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JOURNAL OF BANGLADESH COLLEGE OF PHYSICIANS AND SURGEONS

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EDITORIAL

Breast Feeding Resurgence in Bangladesh

There are three important determinants of good health, nutrition and child survival and these are food security, care and disease control[1]. Breast feeding is an excellent example of all these three things in one. This is not just theoretical rhetoric. The important public health programmes which have been undertaken to reduce morbidity and mortality and to promote health in Bangladesh are immunisation, control of diarrhoeal disease and acute respiratory infections and family planning. Breast feeding makes significant contribution to the success of each one of these programmes.

Breast feeding is the first immunisation a baby receives because of the unique immune properties of colostrum. The immune response to vaccines is superior in the breast fed than in the artificially fed infant. In countries such as Bangladesh, infants fed artificially are at least 14 times more likely to die from diarrhoea than are breast fed children, and four times more likely to die from pneumonia[2]. It is estimated that breast feeding through the lactational amenorrhoea method (LAM) prevents 6.5 births per reproductive life of a woman in Bangladesh[3]. Breast feeding helps in bonding between mother and infant, leads to better neurodevelopment[4] with significant advantages in the Bayley score[5] and prevents ovarian and premenopausal breast cancer in the lactating mother. There are of course many other benefits to breast feeding and these are detailed in this issue's review article.

Although this country has long been regraded as one with a strong breast feeding culture, many studies both in rural and urban Bangladesh have shown widespread improper breast feeding practices such as colostrum rejection[7]. The erosion of proper breast feeding practices the world over has largely been of iatrogenic origin[8].

It was in the early 1980's that UNICEF initiated a revolution in child survival with the acronym GOBI-FFF (growth monitoring, oral rehydration, breast feeding, immunisation, food supplementation, family spacing and female education)[9]. Major breakthroughs in knowledge on the virtues of breast feeding in the 1970's and 1980's[10] led to the launch in 1990 of the first major global initiative to protect, promote and support breast feeding. This was the Innocenti declaration[11] and one of its aims was to establish by 1995 a national body which would be primarily responsible to plan, implement and co-ordinate breast feeding programmes in each country.

It was with this mandate that the Campaign for the Protection and Promotion of Breast Feeding (CPPBF) was founded in Bangladesh in April 1989. This initiative was taken by a group of concerned professionals from medical institutions, government organisations, United Nations agencies and nongovernment organisations in order to halt the alarming erosion in breast feeding practices in Bangladesh[12]. In 1991, the Dhaka Declaration was signed by the President, the Prime Minister, the Health Minister and 800 other citizens pledging a commitment for the protection, promotion and support of breast feeding.

The past six years has seen the CPPBF (now the Bangladesh Breast Feeding Foundation: BFF) bring about a radical resurgence in breast feeding through its varied activities. It has boosted mass awareness of breast feeding through regional conferences and information dissemination through the media. The Campaign group has trained over 4,000 health professionals in the promotion and management of breast feeding. It has spread the culture of breast feeding throughout the

country's medical institutions through its Baby Friendly Hospital Initiative. Bangladesh today has 129 baby friendly hospitals and seems set to achieve one of the important end decade goals of child survival and development - i.e. all maternity service providing hospitals (about 750 in all) to be baby friendly by the turn of the century.

The Campaign has worked to establish the Breast Milk Substitute (BMS) Ordinance in order to curb the unethical marketing practices of infant formula producers. In response to advocacy the government has decided to incorporate breast feeding in its Primary Health Care Programme through its new approach of combined service delivery. In addition to all this, the Campaign is directly involved in research projects to add to the increasing body of knowledge on breast feeding.

Much has been achieved over past six years but much remains to be done. The situation of working women with regard to breast feeding has not improved with little or no enforcement of statutory rights to maternity leave and poor to non-existent creche facilities at work. The health professionals may now be aware of the benefits of breast feeding but their abilities to communicate with and help mothers to successfully breast feed leave a lot to be desired. Breast feeding is now seen as a management skill and this skill needs to be learned by health workers at all levels through appropriate training. The BMS ordinance may be a law of the land but not a single violation by the milk companies (and there have been many) has yet been prosecuted. So there remains little room for complacence as breast feeding protection and promotion enters the next millennium. Immunisation saves millions of lives and requirse a cold chain of vaccines for its success. Breast feeding also saves millions of lives and requires what may be termed a "warm chain" of support for its success[2]. The links in this 'warm chain" are political commitment, knowledge and skill of professionals, strengthening of ongoing programmes for the protection and promotion of breast feeding and ultimately providing mothers the supportive care and counselling that are the keys to successful breast feeding. Policymakers and the health profession need to be convinced that resources spent on "warm chain" will pay rich dividends for our future generations.

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(J Bangladesh Coll Phys Surg 1995; 14: 1-2)

References :

1. Food, Health and Care.UNICEF document 1994.
2. Editorial. A warm chain for breast feeding. The Lancet 1994; 344: 1239-1241.
3. Thapa S, Short R V, Potts M. Breast feeding, birth spacing and their effects on child survival. Nature 1988; 335: 679-692.
4. Lucas A, Morley R, Cole TJ, Lister G, Leeson-Payne C. Breast milk and subsequent intelligence quotient in children born preterm. The Lancet 1992; 339: 261-264.
5. Morrow-Tlucak M, Haude RH, Ernhart CB. Breast feeding and cognitive development in the first two years of life. Soc Sci Med 1988; 26: 635-639.
6. Talukder MQ-K. Infant feeding practices in Bangladesh and the recent dangerous trends towards bottle feeding. Bangladesh Journal of Child Health 1984; 8: 84-90.
7. Woolridge MW, Baum JD. Breast feeding. In : David TJ (editor). Recent Advances in Paediatrics, No. 11, 1993. Edinburgh : Churchill Livingstone. pp-175-189.
8. Grant JP. The state of the world's children. London: Oxford University Press, 1982-83.
9. Jelliffe DB, Jelliffe EFP, Kersay L. Human milk in the modern world. second edition, 1989. London : Oxford University Press.
10. Innocenti declaration for the protection, promotion and support of breastfeeding. Florence, Italy, 1990.
11. Talukder MQ-K. Protection, promotion and support of breast feeding in Bangladesh. Regional Health Forum, SEARO, New Delhi (in press).

Distally Based Fasciocutaneous Flaps for Reconstruction of Defects of the Lower Leg

SH KHUNDKAR, FCPS[a], MA KALAM, MBBS[b]

Summary :

Lower leg trauma and wound coverage is a difficult problem to deal with and more so in the developing world. Ipsilateral distally based fasciocutaneous flaps of significant dimensions and raised without prior delay are of value in the reconstruction of such defects particularly with exposed bone devoid of periosteum. Thirty cases were operated upon in the Plastic Surgery Unit of Rehabilitation Institute and Hospital for the Disabled (RIHD), Dhaka between September, '89 and September, '93 for defects of the lower leg. Large dimensional flaps with length: breadth ratio > 2:1 were raised as distally based fasciocutaneous flaps without any prior delay and on direct visualisation and identification of lower leg perforators. Results were encouraging in terms of wound closure with an overall success rate of 86.67%. Complications in the form of venous congestion in very long flaps were a problem to reckon with. Morbidity was significantly reduced.

Ipsilateral distally based fasciocutaneous flaps of large dimensions are of significant potential in the closure of lower leg defects with exposed bone.

(J Bangladesh Coll Phys Surg 1996; 14 : 3-9)

Introduction :

Trauma to the inferior extremity often presents with extensive lacerated injuries of the lower leg with exposed tibia and fibula with or without fractures. Early coverage is of prime importance in avoiding gross chronic osteomyelitis and a disfigured and mutilated limb. This is of course is a difficult problem under any circumstances and flap coverage is mandatory.

The classical teaching is that all flaps below the knee "are fraught with danger". The peculiarity of the vasculature of the lower limb and the relatively reduced cutaneous blood supply is responsible for this state of affairs.

Ponten[1] in his epic paper of 23 cases first elicited the reliability of leg flaps by including the deep fascia in his proximally based fasciocutaneous flaps for the lower leg. In the leg where the standard length: breadth ratio of 2:1 of skin flaps is precarious the length: breadth ratio of these flaps were 2.5:1 and were all raised without any prior flap delay. This aroused interest in such flaps and Haertsch[2], Barcley et al[3], Cormack and Lamberty[4], and Carriquiry et al[5] studied and described the anatomical basis whereby fasciocutaneous perforators passing up to the surface along the deep fascial septa fan out at the level of the deep fascia and form a plexus from which branches are given off to supply overlying subcutaneous tissues and skin. The vasculature runs in the long axis of the limb and fasciocutaneous flaps are capable of being raised without any prior delay with one or more perforators entering its base (Type B and Type A flaps). The concept of fasciocutaeous flaps has significant versatility. Distally based flaps requiring proximal ligation of the peroneal artery have been described (Type C flaps).

Muscle flaps like the gastrocnemius, soleus and extensor digitorum longus flaps have been described and are often used. However, the muscle requires to be expanded. The 'free

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flaps' have provided an alternative answer. Recently with the advent of microsurgery difficult areas of defects including those of the lower leg have been routinely reconstructed with 'free flaps'. The success rate of such flaps is 84-89%. However, in the developing countries like ours ' free flaps' are yet to begin and gain popularity. Distally based ipsilateral local flaps of the leg raised without prior delay provide a successful answer to this difficult problem.

The present study used ipsilateral distally based fasciocutaneous pedicled flaps of the lower leg utilising the distal perforators of the peroneal, anterior and posterior tibial arteries as their predominant vascular supply. These were raised without any prior delay and artery was ligated proximally as in Type C flaps thereby avoiding sacrifice of a major vessel in an already traumatised limb. The study combined the concept of dynamic cutaneous vascular territories to explain the reliability of the flaps and their raising without any prior delay. These were Type A and Type B flaps of the fasciocutaneous system.

It is obvious that in places where the facilities of a "free vascularised flap " does not exist or even in its presence the relative simplicity and reliability of the distally based ipsilateral fasciocutaneous flaps have a significant edge in the coverage of large lower leg defects particularly with bare bone.

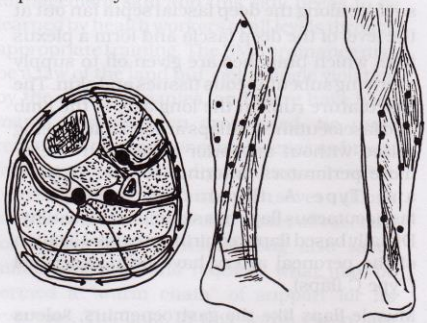

Fig 1 : *Left : Cross-section of leg showing mode of supply of the perforators.*

Right : Commonly constant perforators of the leg.

Materials and method :

Thirty cases of lower leg defects were treated with distally based fasciocutaneous leg flaps in the Plastic Surgery Unit of the Rehabilitation Institute and Hospital for the Disabled (RIHD) between September , '89 and September, '93.

Because of the difficulties and prohibitive costs and the inability of the patients to bear such costs, routine preoperative angiograms of the limbs in question were not carried out. No ultrasound doppler was used to identify the perforators (due to nonavailability). Careful anatomical dissection with direct visualisation and identification for preservation of the distal perforators were carried out in all cases. The ipsilateral, distally based fasciocutaneous pedicled flaps were raised subfascially in the long axis of the leg primarily and without any flap delay. The vascular basis of these flaps were the perforators from the peroneal, anterior and posterior tibial arteries which travel up along the intermuscular septae and form a vascular plexus on the deep fascia of the leg. From this plexus vessels pierce the subcutaneous tissue and supply the overlying skin. This produces in effect a functional axial pattern flap. The flaps were raised on the medial and lateral aspects of the leg and it was possible to rotate them through nearly 180° to cover defects in the region of tendoachilles and proximal dorsum of the foot. The base of the flaps were kept proximal to 6 cms from the medial and lateral malleoli to ensure flap safety. Incorporation of a major drainage vein in the flap was attempted in all cases. Inability to do so resulted in increased flap congestion and distal flap necrosis.

The age of the patients ranged from 15 years to 55 years with a mean age of 32.26 years. Two patients were females (6.66%).

Of the 30 cases, five were closed wounds with bony defects of the tibia with adherent poor skin grafts making the required surgery for the bony defects difficult. The rest 25 cases were infected or potentially infected open wounds with exposed bare bones (tibia

and/or fibula) with or without fractures. Fourteen (46.66%) cases presented with defects in the middle third of the tibia. Another 14 (46.66%) cases had defects of the distal third of the tibia. Of the other two cases, one was an old ruptured tendoachilles with skin loss close to the heel and the other had a wound infront of the ankle and proximal dorsum of the foot. Eleven (36.67%) of the flaps were raised on the medial side of the leg and based on the perforators of the posterior tibial artery. Nineteen (63.33%) flaps were raised on the lateral side of the leg and based on the perforators of the anterior tibial and peroneal arteries.

All flaps had minimum length of 10 cms, four (13.33%) of them had lengths between 10 cms and 15 cms, 17 (56.67%) between 15 cms and 20 cms and seven (23.33%) flaps had lengths between 20 cms and 25 cms. Two (6.67%) flaps had lengths between 25 cms and 30 cms (Table-I).

Table-I

Length of flaps and number of cases

Length of flaps	Number of cases
10 cms to 15 cms	04 (13.33%)
15 cms to 20 cms	17 (56.67%)
20 cms to 25 cms	07 (23.33%)
25 cms to 30 cms	02 (06.67%)

The minimum base breadth was 3.5 cms. Thirteen (43.33%) of the flaps had a base breadth between 3 cms and 4 cms and 17 (56.67%) flaps between 4 cms and 6 cms. The mean base breadth was 4.61 cms (Table - II).

The mean flap length was 19.5 cms with a maximum length of 26.5 cms.

Table-II

Base breadth of flaps and number of cases

Breadth of flap in cms	Number of cases
3 cms to 4 cms	13 (43.33%)
4 cms to 6 cms	17 (56.67%)

The paddle width of five (16.67%) flaps were between 4 cms and 8 cms and nine (30%) flaps had paddles between 8 cms and 10 cms. Sixteen (53.33%) flaps had paddle width of more than 10 cms. The mean paddle width of the flaps was 11.12 cms with a maxium of 18 cms (Table - III).

Table-III

Width of flap paddle and number of cases

Width of paddle	Number of cases
4 cms to 8 cms	05 (16.67%)
8 cms to 10 cms	09(30. 00%)
> 10 cms	16 (53.33%)

There were no cases where the length: breadth ratio was 2 : 1 or less. Two (6. 67%) cases had a ratio between 2 : 1 and 3 : 1 while 14 (46.67%) cases had a ratio between 3 : 1 and 4 : 1. Ten (33.33%) cases had a length: breadth ratio between 4 : 1 and 5 : 1 and four (13.33%) cases had a ratio exceeding 5 : 1. The mean length:breadth ratio was 4.23 : 1 and the maximum ratio achieved was 6.86 : 1 (Table - IV).

