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Effects of Hilsha fish oil on experimental Atherosclerosis in Rabbits

P. K. GHOSH, M Phil[a], B. ISLAM, M Phil [b], M. R. QUDDUS, M Phil [c] & K. M. N. ISLAM, M Phil[d]

Summary:

It has been observed that fish oil containing omega-3 fatty acid has a protective effect against the development of atherosclerosis. To evaluate the effect of Hilsha fish oil on the genesis of experimental atherosclerosis, 18 New Zealand white rabbits (in three groups) were employed. One group served as normal control and were fed with a normal basal diet. Another group had a diet containing 1% cholesterol and served as atherosclerotic control. The third group received 2ml of Hilsha fish oil daily in addition to 1% cholesterol diet. Following development of atherosclerosis, the percent of aortic lesion was measured by planimetry of Sudanophilic areas. The percent of aortic lesion in the atherosclerotic control group was 39±4.08%. The percentage of aortic lesions were significantly low in the fish oil treated group (19±1.54%, P<0.005). In addition, fish oil fed animals showed lowered level of serum cholesterol, LDL-cholesterol and serum triglycerides in comparison to atherosclerotic control animals. A rise in HDL - cholesterol was also observed in the treated animals in comparison to their pre-diet values.

The study confirms that Hilsha fish oil can attenuate the development of aortic atherosclerosis in cholesterol fed rabbits.

(J Bangladesh Coll Phys Surg 1992 ; 10 : 1-5)

Introduction :

Atherosclerosis is almost a global problem. It is responsible for high degree of mortality and morbidity. In Bangladesh, the problem of atherosclerosis which is synonymous with ischaemic heart disease is no less important.

To understand various aspects of this disease including its prevention, many workers have studied various aspects of this problem. Among these, experimental studies on prevention of atherosclerosis is noteworthy. Many agents have been tried for this purpose. Of these, fish oil containing omega 3- fatty acids is found to be an important agent in retarding atherosclerosis in animal model[1,2].

In Bangladesh, Hilsha fish is popular and its consumption is high. It has been observed that, Hilsha fish oil contains a considerable amount of unsaturated fatty acids including omega-3 group[3]. So it is tempting to speculate that Hilsha fish oil might play a protective role against atherosclerosis.

The aim of this study was to observe the preventive effect of Hilsha fish oil on experimental atherosclerosis in an animal model.

Materials and Methods:

18 New Zealand white rabbits were employed in this experiment. The body weight varied from 1.5-2.0 kg. The animals were kept

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in different cages and were grouped into three in the following order: Group-I was provided with normal basal diet formulated by ICDDR'B. Group-II served as atherosclerotic control having an atherogenic diet, prepared by adding 1 % cholesterol with normal basal diet. Group-III was treated with Hilsha fish oil at a dose of 2ml/rabbit/day in addition to atherogenic diet for a period of 10 weeks. The oil was administered with a rubber tube. Fish oil was well tolerated by each animal. Body weight and food consumption was estimated every week. Each animal ate approximately 75 g of diet everyday. For serum lipid estimation, blood samples were collected from the ear vein of rabbits at the beginning and at the end of the experiment.

All animals were sacrifed after 10 weeks, by injecting Sodium Pentobarbital at a dose of 60mg/kg body weight. After opening the chest and abdomen by a ventral incision the aorta was dissected out from its commencement to 2 cm beyond the bifurcation of the common iliac artery.

Each aorta was opened longitudinally through the ventral surface. These were stained with 1% Sudan IV solution according to the method of Holman[4] and fixed on a cork board with pins keeping the endothelial side up. A tracing paper was placed on those. Sudanophilic lesions and the aortic outline was traced with separate ink. The paper was placed on a graph paper and the percentage was determined by planimetry [5]. Sections from the plaques and sections from the corresponding area of the normal aorta were stained with Haematoxylin and Eosin. Frozen sections were also stained with Oil-red-O.

