will find that local application of 1% clotrimazole solution can help. Apply the solution with a cotton swab twice daily for about 2 weeks.
Glow-in-the-dark eye exam	To visualize the fundi of even very young children, secure a glow-in-the-dark sticker at about eye level a few feet away from the exam table. Turn the lights out and ask the child questions about the glowing object as you examine one eye and then the other. This works great.

Pep-2

Zinc Sulphate Syrup (10 mg / 5 ml)

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