Table-IV

Flap dimension ratio and number of cases

Length : Breadth ratio	Number of cases
<2 : 1	nil
2 : 1 to 3 : 1	02 (06. 67%)
3 : 1 to 4 :1	14 (46.67%)
4 : 1 to 5 : 1	10 (33.33%)
>5 : 1	04 (13.33%)

Complications were measured in terms of flap loss. Underlying haematoma and mild to moderate infections were sporadic and of little significance. Florid infections invariably produced flap loss through flap congestion and vascular compromise. Twenty two

(73.33%) cases had no flap loss. Eight (26.67%) patients suffered from partial flap necrosis resulting from venous congestion. Of those, four (13.33%) cases had marginal distal flap necrosis. These were salvageable either by split skin grafting onto the viable subcutaneous tissue or by excision of the necrosed area and advancement of the flap and resuturing to the wound margin. The rest four (13.33%) cases had flap losses upto 50% of the flap length (two cases) and had to be salvaged by the use of muscle flaps from the leg (Table- V).

Table-V

Complications in terms of flap loss

Flap loss	No. of cases
No flap loss	22 (73. 34%)
Marginal distal flap loss	04 (13.33%)
Distal flap loss upto 20% of flap length	01 (03.33%)
Distal flap loss 20-40% of flap length	01 (03.33%)
Distal flap loss 40-50% of flap length	02 (06.67%)
Distal flap loss > 50% of flap length	nil

Figs.-2 to 7 show the different types of wound and their reconstruction by flaps.

Fig-2 : *The distally based fasciocutaneous flap. Note the length and width of the flap with an excellent blood supply to the tip of the flap.*

Fig-3 : *Three month old multisegmental fracture with exposed bare bone of the leg.*

Fig-4 : *Stage I – Lateral distally based fasciocutaneous flap to cover the defect. Note the large flap dimension.*

Fig-5 : *Stage II – Medial distally based fasciocutaneous flap was required to achieve full coverage of the leg defect. Note the patient is in wheel chair and capable of hanging the limb. Follow up – Patient was walking about by himself without any support one year after the surgery.*

Fig-6 : *14 years old injury which had been operated seven times before. Recurrent scar break down and infection persists.*

Fig-7 : *A well healed heel area three months after a distally based fasciocutaneous flap was used to reconstruct the area after excision of all scar tissue. Note a well healed and acceptable donor site skin graft.*

Results :

Twenty two (73.33%) cases had good results with satisfactory flap adhesion and no flap loss. Four (13.33%) cases with marginal flap necrosis were taken to be acceptable. The rest four (13.33) cases were regarded as poor outcome cases and alternative modes of coverage were required for them (Table VI).

Table-VI

Results of reconstruction

Result	Criteria	No. of cases
Good	No flap loss, satisfactory flap adhesion	22 (73.34%)
Acceptable	Marginal flap necrosis, salvageable	04 (13.33%)
Poor	Major distal flap loss, not salvageable Alternative modes of coverage required	04 (13.33%)

None of the flaps suffered from ischaemic necrosis and all flap losses were the result of venous flap congestion leading to venous stasis and ultimately to distal flap death.

Discussion :

Ponten described proximally based Type A fasciocutaneous flaps[1]. Out of his 23 cases 17 (73.91) cases were termed good. Three (13.40%) had partial necrosis and three (13.04) were flap failures.

In this study of distally based Type A and Type B fasciocutaneous flaps of the lower leg (utilising the distal perforators of the peroneal, anterior and posterior tibial arteries), out of 30 cases 22 (73.34%) had good results. Four (13.33%) cases had marginal flap necrosis which were satisfactorily salvageable and four (13.33%) cases were flap failures. Thus an overall success rate of 86.67% was achieved in this study as compared to 86.96% of Ponten and a general success rate of 85.89% with 'Free flaps' [1].

The length : breadth ratio achieved by Ponten was 2.5 : 1. This study had a mean length : breadth ratio of 4.23:1 and a maximum ratio of 6.86 : 1, a significant result for any flap in the lower leg.

In addition, the advantage of these flaps was their large flap paddle which was capable of being raised thus enabling coverage of large wounds. This was in obivous contrast to Ponten's proximally based flaps[1], which because of the anatomical structure of the human leg did not allow a flap paddle to be very wide. 'Free flaps' attain good dimensions but require high skills and expertise along with expensive intruments and equipments.

Distally based skin flaps of the lower leg of such dimensions and with a wide flap paddle is a new concept and proves to be very useful for coverage of fairly large defects of the lower leg [6,7,8].

Distally based Type C flaps have been described by Wee[9] using the anterior tibial artery where out of six cases he experienced venous insufficiency in three (50%) and marginal necrosis of his flaps in two (33.33%) cases. Morrison and Shen[10] also described two cases of Type C flaps using the anterior tibial artery. The peroneal artery has also been used for Type C flaps by Yoshimura[11] with satisfactory results. However, he ligated the peroneal artery proximally and thus sacrificed the artery for the flap. In this study the flaps were of Types A and B and though distally based did not sacrifice any major limb artery in the procedures.

Taylor[12] described the angiosomes and venosomes and pointed out the possible presence of 'choke vessels' between adjacent venosomes and the problems of venous drainage when vascular territories were "taken over' by adjacent ones. In this study flap congestion and distal necrosis was attributed to venous insufficiency. It was observed that careful inclusion of a major venous drainage vessel helped avoid flap congestion and good flap viability. Distally based fasciocutaneous flaps of similar nature have also been used to reconstruct defects of the lower leg with skin grafting of the flap [13,14].

The dimensions achieved by these flaps and the comfort to the patients in terms of morbidity as compared to the traditional crossleg flap procedures were significant. Ipsilateral distally based fasciocutaneous flaps of the lower leg are of great potential for reconstruction of large lower leg defects with exposed bare bone. Carefully planned, the flaps are of value in covering wide defects in the middle and distal third of the leg and even proximal dorsal foot.

References :

1. Ponten B . The fasciocutaneous flap: its use in soft tissue defects of the lower leg. Br J Plast Surg 1981; 34: 215-220

2. Haertsch P. The blood supply to the skin of the leg : a postmortem investigation. Br J Plast Surg 1981; 34: 470-477.

3. Barclay TL, Cardoso E, Sharpe DT, Crockett DL. Repair of lower leg injuries with fasciocutaneous flaps. Br J Plast Surg 1982; 35:127-132.

4. Cormack GC, Lamberty BGH. A classification of fasciocutaneous flaps according to their pattern of vascularisation. Br J Plast Surg 1984; 37: 80-87.

5. Carriquiry C, Costa M, Vasconez LO. An anatomic study of the septocutaneous vessels of the leg. Plast Reconstr Surg 1985; 76: 354-361.

6. Amarante J, Costa H, Reis J, Soares R. A new distally based fasciocutaneous flap of the leg. Br J Plast Surg 1986; 39:338-340.

7. Hong G, Steffens K, Wang FB. Reconstruction of the lower leg and foot with the reversed pedicled posterior tibial fasciocutaneous flap. Br J Plast Surg 1989; 42 : 512-516.

8. Shalaby HA, Higazi M, Mandour S, El-Khalifa MA, Ayad H. Distally based medial island septocutaneous flap for repair of soft tissue defects of the lower leg. Br J Plast Surg 1991; 44: 175-178.

9. Wee JTK. Reconstruction of the leg and foot with the reverse pedicled anterior tibial flap: preliminary report of a new fasciocutaneous flap. Br J Plast Surg 1986; 39: 327-337.

10. Morrison WA, Shen TY. Anterior tibial artery flap: anatomy and case report. Br J Plast Surg 1987; 40: 230-235.

11. Yoshimura M, Imura S, Shimamura K, Yamauchi S, Nomura S. Peroneal flap for reconstruction in the extremity: preliminary report. Plast Reconstr Surg 1984; 74: 402-409.

12. Taylor GI, Watterson PA, Crock JG. The venous territories of muscles: anatomical study and clinical implications. Br J Plast Surg 1988; 41: 596-585.

13. Gumener R, Zbrodowski A, Montandon D. The reversed fasciosubcutaneous flap in the leg. Plast Reconstr Surg 1991; 88: 1034-1041.

14. Lin SD, Lai CS, Chou CK, Tsai CW. The distally based posterior tibial arterial adipofascial flap. Br J Plast Surg 1992; 45: 184-187.

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Incidence and Problems of Low Birth Weight Babies in a Special Care Nursery Unit of a Teaching Hospital

MS RAHMAN, MCPS[a], SA KHATOON, FCPS[b], JIM HARUN, MBBS[c]

Summary :

The present study of 85 neonates weighing less than 2500gm admitted from January to December, 1992 in the neonatal unit of paediatrics department at Sir Salimullah Medical College and Mitford Hospital was carried out to find out the incidence and identify the problems of low birth weight babies.

The incidence of low birth weight was 45.45% amongst the admitted neonates. Maximum number of babies were between 1500 and 2000gm, comprising 68.24%. Birth asphyxia was found to be the major problem (32.94%). Other common problems were infection (28.24%), neonatal jaundice (14.12%), preterm LBW (8.24%) and respiratory distress (7.06%). Birth injury, hypoglycaemia, convulsion, meconium ileus and anuria due to malfeeding were present in 2.35% of cases. Mortality amongst those new-borns was 42.35%. Further analysis shows an inverse relationship of mortality with the increase in birth weight (68.75% in 1000-1499gm group and 18.18% in 2001-2499gm group).

It is concluded that low birth weight constitutes a major load for neonatal admissions. High mortality and morbidity demands improved neonatal service in the hospitals.

(J Bangladesh Coll Phys Surg 1996; 14: 10-13)

Introduction :

About 50% of new-borns in Bangladesh are of low birth weight (LBW)[1]. The estimated neonatal mortality in Bangladesh is 85/1000 live births[2]. Maximum morbidity and mortality of neonates are related to LBW[3]. Actually LBW is the primary predictor of infant mortality and morbidity[4]. LBW infants born before term have a high incidence of respiratory distress syndrome[5] with highest mortality in infants of shortest gestation[6]. Infants with foetal malnutrition are prone to perinatal asphyxia and meconium aspiration[6]. LBW associated with birth asphyxia increases the risk of death in the neonatal period[7]. During the first 72 hours of life, LBW babies frequently develop symptomatic hypoglycaemia which may be lethal if not quickly recognised and treated[8-10].

There is scarcity of information regarding problems in this group of new-borns as seen in a national hospital set up. Separate neonatal unit under paediatrics department at Sir Salimullah Medical College and Mitford Hospital (SSMC) started functioning very recently. There was dearth of modern facilities. The study was done to evaluate the problems in LBW in this set-up so that appropriate corrective measures can be taken to reduce the morbidity and mortality in these new-borns.

Materials and method :

This retrospective study was carried out with 85 neonates weighing below 2500gm admitted in the neonatal nursery of Sir Salimullah Medical College and Mitford Hospital between January and December 1992. The history of pregnancy, delivery, clinical findings on admission and problems that developed after admission were analysed from collected case record forms. Usually these forms are filled in by on duty doctors guided by a set proforma which contains questions regarding all the above parameters.

Incidence of LBW in the admitted neonates was determined on the basis of ward records

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of total neonatal admissions during that period.

The problem identifications were mainly based on clinical history and examination by attending physician and subsequently confirmed by one of the senior authors. In certain cases, relevant available investigations like total blood count, differential count, urine routine examination and culture, blood sugar level determination were done.

The management of LBW included attention to maintenance of body temperature, oxygen therapy, nutrition, control of infection etc. The new-borns were closely followed up with round the clock visit. Any new problem suspected was noted and followed up. There was no incubator or respirator facility in the centre. Laboratory support services were minimum.

Results :

There were 187 admissions in the neonatal unit during the study period. Of those, 85 (45.45%) were LBW babies. The babies were grouped into three according to birth weight (Table-I) to compare their mortality (Table-II). It was found that most of the new-borns were in the category of 1500-2000gm (68.24%). Below 1500gm (termed very low birth weight-VLBW) constitutes 18.82%. The mortality was found inversely related to the birth weight (Table-II).

Table-I

Weight distribution of low birth weight babies (n-85)

Weight range (grams)	Number	Percent
1000-1499	16	18.82
1500-2000	58	68.24
2001-2499	11	12.94

Table-II

Death among low birth weight babies according to their weight (n-85)

Weight range (grams)	Number of babies	Number of death	Percent
1000-1499	16	11	68.75
1500-2000	58	23	39.66
2001-2499	11	02	18.18
Total	85	36	42.35

It is obvious from Table-III that birth asphyxia was the major problem of LBW babies comprising 32.94%. Next common problem was infection which was found in 24 (28.24%) cases and were mostly having pneumonia, diarrhoea. umbilical sepsis, meningitis and probable septicaemia. Other problems are shown in Table-III.

Table-III

Problems associated with low birth weight in neonates (n-85)

Problems	Number	Percent
Birth Asphyxia	28	32.94
Infection	24	28.24
Neonatal jaundice	12	14.12
Preterm LBW with respiratory distress	06	07.06
Birth injury	02	02.35
Hypoglycaemic convulsion	02	02.35
Meconium ileus	02	02.35
Anuria	02	02.35
Preterm LBW	07	08.24

Discussion :

Neonatal service in hospitals are not well developed in the country. Neonatal unit was opened at the Institute of Postgraduate Medicine and Research (IPGMR), Dhaka Medical College Hospital and Dhaka Shishu

Hospital sometimes back, but the unit at SSMC Hospital was opened only recently. The facilities are still meagre but significant number of neonatal admissions occur in this unit. The study was done to see the extent of problems of this group and thereby to help in justifying the improvement of the facility.

The average birth weight of Bangladeshi neonates is found to be 2480-2530gm[1-5]. It has been estimated that 50% of these new-borns are of LBW[1], a finding consistent with the present study findings. Even though the community based data are lacking in our country, we are frequently facing the problems of LBW in our hospital practice. Maximum number of babies, 58 (68.24%) were in weight range of 1500-2000gm which is very much consistent with other study findings[11].

The common problems identified in the present study match with those of other studies in Bangladesh[11-13]. The high incidence of birth asphyxia reflects an inadequate delivery care in this country. Practice of resuscitation of new-born is not scientific in most cases which may result in high rate of hospital admission. Diagnosis of infection was made mainly on the basis of clinical judgement as infection screening facilities were poor. Bacteriological study was not possible in all the cases. Though the infection rate of 28.24% matches with other studies[2,3] but there may be more infection than what is reported here.