Statistical analysis of serum lipid values and aortic lesions were performed. Data was subjected to (two way analysis of Varience) ANOVA. Students "t" test was also done to compare results obtained from two groups.

Results:

Morphologic study of aortic lesion : Raised yellowish white oval and irregular lesions were found on the intimal surface (which were strongly Sudanophilic) of aortae belonging to the atherosclerotic control and fish oil treated groups. Lesions were mainly distributed in the aortic arch, ascending aorta and at vessel branches. No lesion was observed in group-I animals (normal control).

TABLE - 1 : *Mean Percentage of Sudanophilic lesions in different groups of rabbits aortae (Mean value ± SEM)*

Group	Number of animals	Lesions (%)
I	6	No lesion
II	6	39.00 ± 4.08 * P<0.005, Compared with fish oil fed (Student's 't' test)
III	6	19.31 ± 1.54

Group-I : Normal control,

Group-II: Atherosclerotic control,

Group-III: Fish Oil fed. SEM : Standard error of mean.

The animals of atherosclerotic control group developed maximum number of lesions (39 ± 4.08%). There was a significantly low percentage of aortic lesions in the fish oil treated group (19.3 ± 1.54% P<0.005).

Serum Lipid Levels:

At the end of the experiment some of the serum lipid levels increased manifolds than basal levels in Group -II and group-III animals.

Table -II : *Mean Serum Lipid Levels (mg/dl) in Different Groups of Rabbits at the Beginning of the Experiment*

(Mean value ± SEM)

Group	Cholesterol	Triglyceride	HDL-chol	LDL-chol
I	101 ± 4.2	109 ± 3.6	32 ± 1.4	56 ± 2.2
II	97 ± 9.8	103 ± 5.2	33 ± 1.5	59 ± 3.3
III	98 ± 2.9	102 ± 3.8	34 ± 2.1	56 ± 4.2

Group-I: Normal control, Group-II: Atherosclerotic control, Group-III : Fish oil fed. SEM : Standard error of mean.

At the beginning there was no significant difference among the serum lipids, but at the end of the experiment, a significant difference in serum cholesterol between the atherosclerotic control and the fish oil treated group (1948 ± 98 Vs 1456 ± 65mg% P<0.005) was observed.

Serum Triglyceride value were low in the fish oil fed group (group-III) in comparison to the atherosclerotic control (440 ±19mg% Vs 273 ± 35 mg% P<0.005). Low density lipoprotein -cholesterol (LDL) level also showed a significant difference between group-II and Group-III animals (1760 ± 66mg% Vs 1332 ± 67 mg% P<0.001). On the other hand, fish oil treated animals revealed a raised concentration of high density lipoprotein (HDL) cholesterol in comparision to their pre-treatment levels (34 ± 2.1 mg% Vs 46 ± 3.3mg% P<0.005).

Teable-III : *Average Serum Lipid Levels (mg/dl) in different Groups of Rabbits at the end of the Experiment*

(Mean Value ± SEM)

Group	Cholesterol	Triglyceride	HDL-chol	LDL-chol
I	99 ± 3.5	101 ± 3.8	35 ± 2.1	58 ± 3.6
II	1948 ± 98	440 ± 19	30 ± 1.3	1760 ± 66
III	*1456 ± 65	*273 ± 35	46 ± 3.3	**1332±67

*P<0.005, **P<0.001

Group-I: Normal control, Group-II: Atherosclerotic control, Group-III: Fish oil fed. SEM : Standard error of mean.

Discussion:

This study clearly establishes inhibition of diet induced atherosclerosis by Hilsha fish oil in an animal model. This finding confirms the speculation that Hilsha fish oil intake can protect against the development of atherosclerosis as this fish oil is rich in unsaturated fatty acids including omega-3 group[3].

In Hilsha fish, the omega-3 content, especially Eicosapentaenoic Acid (which is thought to be an important component in retarding atherosclerosis) is lower than that of a typial marine fish[2]. Inspite of this deficiency Hilsha fish oil clearly has shown a protective effect against atherosclerosis.

The action of Hilsha fish oil is not known clearly, however it can be suggested as is thought to be multifactorial Eicosapentaenoic acid of Hilsha fish oil is incorporated into the cell membrane phospholipids of platelets and endothelial cells of blood vessels[6]. However, It

is a poor substrate for cyclo-oxygenase enzyme and its metabolism results in biologically inactive products such as leukotriens of five series[7]. It also produces Prostacyclin (PGI_3). These altered prostaglandin metabolism may play a role in the suppression of atherosclerosis. Its influence on platelets may be a factor as it is evident by a reduced aggregation of platelets and increase in bleeding time in animals and human after omega-3 treatment[6,7].

In this study there was significant change in serum cholesterol, triglycerides and lipoproteins in the fish oil treated animals[8]. The result is in congruence with other study[9]. The cholesterol lowering mechanism is not clear. But it has been observed that after fish oil treatment faecal excretion of sterol is increased. Also has been observed in human that after intake of omega-3, rate of synthesis of LDL and VLDL-apoB is decreased[10,11]. This may explain the lowered level of LDL and triglyceride in the fish oil treated animals.

In this study, HDL-cholesterol level become raised after fish oil treatment. It also corroborates another study[12]. The mechanism of rise is yet to be investigated, but it has been observed that after intake of unsaturated fatty acid, bile acid output increases and incresed enterohepatic circulation of bile acid may be responsible for increased HDL especially HDL_3 fraction[12]. However, it may not be the sole explanation.

It can therefore be concluded from this study that, Hilsha fish oil has a potential benefit in retarding the development of cholesterol induced atherosclerosis in rabbits. Its hypolipidemic effects may contribute directly to this beneficial influence.

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Irrigation

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Towards Solving the Urological Irrigation Problem in Bangladesh

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Summary :

A sterilizable stainless steel drum, filled with 5% dextrose in aqua, connected to cystoresectoscope using a soft plastic tube has been proved to be a satisfactory irrigation system for use during transurethral resection in our country. A total of 57 TUR were carried out in a one year period without any significant complications

(J Bangladesh Coll Phys Surg 1992;10 : 6-8)

Introduction:

In Bangladesh, TUR is gradually becoming more available and is now the preferred operation for obstructing prostates and bladder tumours. As the entire process is carried out "under water", a large quantity of irrigation fluid is required for each procedure. An ideal irrigant should have the following characteristics - (1) sterile (2) clear (3) cheap (4) non-electrolytic (5) non-haemolysing and (6) non-toxic. In developed countries they use 1.5% glycine or "CYTAL" (2.7% sorbitol with 0.54% mannitol) packed in sterilised flexible plastic bags connected to the cystoresectoscope using pre-sterilized disposable plastic tubes of suitable size. In Bangladesh, none of these are available nor is it possible to manufacture them locally or import them in bulk. This lead us to search for a satisfactory alternative.

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Method :

From amongst the commercially available intravenous fluids our choice was 5% dextrose in aqua. Once we opted for 5% dextrose we then had to find a method of delivering the irrigation fluid in sufficient volume through the cystoresectoscope during resection. In developed countries, two 5 litre bags filled with the irrigant, hanging from a drip stand, are used as a reservoir. These bags are connected to the cystoresectoscope using a "Y" delivery set. We tried using locally available 1 litre bag of dextrose connected to the cystoresectoscope using a blood giving set. This failed miserably. The rate of delivery was too slow and the reservoir was too small. The surgeon was forced to keep stopping to allow the bag to be changed. After a lot of discussion we opted for a stainless steel drum as a reservoir and an ordinary soft, large bore plastic tube as a delivery set. The drum can be easily sterilised by steam autoclave and the plastic tube by immersing in chemical sterilizer.