Out of 85 LBW babies, 36 (42.35%) died. Birth asphyxia and infection were the main contributors to the mortality, similar to the findings of other studies[11,14]. Neonatal mortality bears an inverse relationship with birth weight and gestational age[12,14,15]. High mortality in the study suggests inadequate neonatal care. This may be due to lack of bare minimal supports such as incubator, ventilator, blood gas analyser etc. Skilled manpower, specially skilled neonatal nursing care, vital for such a unit, is absent in this unit. Late referral may be another contributor in addition to those mentioned above.

In conclusion, the study presents a gloomy picture of the present situation of care for the LBW. The necessity of the unit is quite well thought of, but it requires improvement and support to optimise its function and thereby to justify its presence. The findings may help the planners in future development planning. Improvement in neonatal care will definitely decrease the neonatal mortality so also the infant mortality and thus help the government to achieve its target for end-decade goals.

References :

1. Canosa C. Deterioration of nutrition in Bangladesh. WHO, Geneva. April, 1983.
2. Bangladesh country data. An analysis of the situation of children in Bangladesh. 1987. UNICEF Publication.
3. Khatoon SA. Low birth weight babies. A problem - how to solve it ? Bangladesh Journal of Child Health 1991; 15 : 92-95.
4. Scott KE, Usher R. Foetal malnutrition. Its incidence, cause and effects. Am J Obst Gynaecol 1966; 94 : 951-963.
5. Usher R, MacLean F, Scott KE. Judegement of foetal age. II. Clinical significance of gestational age and objective method of its assessment. Paediatr Clin N Am 1966; 13 : 835-848.
6. Fatmi LE. Prevalence of term and pre-term in institution deliveries of Dhaka city. Dissertation for FCPS part II examination in Paediatrics, 1988.Bangladesh College of Physicians and Surgeons, Dhaka.
7. Abrams B, Newman V. Small for gestational age at birth, maternal predictors and risk factors of spontaneous pre-term deliveries in the same cohort. Am J Obst Gynaecol 1991; 164 : 758-790.
8. Ali MM, Kawser CA, Talukder MQ-K. Very low birth weight infants. I. Outcome of hospital admission. Bangladesh Journal of Child Health 1988; 12; 90-96.
9. Cornblath M, Odell GB, Levin EY. Symptomatic neonatal hypoglycaemia associated with toxaemia of pregnancy. J Pediatr 1959; 55 : 545.

10. Cornblath M, Wybregt S, Beans G, Klen R. Symptomatic neonatal hypoglycaemia. Paediatrics 1964; 33: 388.

11. Tabib SMSB, Nahar N, Khan MR. Clinical profile of low birth weight babies. Bangladesh Journal of Child Health 1987; 11: 114-120.

12. Bhalla JN, Bhalla M, Srivastava JR. A study of low birth weight babies in a special care unit. Indian Paediatrics 1975; 8: 8.

13. Banu K. Disease pattern in neonatal period. Bangladesh Paediatrics 1984; 3: 24.

14. Bhatia BD, Mathur NB. Neonatal mortality pattern in rural based Medical College Hospital. Indian J Paediatrics 1984; 51: 309-312.

15. Sing MK. Birth weight, gestational age correlation of neonatal mortality. Indian J Paediatrics 1982; 49: 511-517.

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Adult Intussusception : Analysis of 26 Cases

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Summary :

Twenty six cases of intussusception in patients above 15 years of age treated in two hospitals from August, '83 to May, '95 by the author are analysed. Causative lesions were found in 88.5% cases. Common causative lesions were Meckel's diverticulum and ileocaecal tuberculosis. In all the cases resection and anastomosis were done. Resection and anastomosis rather than reduction was suggested even when the involved part of the gut looks viable because of high incidence of primary pathology.

(J Bangladesh Coll Phys Surg 1996; 14: 14-16)

Introduction :

Intussusception is rare in adults. Only 10 to 20 percent of all intussusceptions occur in adults and in the great majority of the cases there are some obvious causes[1]. According to Dean et al, Stabenbord et al and Weilbeacher et al it is about 5%[2,3,4]. Surprisingly, adult intussusception is common in some African communities with very low apical causative lesions [5,6]. Due to its rarity among adults, usually the diagnosis is delayed and not made before laparatomy[7]. Causative lesions are present in most of the cases (50% to 90%)[3,4,8,9,10]. Due to its rarity, this small series of 26 patients of adult intussusception treated over a period of 12 years (1983-95) is presented.

Materials and method :

Twenty six patients over 15 years of age were admitted and treated for intussusception in the department of general surgery in General Hospital, Sirajganj (August, '83 to April, '89) and in one surgical unit of Sher-e-Bangla Medical College Hospital, Barisal, (May '89 to May '95). Diagnoses of intussusception were made at laparatomy in 23 patients and only in three cases preoperative diagnosis could be established. Jejunogastric intussusception in one patient following gastrojejunostomy and intussusceptions incidentally noticed at laparatomy were not included. There were 15 men and 11 women age ranging from 16 to 69 years with a mean of 32 years.

These patients presented with symptoms of acute intestinal obstruction. Typical red-current jelly due to blood mixed with secreted mucous was present in only five (19%) cases. Vomiting and colicky abdominal pain were present in 22 and 20 cases respectively. Abdominal lump could be felt in four cases and in one intussusceptum could be felt rectally.

Plain X-ray abdomen was done in all the cases and a definitive diagnosis other than small bowel obstruction could not be made. Barium enema X-ray was done in two cases which showed typical claw-hand appearance.

All the patients in this series had undergone laparatomy and on principle resection and anastomosis was done in all and the tissues were sent for histopathology. Type of intussusception and cusative lesions are shown in Tables-I and II.

Table-I

Type of intussusception and presence of pathology

Type	Total number of cases	No. of cases with pathology	Percentage
Jejunojejunal	1	1	100.00
Jejunoileal	1	1	100.00
Ileoileal	2	1	50.00
Ileocolic	22	20	90.91

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Table - II

Site and type of causative lesions

Causative lesion	Site	Number	Type
Benign polyp	Ileum	2	Ileocolic
	Jejunum	1	Jejunojejunal
Meckel's diverticulum	Ileum	5	Ileocolic
		1	Ileoileal
Enteric fever with intestinal perforation	Ileum	1	Ileocolic
Crohn's disease	Ileum	1	Ileocolic
	Caecum	1	Ileocolic
Ileocaecal tuberculosis	Ileum and caecum	5	Ileocolic
Adenocarcinoma	Caecum	3	Ileocolic
Ascaris infestation	Jejunum and ileum	1	Jejunoileal
Dysentry		2	Ileocolic
Idiopathic		2	Ileocolic
		1	Ileoileal

Discussion :

Intussusception is rarely considered in the differential diagnosis of gastrointestinal problems in adults. Due to resemblance with some other common gastrointestinal problems it is rarely diagnosed preoperatively. Nonspecific symptoms of pain and vomiting, less frequent bloody stools and finding of an abdominal or rectal mass may be of diagnostic value[7]. Ultrasonography can be a very useful diagnostic aid[7]. In ultrasonorgram, target like finding through the apex and demonstration of two concentric rings and an inner circular area more proximally is characteristic[7]. In cases of doubt, barium enema is suitable to confirm the diagnosis. Intussusception in adult is usully secondary (70-90%). But the aetiological factors are different in different regions of the world. In United States, 70% of secondary aetiological factors are neoplasm and one third of all are due to malignancy[2,3,4,8,9,10,11,12,13], and the incidence of malignancy rises with the increase of age. In an Indian series[14] neoplasm was found in 33% and malignancy in 22% of all cases. In the present series the findings are 23% and 11.5% respectively. Meckel's diverticulum (23%) and ileocaecal tuberculosis (19%) were other two leading causes. In comparison to western statistics, the patients were younger in age. Reduced average life span in comparison to west and some diseases which are common in the east like gastrointestinal tuberculosis, helminthiasis, dysentry are the causes of low age incidence and low incidence of neoplasm in the aetiology

of intussusception among adults in the east. It is an universal practice to excise the involved gut before reduction in case of adult intussusception after laparatomy. Hydrostatic pressure reduction is not practised due to high incidence of malignant lesions as a lead point in case of adult intussusception for fear of dissemination. In this series, all the cases had resection and anastomosis after laparatomy without attempting reduction. The excised whole tissue masses were examined before sending those for histopathological examination.

Reference :

1. Ellis H. Special forms of intestinal obstruction. In: Schwartz SI, Billis H (eds). Maingot's Abdominal Operations, 9th edition. 1990, London: Prentice Hall International Inc. pp- 905-932.
2. Dean DL, Ellis FH, Sauer WG. Intussusception in Adults. Arch Surg 1956; 73 : 6-11.
3. Stubenbord WT, Thorbjaranarson B. Intussusception in adults. Ann Surg 1970; 172: 306-310.
4. Weilbeacher D, Bolin JA, Hearn D, Odgen W. Instussusception in adults. Am J Surg 1971; 121: 531-535
5. Kark AE, Rundle WJ. The pattern of intussusception in Africans in Natal. Br J Surg 1960; 48: 296-298.
6. Cole GJ. A review of 436 cases of intestinal obstruction in Ibadan. Gut 1956; 6:151.
7. Reijnen HAM, Joosten HJM, de Boer HHM. Diagnosis and treatment of adult intussusception. AM J Surg 1989; 158: 25-28.
8. Donhauser JL, Kelly EC. Intussusception in the adult. Am J Surg 1950; 79: 673-677.
9. Felix EL, Cohen MH, Bernstein AD, Schwarta JH. Adult intussusception. Am J Surg 1976; 131: 759-761.
10. Nagorny DM, Sarr MG, Mcilrath DC. Surgical management of intussuception in the adult. Ann Surg 1981; 193: 230-236.
11. Roper A. Intussusception in adults. Surg Gynecol Obstet 1956; 103: 267-278.
12. Sanders GB, Hagan WH, Kinnaird WD. Adult intussusception and carcinoma of the colon. Ann Surg 1958; 147: 796-804.
13. Harlaftis N, Skandalakis JE, Droulias C, Cray SW, Akin JT. The pattern of intussusception in adults. J Med Assoc Georgia 1977; 66: 534-539.
14. Pal JC, Das Gupta TK. Intussusception in adults. J Indian Med Assoc 1981; 9 and10: 151-153.

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Experience of a Child Guidance Clinic at the Bangladesh Institute of Child Health and Dhaka Shishu Hospital

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Summary :

Two hundred and eighty one children were seen at a Child Guidance Clinic (CGC) at Bangladesh Institute of Child Health and Dhaka Shishu Hospital and Multi-axial diagnosis was coded to see the pattern of child psychiatric morbidity. In axis I diagnosis, conduct disorder was found in 8.90%, somatoform disorder 7.12%, attention deficit hyperkinetic disorder 6.76%, autism (pervasive developmental disorder) 6.04% and abdominal discomfort 5.32% of cases. In axis II diagnosis, delays in speech and hearing impairment were found in 5.32% and 4.89% respectively. In axis III diagnosis, mental retardation was seen in 17.79%. In axis IV diagnosis, major convulsive disorder (epilepsy) with behavioural disturbance was seen in 20.62% cases. It has been revealed in this study that conduct disorder may be contributed by marital discord in parents. Parental mental and physical illness is associated with an increased risk of psychiatric disorder in children. Data was compared with the data obtained from the psychiatric out-patient department of Sir Salimullah Medical College and Mitford Hospital.

(J Bangladesh Coll Phys Surg 1996; 14: 17-24)

Introduction :

The purpose of establishment of a CGC at Shishu Hospital Dhaka was to see the referred cases from other city hospitals and screen out and assess psychiatric illness and mental retardation in children and to see the pattern of morbidity among the children population attending the clinic.

Institute of Child Health and Shishu Hospital, Dhaka was chosen because it is the only hospital for the children in Bangladesh with multispecialized service facilities where children are referred from primary and secondary health care facilities. In Bangladesh, more than 40% of the total population are children and are overwhelmed with infectious diseases, malnutrition, blindness etc.[1] Child specialists are overburdened with above mentioned problems. Mental health problems are inadequately addressed by the primary, secondary and even tertiary health care delivery system due to its priority lying at the bottom and also due to poorly framed infrastructure, and social stigma attached to psychiatric illnesses.

In Srilanka and India, among children above five years of age attending psychiatric clinics, at least 15 percent would have functional complainst (FC), sometimes also called somatoform disorder, that is physical complaints for which no organic basis can be found[2].

We are familiar with "multiple" vague complaints or "aches and pains" among adults. Older children with some distress also often present like that. But younger children (say below 12 years) present differently in most instances. They often are brought with only one or two distinct complaints (e.g. headache, bellyache or vomiting) and they always have a clear psychological or social problem at the beginning of the complaints[2].

Recognition of such children is of utmost importance because treatment with drugs (as if physically sick) and repeated investigations will lead to a reinforecment of a sick role, that is, a tendency to express psychosocial problems through somatic complaints or to

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medicalize psychosocial problems[3]. Nevertheless, 3% of children all over the world including Bangladesh suffer from mental retardation at a given point of time. No survey on child psychiatric disorders has been done at any level in Bangladsh except those on mental and physical handicaps.

Keeping all the information mentioned above in mind the objectives of this study was to :

1) gather the knowledge about the size of the child population attending general children hospital set up having psychological problems;
2) see socio-demographic status of the children attending the CGC;
3) assess these children, determine their needs and give guidence to the staff of group homes, imstitutions and schools, and also foster parents and child welfare social workers, as to how these needs may be best met;
4) compare the findings with those of a general hospital population.

Materials and method :

This study was conducted at the Institute of Child Health and Shishu Hospital, Dhaka situated at Sher-e-Bangla Nagar with a bed strength of 305 and with the facilities of outpatient, inpatient and emergency services available round the clock. The CGC was established at the out-patient department next door to the resident physician for easy approach for the clients attending from far away places.

The study was extended over a period of three years. As because this clinic was specialized in its nature the children referred over here were first seen by primary health care services, general practitioners, traditional healers and other first contact persons or facilities.

The CGC inclusion criteria were to receive the cases referred by the agencies mentioned earlier or from children out-patient department of Shishu Hospital. Clients referrred from out-patient department were seen by resident physician to exclude nonpsychiatric illnesses.

Detail birth history, developmental history, medical and psychiatric history were taken by applying semistructured questionnnaire taking help from National Institute of Mental Health and Neurosciences, (NIMHANS) Bangalore, India CGC history sheet.

Multiaxial diagnosis was quoted as per Michael Rutter[4,5]. Intelligence quotient (IQ) was assessed by using modified revised Wechsler Intelligence Scale for Children (WISC-R) (Psychological Corporation).

The professional staffs of the CGC were consisting of two consultant psychiatrists, one senior guide teacher working in special education classes for mentally retarded, one counsellor and one social worker deputed from social welfare ministry to Shishu Hospital.