The stainless steel drum is about 12" high and has a capacity of about 15 litres. It has an easily removable lid and two metal pipes coming out from the bottom. One of the metal

pipes has a tap at the end of it and the other one is open. The tap is attached to a plastic tube which in turn is attached to the cystoresectoscope. The open ended pipe is attached to a short transparent plastic tube which is then clamped to the side of the metal drum to position it (the tube) vertically.

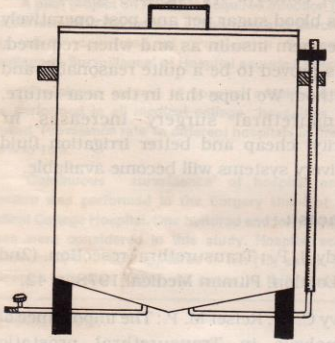

Fig - 1 : *Sketch of the Stainless steel Drum used as reservoir*

Before operation one litre bags of 5% dextrose in aqua, still wrapped in their outer coverings are immersed in a hot water bath to bring the temperature of the irrigant near body temperature. The stainless steel drum, which has been wrapped in linen drapers and then sterilized under pressure, is exposed. A gloved person then attaches a short transparent plastic tube to the open ended metal tube and fixes it to the side clamp of the drum near the top. The lid is taken off. The dextrose bags are taken out of the water bath and wiped dry. One person then cuts open the outer covering. A second person who is gowned and gloved, takes the bag out, cuts the corner of the bag and pours the contents into the drum. In this way, using aseptic technique, the drum is filled with the dextrose solution. Once filled, the lid is replaced and the drum is placed on a wooden stand which is approximately 60 cm higher than the operation table. The surgeon then hands over a long plastic tube to his assistant who attaches one end of it to the drum tap. The vertical plastic tube acts as an indicator of the amount of the fluid that is left in the drum. If the irrigation fluid is getting low it can be replenished during the procedure by removing the lid of the drum and pouring in more dextrose using aseptic technique without removing the drum from the stand. Thus the surgeon is not disturbed during the resection.

Patients and Results :

During the period of April 1990 to March 1991, a total of 57 TURs were carried out by one of us (B.K.) using the above mentioned irrigation method. Of these, 50 were prostates and the rest were bladder tumours. All the patients except two were male. The view through the cystoresectoscope was excellent in all of them. The average time of resection was just below an hour. The amount of irrigation fluid used on average per case was 14 litres. No significant mechanical trouble was encountered with the delivery system. The only serious medical complication was one case of TUR syndrome. Several cases of hypothermia were encountered early in the series but this problem was largely abolished by warming up the fluid before filling the drum.

Discussion :

Of the different sterile, pyrogen free fluids available currently in Bangladesh (i. e., normal saline, distilled water, 5% dextrose, etc.) only 5% dextrose in aqua meets all the criteria of the ideal irrigant. It is, however, relatively expensive. In some units distilled water is used

but this can cause intravascular haemolysis. With distilled water therefore, in all but the smallest resections, the patients life is put at risk.

TUR is a complicatied procedure requiring a lot of sophisticated equipment and as such is relatively costly. These costs are largely offset by the early post operative recovery and decreased post operative morbidity and mortality. Since one is going to such an expense to improve post-operative morbidity and mortality, it does not make sense to cut corners by using either boiled water or distilled water. To quote Prof. Blandy : "Since irrigation fluid used at TUR will get into blood stream it must be at least as pure as an intravenous solution and no lesser standard can be accepted"[1]. This emphatic statement by one of the most renowned and experienced urologists in the world virtually forbids us from using boiled water. As to the use of distilled water it has been proven again and again that it is dangerous as it can precipitate intravascular haemolysis[2,3]. It can be said therefore, that water has almost no role as an irrigation fluid during TUR. In our opinion, without doubt, the clear winner is 5% dextrose. We opted for it by trading relative cheapness in favour of increasing the patients safety through using a non-haemolysing irrigation solution.

Our choice of 5% dextrose is not an ideal choice nor is our delivery system a perfect one but this is the best we have been able to do in a country where urology is still in its infancy. The use of 5% dextrose in diabetics may give cause for concern. We regularly monitor our patient's blood sugar per and post-operatively and give them insulin as and when required. This has proved to be a quite reasonable and safe method. We hope that in the near future, as transurethral surgery increases in popularity, cheap and better irrigation fluid and delivery systems will become available.

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Surveillance Study of Hospital Acquired Infection

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Summary :

A pilot project on Hospital Acquired Infection (H. A. I) was performed in the months of February and March, 1990. This study consisted of 'Prevalance Survey' and 'Continuous Surveillance' of Hospital acquried infection.

"Prevalance survey' of hospital acquired infection was performed in all medical college hospaitals, which showed 'Prevalance rate' in different hospitals in the range of 6% to 18%.

"Continuous surveillance' of hospital acquired infection was performed in the Surgery Unit-I of Dhaka Medical College Hospital. One hundred and forty three (143) cases were considered in this study. Hospital acquired (Nosocomial) infection appeared in ten (10) cases. So the incidence rate was 3.49%. All cases in this study were postoperative 'surgical wound infections'. Commonest micro-organism was E. Coli and the antibiotics to which organisms were sensitive were tetracycline and doxacyline. The commonly used broad spectrum antibiotic like ampicillin, cloxacillin, amoxycillin, gentamycin and cephalexin were not efffective.

The mean postoperative hospital stay in case of patients with nosocomial infection is about 3 times than that of the cases without infection. This resulted in unnecessary monetary loss and bed occupancy.

It is concluded that a 'National Surveillnce study' should be started immediately to focus upon the magnitude of hosptial infection problem which will stimulate the administrator to initiate effective control programme.

(J Bangladesh Coll Phys Surg 1992; 10 : 9 -13)

Introduction:

Hospital acquired infection (H. A. I.) or Nosocomial infections are infections that are not present or incubating when a patient is admitted into a hospital but acquired in the hospital atmosphere[1]. It is a common problem in the hospital service both in the developed and developing countries. It increases the patient morbidity and mortality as well as cause much economic loss to the family and nation.

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The number of the patients suffering from hospital acquired infections is more than that in any known epidemics. Nosocomial infection affects not less than 400,000 hospitalized patients at any time[1]. All developed countries have put great emphasis on it. Nosocomial infection control has been well established in the United States since 1960's[2]. Billions of dollars are used annually for the control of H. A. I. in the U. S. A. Recently countries in the South East Asian zone, one of them Thailand have started work to prevent and control H. A. I. This measure has reduced the incidence of nosocomial infection substantially in Thailand. But unfortunately no such work so far has been undertaken in Bangladesh. A surveillance study of H. A. I. has been done in one surgical unit of Dhaka Medical College Hospital as a pilot project for two months only. This study was undertaken to asses the magnitude of the problem of H.A.I. in the hospitals of Bangladesh.

Materials and Methods:

A 'Prevalance Survey' of nosocomial infection in the surgery units of all medical college hospitals was performed. For this nosocomial infection diagnosed clinically at the time of a single visit to a single unit was used to measure the 'prevalance rate' as percentage.

'Continuous surveillance' of H. A. I. among the 143 patients admitted and treated in Surgery Unit-I, Dhaka Medical College Hospital from Ist February to 31st March 1990 was performed. Both the 'Clinical based' and Laboratory based' surveillance methods were used to screen nosocomial infection. At first, clinical diagnosis of H. A. I. has been made in the ward as per definition of H. A. I. All the cases in this study were found to be 'Surgical wound infection'. Wound swab was taken and bacteriological examination for culture and sensitivity was done, using blood agar, MacConkey's agar and Nutrient agar media.

At first, average postoperative hospital stay of the patients of the same disease without nosocomial infection in this particular period (irrespective of other factors) was found. Then the overstay period of the patients with nosocomial infection was calculated.