Results :

Total number of children attending the CGC was 281. Table I and II show the socio-demographic characteristics of referred children at Shishu Hospital and treated children at psychiatric out-patient department of Sir Salimullah Medical College (SSMC) and Mitford Hospital. Mean age of the children were 13.5 and 14.8 years respectively.

Table—I

Sociodemographic characteristics of the children attending the CGC

Characteristics	Number	Percent
Sex:		
Male	173	62
Female	108	38
M/F ratio= 1.61:1.20		
Social backgraound:		
Rural	50	17.80
Urban	231	82.20
Economic background :		
High income group	75	26.69
Middle income group	175	62.28
Low income group	31	11.03

Table–II

Sociodemographic charactiristics of the children attending the Sir Salimullah Medical College and Mitford Hospital psychiatry out-patients department

Characteristics	Numbers	Percentage
Sex:		
Male	54	44.63
Female	67	55.37
M/F ratio= 0.8:1.2		
Social background :		
Rural	75	61.99
Urban	46	38.01
Economic Background :		
High income group	15	12.40
Middle income group	50	41.32
Low income group	56	46.28

At CGC, male children outnumbered the female children and M :F ratio was 1.61 : 1.20 but at SSMC and Mitford Hospital female children outnumbered the male children i.e., M : F ratio was 0.8:1.2.

Analysis of the social background shows that children from urban background attended at CGC more in numbers than rural background, 82.20% and 17.80% respectively, whereas at SSMC and Mitford Hospital more children were from rural than urban background, 61.98% and 38% respectively.

At CGC, children from middle income group were more in number than low and high income group, 62.28%, 11.03% and 26.69% respectively. At SSMC and Mitford Hospital, children from low income strata outnumbered the middle and high income group, 46.28%, 41.32% and 12.40% respectively.

Table-III and IV show the types of referral in both the hospitals. At CGC, maximum number of children were either brought voluntarily by parents and guardians (35.90%) or referred by paediatricians (30.25%). On the other hand, at SSMC and Mitford Hospital, most of the children were referred from internal medicine department, guardians and parents, and department of paediatrics (37.19%, 14.88% and 16.53% respectively).

Table—III

Source of referral to child guidence clinic

Sl. No.	Source of referral	Number	Percentage
1.	Paediatrician	86	30.25
2.	Other medical officers and GPs	50	17.80
3.	Parents and guardians having a MR child/ psychiatrically ill child	101	35.90
4.	Professionals and social workers dealing with child problems	15	05.35
5.	Information gathered from electronic and print media	30	10.70

Table—IV

Source of referral to Sir Salimullah Medical College and Mitford Hospital psychiatry out-patients department

Sl. No	Source of referral	Number	Percentage
1.	Department of paediatrics	18	14.88
2.	Internal medicine department	45	37.19
3.	Departemnt of surgery	08	06.61
4.	Deptt. of obstetrics and gynaecology	15	12.40
5.	Parents and guardians having a MR child/ psychiatrically ill child	20	16.53
6.	Professionals and social workers dealing with child problems	05	04.13
7.	General practitioners and primary care physicians	10	08.26

Tablet V and VI show the disease profile and comparison between two hospitals by using Multi-axial classification of child psychiatric illnesses[6].

At CGC, in axis I diagnosis (clinical psychiatric syndrome), fifteen different types of child psychiatric syndromes were encountered. Among those, conduct disordr (8.90%),

Table—V

Diagnosis of children attending CGC at Bangladesh Institute of Child Health and Dhaka Shishu Hospital by using Multi-axial classification

Sl. No	Name of the syndrome	Number	Percentage
1.	Autism	17	06.04
2.	Attention deficit hyperkinetic disorders (ADHD)	19	06.76
3.	Counduct disorder	25	08.90
4.	Somatoform disorder (conversion and dissociation hysteria)	20	07.12
5.	Bipolar affective disorder	03	01.07
6.	Depressive disorder	05	01.78
7.	Anorexia nervosa	03	01.07
8.	Night terror and nightmare	04	01.42
9.	Pbobic disorder	03	01.07
10.	Tic disorder	03	01.42
11.	Psychosomatic disorder	04	01.48
12.	Obsessive compulsive disorder	07	02.48
13.	Enuresis	03	01.07
14.	School phobia/refusal	10	03.56
15.	Abdominal (recurrent) pain	15	05.32
16.	Speech delays	15	05.32
17.	Speech and hearing impairmant	14	04.89
Axis III (Intellectual level) : IQ was assessed by using Wechslar Intelligence Scale for Children (WISC), Vinland Social Maturation Scale and comparing the normal children of this age from same subculture and family.			
18.	Mental retardation of mild, moderate and severe degree were diagnosed clinically with above mentioned method in 50 cases (17.79%).		
Axis IV (Medical conditions recorded from longituadinal personal history) :			
19.	Major convulsive disorder (epilepsy) with behavioural problems	58	20.65
20	Organic brain disorder with neurological soft signs	04	01.42
21.	Cerebral palsy (CP) with physical handicap	08	02.85

Table–VI

Diagnosis of children attending psychiatry out-patients department of SSMC and Mitford Hospital, Dhaka

Sl. No.	Name of the syndrome	Number	Percentage
1.	Schizophrenia	43	35.54
2.	Bipolar afftective disorder	14	11.57
3.	Depressive disorders	10	08.26
4.	Anxiety disorders	13	10.74
5.	Obsessive compulsive disorder	07	05.79
6.	Conversion and dissociation hysteria	19	15.70

Axis II (Specific delays in development) :
No case of any developmental delays attended psychiatric out-patient department of Sir Salimullah Medical College and Mitford Hospital.

Axis III (Intellectual level) :

7.	Mental retardation	15	12.40

Axis IV (Medical conditions recorded from longitudinal personal history) : Nil

conversion and dissociation hysteria (7.12%), attention deficit hyperkinetic disorders (ADHD) (6.76%), autism (6.04%), abdominal (recurrent) pain (5.32%) and school phobia / refusal (3.56%) were important.

Picture at SSMC and Mitford Hosptial were different. There schizophrenia (35.54%) conversion and dissociation hysteria (15.70%), bipolar affective disoder (11.57%), anxiety disorders (10.74%), depressive disorders (8.26%) and obsessive compulsive disorder (5.79%) were common.

In axis II diagnosis in CGC, cases of speech delays (5.32%) and speech and hearing impairment (4.89%) could be identified. There was no case of delays in development at SSMC and Mitford Hospital.

In axis III diagnosis in CGC, 17.79% children were mentally retarded where as at SSMC and Mitford Hospital the mental retardation cases were 12.40%

In axis IV, in CGC, major convulsive disoder (epilepsy) (20.65%), organic brain disorder with neurological soft sign (1.42%) and cerebral palsy (CP) with physical handicap (2.85%) were the main identified conditions. No axis IV diagnosis could be made in SSMC and Mitford Hospital.

In axis V diagnosis, it has been revealed in this study that antisocial behavior or conduct disorder in the children was probably contributed by the family where there was discord or discharmony between family members, especially within the marriage, a lack of warmth, a tendency to use punishment and criticism unmitigated by praise, or even frank rejection. Inconsistent discipline, large family size and criminality in other family members were more prevalent in families of conduct disorder children.

Parental illness, both psychiatric and to a lesser extent physical, and inconsistant support were more in case of CGC children.

Discussion :

In this study it was observed that male children outnumbered the female children at CGC.

But at SSMC and Mitford Hospital female children outnumbered the male children. Urban population was benefitted from the CGC more than rural population, might be due to early communication and availability of the service to their doorstep. On the other hand, rural people are benefitted from the psychiatric service of the SSMC and Mitford hospital. Middle income socio-economic group was over represented in CGC, may be due to awareness and because bulk of middle income population live in and around Dhaka city. Low income group are the consumer of the psychiatric service delivery system at SSMC and Mitford Hospital. This difference was probably due to easy approach of vast number of rural people attending SSMC and Mitford Hospital crossing the river Buriganga and more agencies are involved in referral system there, as well as availability of diversity of treatment offered by a well established psychitry department of a multispecialised general hospital.

There is no marked difference in source of referrel at both the hospitals. It was seen that parents of a MR child referred a MR child to CGC in most of the cases (35.90%). Then came the referral from child specialists (30.25%). Other important sources of information and referral were mass media, medical practitioners and professionals involved in social works.

Multi-axial diagnosis system was tried to see the child psychiatric morbidity and to suggest proper management. Causation in child psychiatry is almost always multifactorial[6], and involves two issues. First, it is necessary to distinguish between factors that predispose the child to develop psyhchiatric disorder, those that precipitate it and those that perpetuate it (the three Ps of aetiology)[7]. Second, that host of causative elements have been shown to exist: family relationships, peer groups, school, genetic background, intellectual endowment, brain damage, coexistent physical disorder, subcultural influence, the child's subjective personal experience and so on, each of which may operate at any one of the levels indicated by the three Ps above.

Children with psychological difficulties commonly suffer from a number of handicaps, the mutual influence and importance of which vary considerably[8]. Thus likelihood of psychiatric disorder increases with low IQ and with coexistent physical disorder, yet the economy of superficiality leads the casual observer to identify the child's problem as solely psychiatric, cognitive or physical without appreciating the interplay[3]. Within the subgroup of disturbed children, associations were demonstrated with maternal depression, quality of parents marriage, and a delay in the child's language development.

Psychiatric disorders among ten year old children living in the Island (Isle of Wight study) were surveyed for eduational, intellectual, physical and psychiatric handicaps[6]. Children identified by standardized questionnaires and likely to have psychiatric disorder were individually assessed. The most important findings were fully documented in two publications by Rutter et al[9,10]. Particular conclusions relevent to childhood psychiatric disorders were :

1. A prevalence of 6.8% in the total population of 10 and 11 years old children, with conduct disoerder (4.0 percent) and emotional disorder (2.5 percent) accounting for bulk of this.
2. No significant relationship with social class as determined by parental occupation.
3. A general two-fold excess of boys, within category of emotional disorders there was a slight excess of girls.
4. A corresponding increase in prevalence with progressively lower IQ.
5. A marked association between specific reading retardation and conduct disorder.

6. An increase in the prevalence of psychiatric disorder to 10.4% if physical disorder not involving the brain was present (asthma etc.)

7. A five-fold increase in rate (34.3%) if brain disorder coexists. No particular symptoms or disorders were associated preferentially or specifically with brain disorder, the increase being true for all categories of psychiatric disorder.

8. Only a one in ten likelihood of receiving psychiatric help. The rate of childhood psychiatric disorder rises with :

   the presence of discordant family relationships;

   psychiatric disorder in either parent;

   lack of emotional warmth displaying towards the child.

Clearly, these are likely to interact, yet the final common pathway seems likely to be a failure to provide a harmonious relationship between the parent and the child.

In this study multiaxial diagnoses was used to see the contributory factors interplaying in the aetiology of the child psychiatric illness and for management of the children having psychiatric problems.

There exists in any one child various aspects of his disorder which may combine in various patterns and vary independently of each other (or nearly so), each containing relevant information. For example, mental retardation, infantile autism and epilepsy may coexist in one child.

In axis I, conduct disorder, somatoform disorder, attention deficit hyperkinetic disorder (ADHD), childhood autism (pervasive developmental disorder), somatoform pain disorder (recurrent abdominal pain) were more frequent in CGC patients. School phobia, psychosomatic disorder, obsessive compulsive disorder, affective disorder and other emotional and motor disorders were other child psychiatric illnesses seen at CGC. The disease profile at SSMC and Mitford Hospital is more consistent with major mental illnesses and severe neurotic disorders.

Delay in speech and speech and hearing were axis II diagnosis in this study. Speech disorders are one of the earliest identified conditions in the family.

Mental retardation was the most frequent axis III diagnosis, may be because of more publicity and reference were made by parents of mentally retarded children in the community about the facility available.

Axis IV diagnosis showed a comon associated physical illness paripasu of mental retardation or behavioural problems, that is seizure disorder.

Abnormal psychosocial situations were inquired in these cases and comments were coded in axis V. In most of the emotional conditions, the family plays a contributing role[11]. Lack of warmth, a tendency to use punishment and criticism unmitgated by praise act as a causal factor[7]. Inconsistent discipline, large family size and problem behaviour in other family members has definitive causative role in developing conduct disorder in children.

Reasons for difference in cliental characteristics of two treatment facilities may include, among others, organizational profile of the facilities and their referral contacts[12]. Thereby the study findings reinforces the need for a CGC in major health care facilities.

References :

1. Statistical year book of Bangladesh, 1993. Dhaka : Bangladesh Bureau of Statistics. pp-1-3.

2. Nikapota AD/MENT/93. Recognition and Mangement of Children with Fuctional Complatints (Psychosocial problems, ill defined somatic complaints). A training package for the primary care physicians, 1993. New Delhi : WHO/SEARO. pp- 1-3.

3. Kaplan HI, Sadock BJ, Grebb JA (editiors). The Doctor patient relationship and interviewing techniques. In : Kaplan and Sadock's Synopsis of

psychiary, seventh edition, 1994. Baltimore : Williams and Wilkins. pp- 1-15.

4. Rutter M L, Shaffer D, Shephard M. A Multiaxisal Classification of Child Psychiatric Disorder, 1975. Geneva : WHO.

5. Rutter M, Shaffer D, Sturge C. A guide to multi-axial classification scheme for psychiattric disorders in children and adolescent 1975. Department of Child and Adolescent Psychiatry, Institute of Psychiatry, London, London SE 8 and 8AF.

6. Rutter M, Gould M. In : Rutter M, Hersov L (eds.). Child and Adolescent Psychiatry : Modern Approches, second edition, 1985. Oxford : Blackwell Scientific publications. pp- 359-384.

7. Hill P, Murray R, Thorley A (editors). In : Essentials of Postgraduate Psychiatry, Second edition, 1996. New York : Grune and Stratton Ltd. pp- 82-86.

8. Rutter M, Quinton D. Parental psychiatric disorder: Effects on children. Psychol Med 1984; 14: 853-880.

9. Rutter M, Tizard J, Yule W, Graham P, Whitmore K. Isle of Wight studies, 1964-1974. Psychol Med 1976; 6 : 313-332.

10. Rutter M, Graham P. The reliability and validity of psychiatric assessment of child: I. Interview with the child. Br J Psychiatry 1976; 114: 563-579.

11. Philip B. In : Basic Child Psychiatry, fifth edition 1993. Oxford. London : Blackwell Scientific Publications. pp- 326.

12. Fairburn AC. Developing child and family mental health services in Pakistan. The Pakistan Journal of Child Mental Health 1991; 1: 40-46.