Results :

Prevalance rates of nosocomial infection in the medical college hosptials are shown in Table-I, which shows prevalance rate of H. A.I. is comparatively less in Dhaka Medical College Hospital then in other medical college hospitals.

One hundred and forty three cases were treated in the Surgery Unit-I, Dhaka Medical College Hospital during the period of this study. Nosocomial infection appeared in ten (10) cases. So the 'Incidence rate' was 3.49% which was calculated by the number of the patients who acquired nosocomial infection per hundred discharges per month[3]. All of the cases were post operative 'Surgical wound infection' (Table-II). Disease pattern of nosocomial infection in this series is shown in Table -III.

Table -I : *Prevalance rate of H. A. I. in Medical College Hospitals of Bangladesh.*

Medical College Hospital	Prevalance rate of H.A.I. in percentage (%)
Dhaka Medical College Hospital	6.0
Chittagong Medical College Hospital	12.0
Sylhet Medical College Hospital	17.0
Salimullah Medical College Hospital	12.0
Mymensingh Medical College Hospital	16.0
Rangpur Medical College Hospital	18.0
Rajshahi Medical College Hospital	13.0
Sher-E-Bangla Medical College Hospital	18.0

Table - II : *Incidence of H. A. I. in the study during two months:*

Status	Number	Percentage
Infected	10	6.99*
Non-infected	133	93.01

*=3.49% per month i. e. incidence rate.

The result of culture and sensitivity tests of the clinically diagnosed cases of H. A. I. is shown in Table- IV. In this series, causative

Table-III : *Incidence and disease pattern of the nosocomial infection*

SL. No.	Name of Disease	Total No. of Patients	Diagnosed HAI Case	Percentage of HAI in each category of Case	Percentage of H. A. I. in total no. of cases (N=143)
1.	Perforation of chronic D. U	32	5	15.60%	3.49
2.	Ileal perforation	5	2	40.00%	1.40%
3.	Burst appendix	3	1	33.33%	0.70%
4.	Cholelithiasis	11	1	09.09%	0.70%
5.	Nephrolithiasis	2	1	50.00	0.70%

Table -IV : *Results of culture and sensitivity tests of disgnosed H. A. I. cases.*

No. of H.A.I.	Type of the organism	Antibiotic sensitivity
10	E. Coli 6 (60%)	Tetracycline 5 (62.50%)
	Staph. aureus 2 (20%)	Doxacycline 5 (62.50%)
	Pseudomonous aeruginosa 2 (20%) (with E. Coli)	Chloramphenicol 4 (50.00%)
	No growth 2 (20%)	

organism in 60% of cases was E. Coli and in 20% was Staph. aureus. In 20% cases, there was mixed infection caused by Pseudomonous aeruginosa and E. Coli. Tetracycline, doxacycline and chloramphenicol were sensitive antibiotics, whereas in all cases the commonly used broad spectrum antibiotics like ampicillin, amoxycillin, gentamycin, cephalexin, and cotrimoxazol were resistant.

The mean postoperative stay in case of the patients with nosocomial infection was 25 days about 3 times more than that of cases without nosocomial infection (8.6 days). The postoperative over-stay period of H. A. I cases ranged from 7 to 41 days. This is shown in Table-V.

Table -V : Post-operative stay period of individual H. A. I. Cases.

Case No.	Disease	Average Post-operative stay of non-infected cases.	Post-operative stay of diagno sed HAI cases.	Over stay of diagnosed H.A.I. cases.
I.	Ileal Perforation.	10 days	51 days	41 days
2.	Perforation D. U.	8 days	17 days	9 days.
3.	Cholelithiasis	8 days	27 days	19 days.
4.	Burst Appendix	8 days	47 days	39 days.
5.	Perforation D. U.	8 days	19 days	11 days
6.	Perforation D. U.	8 days	16 days	8 days
7.	Perforation D. U.	8 days	18 days	10 days
8.	Nephrolithiasis.	10 days	17 days	7 days
9.	Ileal Perforation.	10 days	20 days	10 days
10.	Perforation D.U.	8 days	18 days	10 days

Discussion:

Total number of patients during the two months of study was 143. Nosocomial infection appeared in 10 cases. So the average monthly "Incidence rate" in this study was 3.49% which was calculated by the number of the patients who acquired nosocomial infections per hundred discharges per month[1]. Approximately 5.5% hospitalized patients acquired these infections[3]. An international prevalance study of nosocomial infections by WHO showed an incidence rate of 8.7%[4]. Our study showed a lower rate of nosocomial infection. This might be due to failure in detection of some nosocomial infections which might have had onset after the patients were discharged from the hospital. Also as the casualty department is seperate from the general surgery ward in D. M. C. H., the incidence was comparatively lower. In all other hospitals where casualty patients are being treated in the same ward and in the same operation theatre with general surgery patients, the incidence rate is high. This has been proved in the "Prevalance Survey" where the "Prevalance rate" in other hospitals ranged from 12% to 18%, whereas in the Dhaka Medical College Hospital it was 6%. "Prevalance Rate" is the number of patients having active nosocomial infections per 100 admitted patients at the time of surveillance[2]. The prevalance rates of nosocomial infections in many countries ranges from 9.2% to 21.4%[1]. In Thailand prevalance rate is 11.7%, in Ethiopia 17.0%, U. K. 9.2% and in Norway 9.0%[1]. This study showed similar prevalance rate of nosocomial infections in our country. All cases in this study were postoperative "Surgical wound Infection". As for the site of infections, urinary tract is by far the commonest infection followed by pneumonia and surgical wound infection[2]. In this study surgical wound was the commonest, as possibly only one surgical unit was considered in this study. Though the highest score was for the perforation of chronic

duodenal ulcer, incidence was more in case of ileal perforation (40%) than perforation of chronic duodenal ulcer (15.60%). Highest score was due to the highest number of the patients of perforation of chronic duodenal ulcer treated during this period. This study showed highest incidence of H. A. I. in nephrolithiasis cases. A definitive incidence rate is unlikely to emerge from the present study as it was based on a relatively small number of cases.

Staph aureus is the most common organism for surgical wound infection[5]. But in this study E. coli replaced the Staph. aureus. The commonest micro-organisms in nosocomial infections are E. Coli, Staph. aureus, Enterococci and Pseudomonous aeruginosa[1]. This study also showed the same trend. Two cases in this study showed no growth of bacteria as there is no facilities available to culture and isolate fungus and viruses. Antibiotic sensitivity test in this series yeilded an interesting result. In all cases tetracycline and doxacycline emerged as the commonest antibiotic to which organisms were sensitive. Next in order was chloramphenicol. But the commonly used broad-spectrum antibiotic like ampicillin, cloxacillin, amoxicillin, gentamycin, cephalexin and co-trimoxazol were ineffective. This information hopefully will act as an improtant guide to the prophylactic use of antibiotic against nosocomial infections. Hospital stay was prolonged by 3.1 to 4.5 days due to nosocomial infection in one study[6]. In the present study hospital stay was prolonged by 7 days to 41 days. This showed that the total stay was about 3 times that of cases without nosocomial infection. It increased the patients' sufferings. Apart from this, nosocomial infection compromised the result of treatment specially in the surgical wound infection. On the other hand the hospital authority had to spend quite a large amount of money to overcome H.A.I. In Thailand nosocomial infection costs about 40 million U.S. dollars. Compared to this a full preventive programme requires one million U.S. dollars a year[7]. These national surveillance studies stimulated the administrators to initiate effective infection control programme in Thailand. From the result of the present study it is strongly felt that a "National Surveillance Study" needs to be started immediately to find out the magnitude of the hospital infection problem in our country.