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Value of BCG and Tuberculin Tests in the Diagnosis of Tuberculosis

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Summary :

The present study was designed mainly to evaluate and compare the diagnostic efficacy of BCG and tuberculin tests in childhood and adult tuberculosis cases. A total of 132 consecutive cases of tuberculosis were studied at General Hospital, Narayangonj during January '91 to March '93. Out of 132 cases, 76 were children between nine months and 15 years of age (mean, 6 ± 2.79 years) and 56 cases were adult between 16 and 70 years of age (mean, 35±14.99 years). BCG and tuberculin tests were positive in 89.40% and 44.70% cases of childhood tuberculosis respectively (p<.001), while in adult tuberculosis ,BCG and tuberculin positivity were observed in 92.80% and 57.10% cases respectively (p<.001). AFB was found in 15% of adult cases, all of which showed BCG positivity. Thoracic tuberculosis was found more common in adults (91.07%) than in children (51.32%), while extrathoracic tuberculosis was more common in children (48.68%) than in adults (8.93%). It can be concluded that BCG test, in the diagnosis of tuberculosis, both in children and in adults, is nearly two times more sensitive than tuberculin test.

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Introduction:

Tuberculin test has customarily been used for detection of tuberculous infection since its discovery over six decades back, but its sensitivity is quite low in certain situations like malnutrition, miliary tuberculosis, following measles[1]. Search for isolation of more sensitive test for detection of tuberculosis cases was continuing for long. Encouraging results were obtained by various workers in last few years by using BCG vaccination as a diagnositic test for tuberculosis[2,3,4] and this has been termed as BCG test. More interest had aroused on the diagnostic value of BCG after the WHO publication in 1964[5]. Udani et al for the first time in India exclusively proved its diagnostic efficacy in detecting tuberculosis[3,6,7].

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The present study was carried out mainly to evaluate and compare the diagnostic efficacy of BCG test over tuberculin test in the diagnosis of tuberculosis both in children and adults.

The hypothesis behind the study objective was-

'BCG test is more sensitive than tuberculin test in the diagnosis of tuberculosis both in children and in adults'.

Materials and method :

This study was conducted among 132 consecutive cases who were hospitalised at Narayangonj General Hospital for tuberculosis during January '91 to March '93. Out of 132 cases, 76 were children between nine months and 15 years of age, and 56 were adults between 16 and 70 years.

Inclusion criteria for the study were :

1. Patients who had one or more of the following clinical features :

a. Prolonged fever of two or more weeks;

b. Prolonged cough for three or more weeks with or without haemoptysis or breathlessness;

c. Features suggesting neurotuberculosis;

d. Persistent lymphadenopathy;

e. Ascites;

f. Arthritis;

g. Sterility;

2. Investigations (viz. sputum or gastric lavage for acid fast bacilli (AFB), radiological study, CSF or pleural fluid analysis, histopathology) suggesting possibility of tuberculosis.

Exclusion criteria were:

1. Patients who had prior BCG vaccination.
2. Patients who had second illness(es) i.e. hepatitis etc.

After admission, detail history was taken and physical examination was done. Cases were individualized and subjected to the following investigations: complete blood counts, sputum for AFB, radiological study, CSF and pleural fluid analysis and histopathology. Diagnostic laparotomy was done in one case. His matted mesenteric lymphnodes were sent for histopathology, Endometrium of another sterile woman, obtained by D and C, was also sent for histopathological study. Both BCG and tuberculin tests were done concurrently in all the cases. BCG test was done by the freeze-dried vaccine supplied by UNICEF. Freshly prepared 0.1 ml of BCG vaccine (containing 0.1mg of vaccine) was injected intradermally over the deltoid region of the left upper arm. The pattern of BCG reaction, depending upon the time of appearance of the papule, was classified as classical (when a papule with more than 5 mm induration appeared within 24-48 hours), accelerated (when a papule appeared within eight to ten hours), or delayed reaction (when a papule appeared after three to four days from the time of inoculation)[4,8]. The positive reactions were graded as mild (5-10 mm) , moderate (10-20 mm), severe (>20 mm) reactions (vide supra). In carrying out tuberculin test, 0.1 ml of purified protein derivatives (PPDITU) was injected intradermally on the anterior surface of the left forearm. Reactions were read between 48 and 72 hours after injection and termed positive when the induration was more than 10 mm. It was further graded as mild (10-15 mm), moderate (15-20 mm), and severe (more than 20 mm)1.

Data were collected by a semi-structured questionnaire and statistical analysis was done using chi-square (X^2) test.

Results :

Characteristics of patients are shown in Table-I. BCG positivity was observed in 89.40% and 92.80% cases of children and adults while tuberculin positivity was observed in 44.70% and 57.10% cases respectively (Tables-II and III). AFB was found in 15% of adult cases (Table-IV). All those cases showed BCG positivity. Table-V shows that thoracic tuberculosis was more common in adults (91.07%) than in children (51.32%), while extrathoracic tuberculosis was more common in children (48.68%) than in adults (8.93%).

Table-I

Characteristics of the patients

Subject	Mean age (years) with SD	Number
children	06 ±2.79	76
Adult	35 ± 14.99	56
		Total = 132

Table-II

Results of BCG and tuberculin tests in childhood tuberculosis (n = 76)

Tests	Positive cases (%)	Negative cases (%)	Total
BCG	68 (89.40)	08 (10.60)	76
Tuberculin	34 (44.70)	42 (55.30)	78

X^2 = 34.32, df = 1, p < .001 (significant)

Table-III

Results of BCG and tuberculin tests in adult tuberculosis cases (n = 56)

Tests	Positive cases (%)	Negative cases (%)	Total
BCG	52 (92.80)	4 (7.20)	56
Tuberculin	32 (57.10)	24 (42.90)	56

X^2 = 19.04, df = 1, p < .001 (singificant)

Table-IV

Sputum for AFB (n = 40)

AFB	No. of cases	Percent
Found	06	15
Not found	34	85

Table-V

Distribution of cases according to sites and types

Sites and types of tuberculosis	Total number of cases	
	Children (n=76)	Adults (n=56)
1. Thoracic :		
Primary complex	06 (7.89)	00
Progressive tuberculosis (bronchopneumonia, lobar pneumonia, lung abscess, collapse-consolidation)	29 (38.16)	41 (73.21)
Pleural effusion	04 (5.26)	10 (17.86)
Total =	39 (51.32)	51 (91.07)
2.Extrathoracic :		
TB meningitis	15 (19.74)	00
Cervical adenitis	12 (15.79)	02 (3.57)
Abodominal tuberculosis	06 (7.89)	02 (3.57)
Bone TB	04 (5.26)	00
Genital tuberculosis (endometrial tuberculosis)	00	1 (1.79)
Total =	37 (48.68)	05 (8.93)

Figures in parenthesis indicate percentage.

Table-VI

Results of BCG and tuberculin tests in different studies conducted with childhood tuberculous cases

Authors	No. of cases	BCG test (%)+ ve	Tuberculin test(%)+ve
Udani et al (1971)	41	100	68.3
Udani et al (1971) (autopsy proved)	21	71.6	47.6
Lothe et al (1973)	97	92.7	55.6
Datta et al (1982)	207	44.9	19.3
Bhandari NR (1984)	165	90.9	47.2
Rahman M, Islam MN (1986)	50	94.0	32.0
Mollah QM, Rahman ME, Nahar N (1994)	80	92.5	45.0

Discussion :

BCG test has been reported to be an effective and simple method for early diagnosis of tuberculosis [1,3,4,7,8]. This test is described to be more sensitive than tuberculin test by a number of workers[1,3,7,8]. Result of BCG and tuberculin tests in different studies done on childhood tuberculosis population is tabulated in Table-VI. It has been suggested that direct BCG vaccination produces no adverse reactions in tuberculin positive patients or in proved cases of tuberculosis[7]. Moreover, BCG reaction responds in an accelerated manner in tuberculous children not in healthy children[8].

In the present study, BCG and tuberculin positivity was observed in 89.40% and 44.70% cases of tuberculous children respectively. The difference was significant (p<.001). Almost similar observations had also been made by a number of workers[8,9,10,11]. Udani et al[3] reported positive BCG and tuberculin tests in 71.6% and 47.6% respectively of autopsy-proved cases of tuberculosis. Desai et al[12] in India observed BCG positivity in 72% of cases of childhood tuberculosis, the figure was

reported as 88% by Alam et al[13] in a hospital based study conducted here in Bangladesh. Mollah et al[14] observed BCG and tuberculin test positivity in 92.5% and 45% cases respectively in another study done in two centres. Chowdhury et al[15] in India reported that response to BCG vaccination was not related to the age of the patient. A significantly higher rate of BCG positivity (92.80%) than tuberculin positivity (57.10%) in cases of adult tuberculosis was observed in this series ($p<.001$). There is no data in this country regarding value of BCG test in the diagnosis of tuberculosis in adults.

The high rate positivity of BCG can be attributed to it being a complete antigen as opposed to tuberculin which is the protein fraction of tubercle bacilli obtained by chemical fractionation. Tuberculin does not contain all components of the antigen synthesised by the tubercle bacillus[1]. BCG contains bovine avirulent strain which apart from protein fraction also contain complex lipids (e.g. wax-D etc.) which again is a potent immunological adjuvant. It is possible that this lipid fraction enhances the antigenicity of BCG vaccine and increases the rate of BCG positivity over tuberculin positivity.

There were six bacteriologically proved cases of adult tuberculosis. All those cases showed BCG positivity. Similar observation had also been made by Jaisal et al[4] in their 15 bacteriologically proved cases of tuberculosis. They found all cases showing positive BCG response.

A very interesting observation was that the thoracic tuberculosis was more common in adults (91.07%) than in children (51.32%), while extrathoracic tuberculosis is more common in children (48.68%) than in adults (08.93%).

BCG test, in the diagnosis of tuberculosis both in children and adult, is nearly two times more sensitive than tuberculin test done with 1 TU. It is, however, necessary to compare BCG sensitivity with tuberculin test done with 10 TU by appropriate intervention study.

References :

1. Shrivastava DK, Shin Waker AG, Thawrani YP et al. Evaluation of BCG test in childhood tuberculosis. Indian Pediatrics 1977; 14: 993 - 994.
2. Friedmann E, Silverman F. Use of BCG vaccine as a new diagnostic test for tuberculosis. Paediatrics 1982; 9: 280.
3. Udani PN, Parkh U. BCG test in tuberculosis. Indian Pediatrics 1971; 8:143.
4. Jaiswal S, Bhandari NR. Evaluation of diagnostic value of BCG test in childhood tuberculosis, Indian Pediatrics 1976; 13: 689.
5. WHO. Investigation of practibility of direct BCG vaccination in Dahomey. Tech Inform 1964; 33: 1-20.
6. Udani PN. Tuberculosis in children. Paediatric Clinic in India 1986; 1: 163-193.
7. Udani PN. BCG test in the diagnosis of tuberculosis in children . Indian Pediatrics 1982; 19:563-581.
8. Bhandari NR, Bhambal SS, Beohar V. Diagnostic value of BCG test in childhood tuberculosis. Indian Pediatrics 1984; 21: 555.
9. Rahman MM, Islam MN. The value of BCG in the diagnosis of tuberculosis in children. Bangladesh Journal of Child Health 1986; 10: 15-19.
10. Lothe PS, Gupta SP, Agarwal SP. Evaluation of BCG as a diagnostic test in tubercular meningitis. Indian Pediatrics 1973;. 1: 419-429.
11. Samal GC, Efficacy of BCG test in diagnosis of childhood tuberculosis. Ind Paediatr 1979; 46: 279-282.
12. Desai AB, Girishrani Ahya PN. Diagnostic value of BCG in tuberculosis. Indian Pediatrics 1972; 9: 767.
13. Alam B, Mahmud CB. Diagnostic value of BCG in childhood tuberculosis. Journal of Chittagong Medical College Teachers Association 1994; 5: 30-33.
14. Mollah QM, Rahman ME, Nahar N. Efficacy of BCG in the Diagnosis of Tuberculosis. Bangladesh Journal of Child Health. 1994; 18: 84-87.
15. Chowdhury VP, Singh MM, Verma IC. BCG and Mantaux intradermal test in the diagnosis of tuberculosis. Indian Pediatrics 1975 : 12: 99.

REVIEW ARTICLE (J Bangladesh Coll Phys Surg 1995; 14: 29-37)

Scientific Evidence on the Benefits of Breast Feeding

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Introduction :

Recent resurgence of interest in breast feeding is observed both in developed and developing countries. Extensive research is continuing on the topic of breast feeding and breast milk with discovery of newer virtues. It is now apparent that benefits of breast feeding are much more than just the advantage of feeding a baby on breast milk. The beneficiaries of breast feeding are not only the child but also the mother, the family and the society as a whole. It is not only supplying the full complements of nutrition that are necessary for the new born but also helping the new born in portecting from infection. It is even protecting from development of diseases in later life. Newer cytokines and growth factors are being identified and constituents are found to be modifying over period of breast feeding to match with the necessity. The international interest has also reached our country and paediatricians, obstetricians, administrators and general physicians are showing newer interest in this respect. Medical professionals of various grade are getting involved in protection and promotion of breast feeding in the country to uphold the benefits that Bangladeshi population were enjoying before the invasion of artificial milk. The present review tries to summarise these newer virtues of breast milk and breast feeding to keep the professionals aware and help in their quest to optimise the use of this vast resource. The review will highlight some of the newer findings on different aspects of breast feeding.

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A. Breast milk : A magnificent example of food, care and health

It is recognised that food security, caring practices and disease control are the important determinants of good nutrition. Breast milk and breast feeding possesses all these three elements. It is a perfect food alone up to six months of age and contributes significantly to the child's total energy and other nutrient intake up to two years of age. Even an ill mother continues to provide this excellent nutrition for the infant. In a study amongst the poor Peruvian women (BMI above 19.5) with established lactation milk volume, protein content and trace elements contents did not differ in mothers with acute infection and control[1]. This ' magnificient example' of food also provide food security even in extreme of situations. Prentice et al[2] had meta-analysed 41 database containing 1,726 measurements of BMI and compared the lactation performance. It was found that amount of milk do not differ even with BMI below 18.5. Only milk fat and BMI have weak but significant negative effect though some reports have shown contradictory results. The author concluded that "human lactation is extremely robust and influenced when undernutrition is sufficiently severe as occur in famine or near famine situations".

B. Breast Milk : Perfect nutrient

1. Qualitative and quantitative adequacy : Breast milk contains all the required nutirents which are adequate both qualitatively and quantitatively for the growth and development of the new-born. The amount of protein, fat, carbohydrate, minerals and vitamins are all adequate till six months of age. The nature and amount of these nutrients are unique in

human milk. Growth factors are identified in human milk[3,4]. Although epidermal growth factor may have a general rather than a specific role, most attention has been focused on its ability to stimulate growth of the gastrointestinal tract[5].

Nucleotides, essential in energy metabolism and enzymatic reactions, are found in significant quantity in breast milk[6]. During the period of rapid growth or after injury, dietary nucleosides and nucleotides may become conditionally essential nutrients. Dietary nucleosides were also reported to be important in the growth and maturation of developing gut and play several role in immune function[8]. Potential benefit in developing infant has led to speculate as to whether they should be added to formula[9]. Experimental results showed that nucleoside supplementation in formula fed infants decreased the incidence of diarrhoea in a group of infants of low socio-economic status in Peru[10]. All these newer virtues of breast milk concludes the superiority of breast feeding.

2. High bioavailability : The balanced constituent of the breast milk helps in easy digestion and provides high bioavailability of most macro- and micro-nutrients. Thus though iron is present in equal amounts in human and cows milk, absorption is five times higher from human milk[5]. Different studies has confirmed the adequacy of iron from breast milk [11,12]. Execess iron in formula has been shown to influence the selenium and copper status[13]. Only 3 mg iron per liter of milk may be enough in formula milk[14]. Calcium content of cows milk is four times greater than human milk but even then cows milk fed infant may develop tetany but not the human milk fed infant. Presence of calcium and phosphate in perfect ratio in breast milk helps in optimum absorption of these nutrients. Study has shown that breast milk contains enough iodine but formula, specially the pre-term formula, are deficient in iodine and new-born are at risk of developing iodine deficiency[15].

3. Satiety : A recent study[16] has shown that breast feeding in early one to four days results in elevated release of cholecystokinin (CCK). This will cause stimulatory effect on digestion and may also cause relaxation and sleepiness after breast feeding. High concentration of CCK are seen in young infant which may help in satiety and keep calm despite a small amount of milk he/she is getting in initial few days.

C. Breast milk : Protection from infection

1. Immune system of human milk : Human milk contains not only the direct-acting antimicrobial agents but also anti-inflammatory factors and immuno-modulators [17,18]. Direct defensive agents like lactoferrin, lysozyme, secretory IgA (SIgA) are abundant in human milk. They have some common features like a) common to mucosal sites; b) resistant to digestive enzymes of the newborn; c) have synergistic action against various organisms; and d) protect without eliciting inflammation[18]. The anti-inflammatory agents in human milk includes prostaglandin E_2, $F_2\alpha$, EGF, lactoferrin, cortisol, α1 anti-trypsin, lysozyme, SIgA, α-tocopherol, β-carotene, ascorbate, etc. The presence of immune modulator is indirect as evidenced by decreased risk of certain immunological diseases like Crohn's disease or type-I diabetes mellitus[17].

2. First immunisation : Colostrum contain more immunoglobulins than mature milk and these provide protection to the new-born against infection. Thus breast milk is termed as first immunisation for the new-born. About 10% of protein in mature milk is secretory IgA which are specific to the pathogen commonly present in mothers gastrointestinal or respiratory passages[19]. This specific protection is obtained by migration of immunogen trigerred B-cells from Peyers pathches and lymphoid centre in bronchial tree to the lamina propria of the mammary gland [17,20]. Breast milk also contains lymphocytes, macrophages, protein with non-specific antibacterial activity, as

well as cytokines and complements whose actual functions are yet to be elucidated.

3. Protects infants from diarrhoea : Breast feeding protects an infant from morbidity and mortality related to diarrhoea. The virtue of exclusive breast feeding has been shown in reducing diarrhoea morbidity by 11 fold in mothers from urban poor in Dhaka, Bangladesh[19] and urban slum in Lima, Peru[21]. Risk of mortality from diarrhoea is 25 times higher in infants aged 0-2 months who are not breast fed as compared to infants who are exclusively breast fed[22]. Though this is particularly true for developing countries, it also holds true for industrialised nations. Study from Scotland showed specific protection from gastrointestinal and respiratory infections by breast feeding up to 13 weeks or more[23]. The risk of diarrhoea is inversely related to the amount of breast feeding[24] (Fig-1).

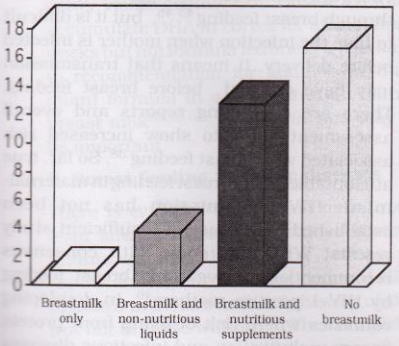

Fig-1 : *Risk of diarrhoea by feeding method (Source : WHO CDD Draft 1991[24]).*

This protection is mediated in two broad ways– directly, through specific and non-specific immune mechanism and indirectly, as extra water is not needed in a breast fed infant[19,25-27] which may be the media of infection, particularly in a developing country. Secretory IgA, specific for most of the diarrhoeal agents prevalent in the area, are found in breast milk[17]. Even antibody to giardia has been found which prevent the symptom of diarrhoea due to it [28].

4. Protects new-born from necrotising enterocolitis (NEC) : Study in low birth weight babies suggest that risk of NEC (a fatal gastrointestinal disease) is six to 10 times less in breast fed infants[29]. The risk attributable to formula feeding was greatest among the most mature, growth retarded babies[29]. The protective effect of breast milk may be mediated through presence of platelet activating factor acetylhydrolase (PAF). PAF is thought to participate in pathophysiology of NEC. Interestingly, the level of PAF-acetyl hydrolase in breast milk is significantly higher in earlier part and more so in pre-term milk when the chance of developing NEC is more[30].

5. Protects infants from acute respiratory infection (ARI) : Breast feeding protects infants from ARI[31], the most common cause of morbidity and mortality in developing countries. ARI morbidity in infants was found three times less in breast fed than mixed fed group in a study from Bangladesh[19]. A study in Brazil has shown risk of death from severe pneumonia is 3.6 times higher in artificially fed infants than breast fed ones [22] (also in Fig.-2). The severity of illness can also be modified.

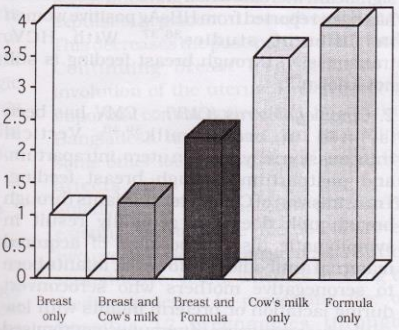

Fig-2 : *Risk of death from pneumonia by feeding method (Source : WHO CDD Draft 1991[24]).*

6. Effect on immunisation : A study has shown that breast feeding influences the antibody response to conjugate vaccine[32]. The antibody level in the initial period may not differ but at twelve month the level differs significantly. Thus it has been proposed that the antibody response is related to the feeding practice.

7. Protection of pre-term : The concentration of SIgA, lactoferrin and lysozyme are higher in pre-term than mature milk[33]. There are now ample evidence to suggest that human milk not only protects term new-born but are specially essential for pre-term both for nutrition and protection[17], who are more prone to infection and damage caused by inflammatory process. It was also reported that feeding human milk was an independent predictor of decreased risk for rehospitalisation in immature infants[34].

D. Breast feeding : Viral transmission

There are numerous studies regarding transmission of viral diseases through breast milk and breast feeding. Present recommendations regarding various viral infections are as follows :

1. Hepatitis B and C virus : Hepatitis B (HBV) seems to be transmitted to infants primarily during delivery. However, HBV antigen has been detected in breast milk[35], but no significant increased risk of HBV transmission has been reported from HBsAg positive women in different studies[36,37]. With HCV, transmission through breast feeding is still not known[38].

2. Cytomegalovirus (CMV) : CMV has been isolated in breast milk[39,40]. Vertical transmission may occur in utero, intrapartum, and postpartum through breast feeding. Transmission of CMV in term-infants through breast milk does not generally result in symptomatic disease because of acquired maternal antibodies[38]. However, infants born to seronegative mothers who seroconvert during lactation or preterm infants with low antibody or rare cases of immunecompromised infants may acquire symptomatic CMV infection[38].

3. Rubella : Transmission primarily occur through respiratory tract. Both wild and vaccine strain of rubella have been identified in breast milk [41,42], but no symptomatic disease associated with breast feeding had been reported.

4. Herpes simplex and zoster virus : Herpes simplex infection in neonates usually occur through an infected maternal genital tract. Transmission through breast milk without lesion in breast seems unlikely[38]. Regarding varicella, no published data indicate transmission through breast milk.

5. HIV: Because of the recent epidemic of HIV, and its necessity to target prevention, health workers have query regarding breast feeding by HIV positive mothers. The following information may help health professionals in this respect.

Transmission of HIV to infants is usually vertical in utero, intrapartum or postpartum[38]. There are several reports suggesting transfer through breast feeding [43-45], but it is difficult to time the infection when mother is infected before delivery. It means that transmission may have occured before breast feeding. There are conflicting reports and overall assessment failed to show increased risk associated with breast feeding [38]. So far, true attributable risk of breast feeding in maternal-infant HIV transmission has not been established[38]. Because of insufficient study results, WHO has come with consensus recommendations regarding breast feeding by HIV-1 positive mothers[46]. In developing countries where risk of dying from protein energy malnutrition and infectious diseases are high and avoidance of breast feeding only increases the risk, the WHO recommendation is to continue breast feeding regardless of HIV-1 status[46]. Numerous model addressing the potential impact of HIV-1 transmission by breast feeding and use of artificial milk indicate that in settings where infant mortality is high the benefits of breast feeding exceeds the potential added risk of HIV-1

transmission[47,48]. Regarding HIV-2 transmission from mother to infant, till now, litle is known regarding the role of breast feeding[38].

E. Breast milk : Neurological development

Breast fed babies are more intelligent, have less speech difficulties[49,50] with higher score in vocabulary test and design copying test[51] and have significant advantages in Bayley score[52] than a bottle or artificially fed child. The difference in long chain fatty acid ratio (C22:6ω-3) and sensitiveness of the composition of lipids in infant brain to dietary intake may be responsible for this[53,54]. Breast milk contain full range of n-3 and n-6 polyunsaturated fatty acids (PUFA) including docosahexaenoic acid (DHA) and arachidonic acid whereas formula containsonly their precursors[55]. DHA has been implicated in neural development[53,56-58]. DHA helps in better early retinal response to light and better visual acquity[53,56]. Breast fed infants accumulate DHA in cortex for atleast first 40 weeks but not formula fed ones[59]. This has led to recommendation for addition of this in infant formula in a concentration found in breast milk[55,60,61]. Growth factors may also be important.

F. Breast feeding : Allergic diseases

There is evidence that breast milk protects from allergic diseases. A study in preterm infants showed that use of human milk significantly reduced the incidence of allergic diseases in those with family history of allergy but not in those without[62]. The lactoglobulin contained in the cows milk is responsible for allergy and is absent in human milk.

G. Breast feeding : Diseases in later life

A recent study has unveiled a new horizon on the virtues of breast feeding in relation to diseases in later life[63]. Recent studies strongly suggest a link between insulin dependent diabetes mellitus (IDDM) and formula feeding. It was shown that antibody to bovine albumin cross react with pancreatic islet B cell surface antigen p69[64]. An American study has shown that a baby who was breast fed for more than 12 months had half the risk of developing IDDM[65]. There are reports suggesting breast fed baby has decreased risk of developing chronic inflammatory bowel disease[66]. A study from Denver on children with cancer showed an increased risk for those who were artificially fed as infants[67]. No mechanism has been forwarded. Future study may confirm the relationship and probably will focus on the mechanism.

H. Breast feeding : Sudden infant death syndrome (SIDS)

A study from New Zealand suggests that breast fed babies have decreased risk of death from SIDS[68]. Decreased incidence of viral infection, differences in sleep pattern between breast and bottle fed babies and possible difference in neurological development attributing to dietary composition are the possible mechanism of this protection as stated in the statement of the Standing Committee on Nutrition of the British Paediatric Association[63].

I. Breast feeding : Maternal health and contraception

Breast feeding also helps mother in various ways. Suckling soon after birth helps in early expulsion of placenta through oxytocin reflex. This decreases the post-partum haemorrhage. Continuing breast feeding helps early involution of the uterus. Breast feeding has important contraceptive effect. Studies in rural Bangladesh has shown that in addition to some other factors, pattern of infant feeding affects the length of post-partum amenorrhoea[69]. It has been estimated that existing contraceptive method is preventing two pregnancies in women in Asia during her reproductive years, whereas existing breast feeding practice is preventing five of the possible 12 pregnancies through the reproductive years of the mothers. In other way, if all mothers in Asia stop breast feeding

from today the average family size will be 10 rather than present size of five[24]. Studies from Bangladesh has shown that breast feeding prevent an estimated 6.5 birth per woman[70]. Breast feeding protects mothers from developing breast and ovarian cancers.

Though the fat content of breast milk and thus total energy content vary with post-partum body composition of mother[71-73], it is not clear whether this affects the total energy intake of breast fed infants. Recently lactational performance by low-income Honduran population has shown that maternal anthropometric status was not a significant predictor of milk volume or infant energy intake when birth weight and milk energy density were included in the model. This may suggest that infant characteristics like birth weight and ability to self regulate the intake in response to milk energy density mediate the relationship between maternal nutritional status and lactation performance[74]. Various studies has shown that quality of breast milk vary little with nutritional status . Study has shown that lactating women excrete less urinary calcium and zinc than never pregnant or non-lactating women[75]. The actual mechanism of this is not known yet. But this mechanism may help in maintaining the bone mineral density even after extended lactation[76].

J. Breast feeding : Bonding

Breast feeding helps in developing bondage between mother and the child. This bondage helps overall healthy development of the child.

K. Breast feeding : Economic value

Breast feeding also helps the family economically. Because of improper breast feeding practices in Bangladesh, the total loss has been quantified at approximately US $ 1 billion per year which is about 2% of Bangladesh's gross national product[77]. It has been estimated that exclusive artificial feeding will cost about Taka 1600-2100 per month. If the cost of cleaning, bottle, nipple, sterilisation and time spent in doing those are considered this will increase the cost further. Thus the cost will amount to monthly salary of a low paid staff or a regular paid labourer which means it is unaffordable.

Conclusion :

Bottle feeding is dangerous in a poor country like Bangladesh. The aggressive advertisement prectice in recent past had illusioned the poor community and the profesionals as well. Because of the cost, very dilute milk is being prepared resulting in malnutrition. Bottles of various kinds,even the empty medicine bottles, are used as feeding bottles without proper cleaning contributing to infection and gastro-enteritis. Bottle feeding contributes to lactational failure as there is nipple confusion. The composition of different nutrients in 'formula milk' are being modified regularly to match with breast milk composition and are marketed as 'Improved Product' each year thus suggesting that the presently available one will be outdated in coming year. Thus it is evident from above review that breast milk is specific and essential for newborn, particularly in developing countries like ours. This review may help the health workers to reorient themselves on the newer virtues of breast milk and further strengthen their desire to promote and protect breast feeding in this country.

References :

1. Zavaleta N, Lanata C, Butron B, Peerson JM, Brown KH, Lonnerdal B. Effect of acute maternal infection on quantity and composition of breast milk. Am J Clin Nutr 1995; 62 : 559-563.

2. Prentice AM, Goldberg GR, Prentice A. Body mass index and lactation performance. European J Clin Nutr 1994; 48: S78-S89.

3. Carpenter G. Epidermal growth factor is a major growth-promoting agent in human milk, Science 1980; 210 : 198.

4. Moran JR, Courtney ME, Orth DN et al. Epidermal growth factor in human milk : daily production and diurnal variation during early lactation in mothers delivering at term and at premature gestation . J Pediatr 1983; 103: 402.

5. Lawrence RA. Biochemistry of human milk. In : Breast feeding. A guide for the medical profession, fourth edition. 1994. St Louis : Mosby Year Book Inc. pp-91-148.

6. Leach JL, Baxter JH, Molitor BE, Ramstack MB, Masor ML. Total potentially available nucleosides of human milk by stage of lactation. Am J Clin Nutr 1995; 61: 1224-1230.

7. Uauy R, Stringel G, Thomas R, Quan R. Effect of dietary nucleosides on growth and maturation of the developing gut in the rat. J Pediatr Gastroenterol Nutr 1990; 10: 497-503.

8. Carver J. Dietary nucleosides : cellular immune, intestinal and hepatic system effects. J Nutr 1994; 129(suppl) : 144S-148S.

9. Quan R, Barness LA, Uauy R. Do infants need nucleotide supplemented formula for optimal nutrition? J Pediatr Gastroenterol Nutr 1990; 11: 429-437.

10. Brunser O, Espinoza J, Araya M, Cruchet S, Gil A. Effect of dietary nucleotide supplementation on diarrhoeal disease in infants. Acta Paediatr 1994; 83: 188-191.

11. Duncan B, Schifman RB, Corrigan JJ et al. Iron and the exclusively breast-fed infant from birth to six months. J Pediatr Gastroenterol 1985; 4: 421.

12 Schulz-Lell G, Buss R, Oldigs HD et al. Iron balances in infant nutrition. Acta Pediatr Scand 1987; 76: 585.

13. Lonnerdal B, Hernell O. Iron, zinc, copper and selenium status of breast-fed infants and infants fed trace element fortified milk-based infant formula. Acta Paediatr 1994; 83: 367-373.

14. Haschke F, Vanura H, Male C, Owen G, Pietschnig B, Schuster E et al. Iron nutrition and growth of breast and formula fed infants during the first 9 months of life. J pediatr Gastroenterol Nutr 1993; 16 : 151-156.

15. Ares S, Quero J, Duran S, Presas MJ, Herruzo R, de Escobar GM. Iodine content of infant formulas and iodine intake of premature babies : high risk of iodine deficiency. Arch Dis Child 1994; 71 : F184-F191

16. Uvnas-Moberg K, Marchini G, Winberg J. Plasma cholecystokinin concentrations after breast feeding in healthy 4 day old infants. Arch Dis Child 1993; 68 : 46-48.

17. Goldman AS, Chheda S, Keeney SE, Schmalstieg FC, Schanler RJ. Immunological protection of the premature newborn by human milk. Seminars in Perinatology 1994; 18: 495-501.

18. Goldman AS. The immune system of human milk: Antimicrobial, antiinflammatory and immuno-modulating properties. Pediatr Infect Dis J 1993; 12: 664-672.

19. Kawser CA. Growth of exclusively breast fed infants from 0-5 months. Dissertation submitted as part of FCPS Examination, 1983. Bangladesh College of Physicians and Surgeons, Dhaka.

20. Kono YL, Beagley KW, Fujihasi K et al. Cytokine regulation of localized inflammation. Induction of activated B cells and H-6 mediated polyclonal IgG and IgA synthesis in inflamed human gingiva. J Immunol 1991; 146: 1812-1821.

21. Brown KH, Black RE, de Romana GL, de Kanashiro HC. Infant feeding practices and their relationship with diarrhoeal and other diseases in Huascar (Lima), Peru. Pediatrics 1988; 83: 31-40.

22. Victora CG, Vaughan JP, Lombardi C, Fuchs SMC, Gigante LP, Smith PG et al. Evidence for protection by breast feeding against infant deaths from infectious diseases in Brazil. Lancet 1987; 2 : 319-322.

23. Howie PW, Forsyth JS, Ogston SA, Clark A, Florey du V. Protective effect of breast feeding against infection. BMJ 1990; 300: 11-16.

24. Breast-Feeding Counselling - A training course. Trainer's Guide. Draft Material for field test. WHO CDD Program, 1991.

25. Ashraf RN, Jalil F, Aperia A, Lindblad BS. Additional water is not needed for healthy breast-fed babies in a hot climate. Acta Pediatr 1993; 82: 1007-1011.

26. Almorth S. Water requirements of breast-fed infants in hot climate. Am J Clin Nutr 1978; 31: 1154-1157.

27. Sachdev HPS, Krishna J, Puri RK, Satyanarayana L, Kumar S. Water supplementation in exclusively breast fed infants during summer in the tropics. Lancet 1991; 337: 929-933.

28. Walterspiel JN, Morrow AL, Guerrero ML, Ruiz-Palacios GM, Pickering LK. Secretory anti- Giardia lamblia antibody in human milk: protective effect against diarrhoea. Pediatrics 1994; 93 : 28-31.

29. Lucas A, Cole TJ. Breast milk and neonatal necrotising enterocolitis. Lancet 1990; 336: 1519-1523.

30. Moya FR, Eguchi H, Zhao B, Furukawa M, Sfeir J, Osorio M, Ogawa Y, Jhonston JM. Platelet-activating factor acetylhydrolase in term and preterm human milk : a preliminary report. J Pediatr Gastro Nutr 1994; 19: 236-239.

31. Pisacane A, Graziano L, Zona G et al. Breast feeding and acute lower respiratory infection. Acta Paediatr 1994; 83: 714-718.

32. Pabst HF, Spady DW. Effect of breast-feeding on antibody response to conjugate vaccine. Lancet 1990; 336 : 269-270.

33. Goldman AS, Garza C, Nichols B et al. The effect of prematurity upon the immunologic system in human milk. J Pediatr 1982; 101: 901-905.

34. Malloy MH, Graubard B. Predictors of rehospitalisation among very low birth weight infants (VLBW). Clin Res 1994; 41: 791A.

35. Boxall EH, Flewett TH, Dane DS et al. Hepatitis B surface antigen in breast milk. Lancet 1974; 2: 1007-1008.

36. Beasley RP, Shiao I-S, Stevens CE et al. Evidence against breast-feeding as a mechanism for vertical transmission of hepatitis B. Lancet 1975; 2: 740-741.

37. Woo D, Cummins M, Davies PA et al. Vertical transmission of hepatitis B surface antigen in carrier mothers in two west London hospitals. Arch Dis Child 1979; 54: 670-675.

38. Ruff AJ. Breast milk, breast feeding and transmission of viruses to the neonate. Seminers in Perinatology 1994; 18: 510-516.

39. Hayes K, Danks DM, Givas H et al. Cytomegalovirus in human milk. N Eng J Med 1972; 287: 177-178.

40. Dworsky M, Yow M, Stagno S et al. Cytomegalovirus infection of breast milk and transmission in infancy. Pediatrics 1983; 72: 295-299.

41. Klein EB, Byrne T, Cooper LZ. Neonatal rubella in a breast-fed infant after postpartum maternal infection. J pediatr 1980; 97 : 774-775.

42. Buimovici-Klein F, Hite RI, Byrne T et al. Isolation of rubella virus in milk after postpartum immunization. J Pediatr 1977; 91 : 939-943.

43. Ziegler JB, Cooper DA, Jhonson RO et al. Postnatal transmission of AIDS-associated retrovirus from mother to infant. Lancet 1985; 1: 896-898.

44. Stiehm ER, Vink P. Transmission of human immunodeficiency virus infection by breast feeding. J Pediatr 1991; 118: 410-412.

45. Van de Perre P, Simono A, Msellati P et al. Postnatal transmission of human immunodeficiency virus type-I from mother to infant. A Prospective cohort study in Kigali, Rwanda. N Eng J Med 1991; 325; 593-598.

46. World Health Organisation. Consensus statement from the WHO/UNICEF consultation on HIV transmission and breast feeding . Wkly Epidemiol Rec 1992; 67: 177-184.

47. Heymann SJ. Modelling the impact of breast feeding by HIV-infected women on child survival. Am J Public Health 1990; 80: 1305-1309.

48. Kennedy KI, Fortney JA, Bonhomme MG et al. Do the benefits of breast feeding outweigh the risk of postnatal transmission of HIV via breastmilk? Trop Doc 1990; 20 : 25-29.

49. Broad FE. The effect of infant feeding on speech quality. NZ Med J 1972; 76: 28-31.

50. Broad FE. Further studies of the effects of infant feeding on speech quality. NZ Med J 1975; 82: 372-376.

51. Taylor B, Wadsworth J. Breastfeeding and child development. Dev Med Child Neurol 1984; 26: 73-80.

52. Morrow-Tlucak M, Haude RH, Ernhart CB. Breast feeding and cognitive development in the first two years of life. Soc Sci Med 1988; 26: 635-639.

53. Uauy DR, Birch DG, Birch EE, Tyson JE, Hoffman DR. Effect of dietry ω-3 fatty acids on retinal function of very low birth weight neonates. Pediatr Res 1990; 28: 485-492.

54. Farguharson J, Cockburn F, Patrick W, Jamieson EC, Logan RW. Infant cerebral cortex phospholipid fatty acid composition and diet. Lancet 1992; 340: 810-813.

55. Makrides M, Simmer K, Neumann M, Gibson R. Changes in the polyunsaturated fatty acids of breast milk from mothers of full-term infants over 30 wks of lactation. Am J Clin Nutr 1995; 61: 1231-1233.

56. Carlson SE, Werkman SH, Rhodes PG, Tolley EA. Visual acquity development in healthy preterm infants : effect of marine-oil supplementation. Am J Clin Nutr 1993; 58: 35-42.

57. Makrides M, Simmer K, Goggin M, Gibson RA. Erythrocyte docosahexaenoic acid correlates with the visual response of healthy, term infants. Pediatr Res 1993; 33: 425-427.

58. Makrides M, Neumann MA, Simmer K, Gibson RA. Dietary docosahexaenoic acid (DHA) and the development of visual acquity in term infants (abstract). J Paediatr Child Health 1994; 30: A2.

59. Makrides, M, Neumann MA, Byard RW, Simmer K, Gibson RA. Fatty acid composition of brain, retina and erythrocytes in breast and formula fed infants. AM J Clin Nutr 1994; 60: 189-194.

60. Uauy R. Are omega-3 fatty acids required for normal eye and brain development in the human? J Pediatr Gastroenterol Nutr 1990; 11 : 296-302.

61. ESPGAN Committee on Nutrition. Comment on the content and composition of lipids in infant formulas. Acta Paediatr Scand 1991; 80: 887-896.

62. Lucas A, Brooke OG, Morley R, Cole TJ, Bamford MF. Early diet of preterm infant and development of allergic or atopic disease : randomised prospective study. BMJ 1990; 300: 837-840.

63. Standing Committee on Nutrition of the British Paediatric Association. Is breast feeding beneficial in the UK? Arch Dis Child 1994; 71: 376-380.

64. Karjalainen J, Martin JM, Knip M et al. A bovine albumin peptide as a possible trigger of insulin-dependent diabetes. N Eng J Med 1992; 327: 302-307.

65. Mayer RJ, Hamman RF, Gay EC, Leotte DC, Savitz DA, Klingensmith GJ. Reduced risk of IDDM among breast fed children. Diabetes 1988; 37: 1625-1632.

66. Koletzko S, Sherman P, Cory M et al. Role of infant feeding practices in development of Crohn's disease in childhood. BMJ 1989; 298: 1617-1618.

67. Davies MK, Savitz DA, Graubard BI. Infant feeding and childhood cancer. Lancet 1988; 2: 365-368.

68. Mitchell EA, Taylor BJ, Ford RP et al. Four modifiable and other risk factors for cot death: the New Zealand study. J Pediatr Child Health 1992; 28(suppl): S3-S8.

69. Ford K, Huffman S. Nutrition, infant feeding and post-partum amenorrhoea in rural Bangladesh. J Biosoc Sci 1988; 20: 461-469.

70. Thapa S, Short RV, Potts M. Breast feeding, birth spacing and their effects on child survival. Nature 1988; 335: 679-682.

71. Nommsen LA, Lovelady CA, Heinig MJ, Lonnerdal B, Dewey KG. Determinants of energy, protein, lipid, and lactose concentrations in human milk during the first 12 months of lactation : the DARLING study. Am J Clin Nutr 1991; 53: 457-465.

72. Brown KH, Robertson AD, Akhtar NA, Ahmed MG. Lactational capacity of marginally nourished mothers : relationships between maternal status and quantity and proximate composition of milk. Pediatrics 1986; 78: 909-919.

73. Prentice A, Prentice AM, Whitehead RG. Breast milk fat concentrations of rural African women. 2. Long term variations within a community. Br J Nutr 1981; 45: 495-503.

74. Perez-Escamilla R, Cohen RJ, Brown KH, Rivera LL, Canahuati J, Dewey KG. Maternal anthropometric status and lactation performance in a low-income Honduran population : evidence for the role of infants. Am J Clin Nutr 1995; 61: 528-534.

75. Klein CJ, Moser-Veillon PB, Douglas LW, Ruben KA, Trocki O. A longitudinal study of urinary calcium, magnesium and zinc excretion in lactating and non-lactating postpartum women. Am J Clin Nutr 1995; 61: 779-786.

76. Sowers M, Corton G, Shapiro B, Jannausch ML, Crutchfield M, Smith ML et al. Changes in bone density with lactation. JAMA 1993; 269: 3130-3135.

77. UNICEF Report, Dhaka, Bangladesh. 1993.

CASE REPORTS

Orbital Rhinosporidiosis - A Case Report

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Summary :

A 20-years-old male reported to National Institute of Ophtalmology and Hospital with complaint of a swelling near the inner canthus and extending along the inferior orbital margin of right eye for last two years. He did not have any other complaint . The lesion was removed under general anaesthesia after a provisional diagnosis of haemangioma. The lesion was found to be located in the orbit and totally separated from eye lid, conjunctiva, sclera, extraocular muscles and lacrimal sac. It was diagnosed as rhinosporidiosis after histopathological examination. Rhinosporidiosis affecting the orbit has not so far been reported in the literature.

(J Bangladesh Coll Phys Surg 1996; 14: 38-41)

Introduction :

Rhinosporidiosis is caused by *Rhinosporidium seeberi*, a microorganism of complicated life cycle and uncertain taxonomy. Most observers however now consider it a fungus. Once believed to be an exotic tropical disease very common in India and Srilanka, it is now seen in nearly all countries. Rhinosporidiosis classically is a chronic, polypoid, inflammatory lesion. The site of involvement most commonly is the nasoharynx but also are the conjuctiva, oral cavity, larynx and rarely the skin, genitals, rectum, bone and brain. Dissemination to other viscera is extremely rare[1,2].

The occurrence of ophthalmic rhinosporidiosis is rare in our country[3,4]. The first ocular case was reported in 1962. In a period of 13 years (1968-81), only two cases each involving conjunctiva and lacrimal sac was noticed[3]. No ophthalmic involvement was noted in another study of 10 years priod (1983-1993)[5]. But, to the best of our knowledge, rhinosporidiosis affecting the orbit has not so far been reported in the literature. So, this case of orbital rhinosporidiosis detected for the first time in this country is reported.

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Case report :

A 20- years-old male was admitted in National Institute of Ophthalmology and Hospital (NIOH) on first May, 1995 with the complaint of a swelling near the inner canthus and extending along the inferior orbital margin for the last two years. He noticed a very small swelling initially which was slowly and progressively increasing in size. But he had no other complaints like watering, redness of eye, discharge, photophobia, headache or pain in the eye. He was habituated to take bath in the ponds. He was also in contact with livestock. He lives in a village of Dinajpur district and works in a grocery shop. The other members of his family were healthy.

Fig-1 : *Showing a diffuse swelling near the inner canthus and extended along the inferior orbital margin in the right eye of the patient.*

Fig-2 : *A colonial arrangement of Rhinosporidium seeberi with a large sporangium in the orbital tissue (X 60).*

On general examnation, he was normotensive, apyrexial but mildly anaemic. Liver, spleen, kidney and regional lymphnodes were not palpable. On local examination of right eye, a diffuse swelling externally appearing continuous with right lacrimal sac and measuring about 2 cm x 1 cm was placed horizontally along the inferior orbital margin. It was soft, non-tender, non-reducible, not associated with pulsation or bruit and overlying skin was bluish in colour and free from the mass. There was no diplopia and ocular motility defect. No abnormality was seen in the conjunctiva specially lower palpebral conjunctiva and fornix. The cornea, anterior chamber, pupil and iris were unremarkable. Right lacrimal sac was found patent on sac patency test. Intraocular pressure was normal. Vision was 6/6. Fundoscopy revealed normal findings. The left eye also did not have any abnormality. Dacryocystography showed normal sac size, shape, and a patent duct. X-ray orbit, paranasal sinuses (PNS) and ECG were unremarkable. Routine stool and urine examinations were also normal. Total count of WBC, differential count, haemoglobin level, erythrocyte sedimentation rate and blood glucose level were within normal limit. Haemangioma was the provisional diagnosis. The patient was referred to vascular surgeons for consultation. They also diagnosed it as haemangioma and suggested excision of the growth followed by cauterization by electro-cautery.

Fig-3 : *Photomicrograph showing mostly mononuclear cell infiltration, mild fibroblastic proliferation, a few maturing "tropic stage" and a sporangium having thick wall and containing numerous spores (X 240).*

The growth was removed by surgery under general anaesthesia. A horizontal incision was given on the lower eye lid over the mass and the orbicularis muscle was splitted. A vascular, granular, reddish mass was seen which was found to be extending into the deeper part of the orbit. Dissection of the growth was very difficult due to severe haemorrhage. Haemostasis was done by repeated electro-cautery and as a result the exact size of the mass was not detectable due to shrinkage. After the removal of the growth *en masse*, all bleeding points at the deeper part of the orbit were well cauterized. During excision of the growth, the conjuctiva, sclera, lacrimal sac, muscle of lower eye lid and extraocular muscles were found univolved.

Ultimately a mass of about 1.5 x 1 x1 cm was found after excision from the orbit. As the provisional diagnosis was haemangioma, whitish spherules of sporangia of *Rhinosporidium seeberi* had probably been overlooked. The wound was closed in layers. The dissected lesion was sent for histopathological examination.The post-operative period was unremarkable. Ketoconazole (Tab. Ketoral- one tablet) 500 mg daily was prescribed for one month.

Discussion :

Ophthalmic rhinosporidiosis is a rare condition in Bangladesh[3-5]. In almost 90% of ocular infections the palpebral conjunctiva is involved. In the remaining cases, it is the bulb, limbus, caruncle or canthi[6]. The world literature contains references to lacrimal sac[3,7,8], and many reports of conjunctival involvement [1,3,9,10]. From 1939 to 1980, a total of nine cases of conjunctival rhinosporidiosis have been reported in the United States[11]. The lacrimal glands and canaliculus may also be involved[12]. The lid and scleral involvement, although rare, has been reported [13]. The occurrence of the lesion in the orbit has not been recorded in standard text books of pathology and ophthalmology. This is believed to be the first reported case of orbital rhinosporidiosis.

The patient was 20 years old. It is stated that most patients of rhinsoporidiosis are between 20 and 40 years of age when diagnosed[6]. Most patients usually come from rural environment. India and Srilanka are the countries having high prevalence of rhinosporidiosis. The condition has been recorded in horses, cows and mules. It has been postulated that the disease occurs primarily in fish and only secondarily in man and animals[9]. Though exact mode of infection is not known, it is thought that the disease occurs when there is contact with animals or stagnant water in which animals have watered[9]. One engaged in removing sand from a river bottom may also get infected. In arid countries, dust is postulated to be a vector[6]. The patient described here came from a village of Dinajpur which is about 25 miles away from India (West Bengal). He frequently bathed in ponds and was associated with livestock. Infected water of the pond or animal may be the possible source of infection in this case. Dust from the dung of infected horses and cattle may be possible source of infection[7].

As nose is the commonest site of rhinosporidiosis, the patient was referred for an ENT consultation. They did not find any abnormality but suggested a course of systemic antifungal therapy (Inj. Amphotercin B, I. V . Infusion daily). Systemic treatment with Amphotrecin B (Fungizone) in pre- and post-operative periods provides the most satisfactory results with no recurrences[3]. As the drug was not available, ketoconazole 500 mg daily (Tab. Ketoral-1 tablet daily) was prescribed for one month. Conventional treatment outcome with antiparasitic antimony preparations or antileprosy drugs is not satisfactory and should therefore be avoided[3]. Recurrences and recalcitrant, and chronic infections are very common, for which the most successful treatment is surgical excision[1]. Recurrence of infection is a characteristic of rhinosporidiosis. Chitravel et al[14] reported that the disease had recurred 49, 21 and 23 times. Local injection of Amphoterecin B may be used as an adjunct to surgery to prevent reinfection and spread. However, no studies have demonstrated inhibition of growth of the organism by this agent. Other drugs such as dapsone have been found without any efficacy[6], although Krishnan[15] claimed dapsone to prevent relapse in 70% of patients. The organism does not grow in artificial media. Successful cultivation of the organism *in vitro* has been achieved in an epithelial cell culture by Levy et al[16]. The patient was advised to report for follow-up. Two and half months later, there was no evidence of recurrence and he is still in good health. The patient is being followed up.

References :

1. Jimenez JF, Young DE, Hough AJ. Rhinosporidiosis - a report of two cases from Arkansas. Am J Clin Pathol 1984; 82: 611-615.
2. Kissane JM (editor). Anderson's Pathology, 9th edition, 1990. St. Louis: CV Mosby. pp-404.
3. Ahmed SMK. Incidence of rhinosporidiosis in Bangladesh. The Healer 1983; 7 : 33-36.
4. Hussain MJ. Rhinosporidiosis. Bangladesh Armed Forces Medical Journal 1983; 3: 61-65.
5. Hasan ASMM, Islam MM. Histopathologic pattern of nasal lesions. Teachers Assoceation Journal 1994; 7: 85-87.
6. Rippon JW. In : Rippons Medical Mycology, 3rd edition, 1988. Philadelphia: WB Saunders. pp-362-372.
7. Mackay IS, Bull TR. Rhinology. In : Kerr AG, Groves J (eds). Scott-Brown's Otolaryngology, 5th edition, 1987. London : Butterworth and Co. pp-135-136.
8. Satyanarayana C. Rhinosporidiosis with a record of 255 cases. Acta Otolaryngol (Stockholm) 1960; 51: 348-366..
9. Khaleque KA. Interesting findings in rhinosporidiosis. Am J Med 1962; 35: 566-568.
10. Neumayr TG. Bilateral rhinosporidiosis of the conjunctiva. Arch Ophthal 1964; 71: 379-381.
11. Prevost E, Kreutner A, Vallotton WW, Walker EM. Conjunctival lesion caused by Rhinosporidium seeberi. South Med J 1980; 73: 1077-1079.
12. Peters HJ, Debelly CG. Conjunctival polyp caused by Rhinosporidium seeberi-report of a case . Am J Clin Pathol 1969; 51: 256-259.
13. Kuriakose ET. Oculosporidiosis: rhinosporidiosis of the eye. Brit J Ophth 1963; 47: 346-349.
14. Chitravel V, Saundaram BM. Recurrent rhinosporidiosis in man: case reports. Mycopathologia 1981; 73: 79-82.
15. Krishnan KN. Clinical trial of diamino-diphenyl sulphone (DDS) in nasal and nasal-pharyngeal rhinosporidiosis. Laryngoscope 1979; 89: 291-295.
16. Levy MG, Meuten DJ, Breitschwerdt EB. In vitro cultivation of Rhinosporidium seeberi: Interaction with epithelial cells. Science 1986; 234: 474-476.

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Synovial Chondromatosis of the Ankle

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Summary :

A case in which 30 osteochondral loose bodies were found in the ankle of a 18-years-old man is reported. Operative removal was not difficult and the result was good.

(J Bangladesh Coll Phys Surg 1996; 14: 42-43)

Introduction :

Synovial chondromatosis or osteochondromatosis of the joint is a rare disease[1,2]. A large number of villous folds become pedunculated and their bulbous extremities undergo metaplasia to cartilage. Eventually they separate from their pedicles to become free mobile bodies, often in pearly clumps, may increase in size as they are nourished by synovial fluid, and many of them become calcified or ossified.

Although the disease may affect any synovial joint, it is mostly seen in the knee, elbow, shoulder and hip joints, predominantly in males of 30 to 50 years of age[3]. This case reports involvement of ankle in a 18-years-old young man, which is unusual[4].

Case report :

A 18-year-old marine cadet presented in July, 1994 with mild pain in his right ankle for last three months. The pain was dull in nature and he was feeling difficulty in continuing his regular drill. On examination, there was mild swelling in front of his lateral malleolus and fine crepitations on joint movements. He denied any injury and the range of his joint movement was normal.

Radiograph showed calcification in front of the ankle (Fig-1). Laboratory investigations were within normal limit. It was decided to explore the joint.

Fig - 1 : *X-ray showing calcifiction in front of the ankle.*

During the operation through antero-lateral approach, immediately after entering the joint, one pearl like round body popped out of the joint, many others followed on moving the ankle and some others were curetted out from a pouch in front totalling to thirty. The ankle mortice and the dome of the talus were seen normal. Post-operative period was uneventful and the patient is now continuing his academy course without any difficulty.

Fig - 2 : *Osteo - chondral loose bodies removed from the ankle.*

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Discussion :

Kollicker described the occurrence of cartilage cells in the villi of synovial membrane[5]. Most observers agree that under the influence of certain stimuli connective tissue cells may undergo metaplasia to form specialized mesodermal tissue such as bone or cartilage[5]. Others believe the condition rises from the embryonic rests. Both synovial membrane and articular cartilage develop from the same mesenchymal tissue. Hyaline cartilage forms the *stratum synoviale* of the synovial membrane, particularly at the point of reflection of the membrane[3].

Only when the bodies are calcified or ossified are they visible on X-ray. Even so, because many are composed only of cartilage, the number is always much greater than one would suspect from the film.

Common symptoms are dull ache, stiffness, transient locking episodes, grating sensations etc. The loose bodies must be removed to halt further damage to articulr surfaces.

This patient was very young and in a literature review the youngest reported case of synovial chondromatosis was in a 29-year-old black male[7].

References :

1. Adams JC, Hamblen DL. Loose bodies in joints. In: Outline of Orthopaedics, 11th edition, 1991. London: Churchill-Livingstone. pp-125.
2. Apley AG, Solomon L. Synovial Chondromatosis. In: Apley's System of Orthopaedics and Fractures, 7th edition, 1993. London : Butterworth-Heinemann. pp-452-453.
3. Turek SL. Osteochondromtosis. In: Orthopaedics - Principle and their application, Vol.-I, 4th edition, 1984. Philadelphia : J. B. Lippincott. pp- 455.
4. Blandino A, Salvi L, Chirico G, Longo M, Faranda C et al. Synovial chondromatosis of the ankle. Clin Imaging 1992; 16: 34-36.
5. Duthie RB, Bentley G. Synovial chodromatosis. In: Mercer's Orthopaedic Surgery, 8th Edition, 1984. London : Edward Arnold. pp-IO29.
6. Bauer M, Jonsson K. Synovial Chondromatosis of the Ankle. Rofo Fortscher Geb Rontgenstr Nuklearmed 1987; 146: 548-550.
7. Sekosky M, Lefkowitz H, Steiner I. Osteochondromatosis of the ankle. J Foot Surg 1990; 29 : 330-333.

COLLEGE NEWS

Continuing Medical Education :

13-9-95 :	Prof. Sayyid Fazlul Hoq Professor of Radiotherapy (Retd.) 676, Dhanmondi Residential Area, Road No. 32, Dhaka delivered lecture on "Cancer pattern in Bangladesh".
11-10-95 :	Prof. Mirza Muzharul Islam Director General BIRDEM Hospital, Dhaka, delivered lecture on "Breast lumps"
25-10-95 :	Dr. Shahana Akhter Rahman Associate Professor of Paediatrics, IPGMR, Dhaka delivered lecture on "How to assess students - an overview"
8-11-95 :	Dr. Ainun Afroza Associate Professor of Paediatrics Project Teacher, Centre for Medical Education, Mohakhali, Dhaka delivered lecture on "Effective teaching in medical education".
22-11-95 :	Dr. (Major) Barendra Chakravarty Classified Specialist in Medicine and Cardiologist, CMH, Dhaka Cantt., Dhaka, delivered lecture on "Trans- oesophageal echo-cardiogram - state of the art".
27-12-95 :	Dr. (Maj. General) A S M Matiur Rahman Commandant Armed Forces Institute of Pathology, Dhaka Cantt., Dhaka, delivered lecture on "Immune response".