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Distribution of Plasmodium species among the fever cases of two Hilly Upazillas of Bangladesh

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Summary :

The distribution of different Plasmodium species causing malaria among the fever cases attending two selected Upazila Health Complexes in Bandarban Hill Tracts was studied . The parasite rate was 45.88% among 194 fever cases of which 58.43% were due to P. falciparum, 31.46% due to P. vivax and 10.11% due to mixed (both P. falciparum and P. vivax) infection. The highest rate (61.53%) was found in 1 -4 years of age group. In almost all age groups the distribution of P. falciparum was more than P. Vivax of mixed infection. The prevalence of MP positive cases were more among males than female, and 61.02% infection of males were due to P. falciparum and while in females it was 53.33%. In the tribal population the parasite rate was remarkably low (16.13%) and 80% of their infection were due to P. falciparum and 20% due to P. vivax. Whereas in nontribal population parasite rate was 51.53% and 57.14% of which were of P. falciparum,32.14% were of P. vivax and 10.72% were of mixed infection. In lower socio-economic group of people the MP positivity was high and in every aspect of the elements furnishing socioeconomic condition, the falciparum was the predominant parasite.

(J Bangladesh Coll Phys Surg. 1992;10 : 14-18)

Introduction:

About 100 million people are suffering from malaria all over the world, the major fraction of whom live in African countries and roughly 2.5 million people live in South East Asia region[1,2].

During and after 2nd world war, thousands of people died of malaria, the average yearly morbidity and mortality were some 1,50,000 and 48,000 respectively in this part of the subcontinent[3].

The Malaria Eradication Programme, came into existence in Bangladesh in 1961. The programme progressed satisfactorily till 1970. Then in 1971 the programme faced a set back due to liberation war[3,4].

At present the problem is limited in the three hilly districts, namely Khagrachari, Rangamati and Bandarban and also in Cox' s Bazar and some border upazilas of graeater Sylhet and Mymensingh districts[5].

The resistant strain of Plasmodium falciparum has been alarmingly increasing since 1985 causing a major public health problem[5]. In those areas the slide positivity rate (SPR) was 2.40% and the P. falciparum infection was 20.16% in 1978 whereas in 1982, the SPR reduced to 1.61% and percentage of P. falciparum increased to 40.77% and in 1987 SPR further reduced to 1.23% and P. falciparum increased to 57.10%[5]. Rosenberg and Moheswari (1982) observed that the rate of P. falciparum was not stable and increased during the transmission season from below 40% in March to above 70% in October[6].

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The present study was designed to assess the cross sectional picture of the distribution of different species of plasmodium causing malaria in an endemic area of Bangladesh and also to explore the factors associated with the increasing trend of P. falciparum infection inspite of ongoing Malaria Control Programme.

Materials and Methods :

The study was carried out in two upazila Health Complexes in Bandarban Hill Tracts, which are endemic homes of malaria. The study period was 1st weeks of two consective months,January and February, 1991. 194 fever cases were included in this study. Both thick and thin blood films were prepared and examined in oil immerson lens under 100 x magnification by light microscope.

Results :

Out of 194 fever cases 89 (45.88%) were found to have malarial parasite of which 52 (58.43%) were P. falciparum (Pf), 28 (31.46%) were P. vivax (Pv) and 9 (10.11%) were mixed (both Pv and Pf) (Table-I).

Table No. I : *Distribution of Plasmodium species by different age groups*

Age Group in years	No.of fever cases	No. of MP positive cases	P. falciparum	P. vivax	Mixed
<1	11	04 (36.36)	02 (50.00)	02 (50.00)	00
1-4	26	16 (16.53)	06 (37.50)	09 (56.25)	01 (6.25)
5-9	29	14 (48.27)	09 (64.29)	04 (28.57)	01 (7.14)
10-14	25	12 (48.00)	08 (66.67)	03 (25.00)	01 (8.33)
15-19	20	09 (45.00)	05 (55.56)	02 (22.22)	02 (22.22)
20-24	25	12 (48.00)	07 (58.34)	04 (33.33)	01 (8.33)
25-29	20	09 (45.00)	05 (55.56)	02 (22.22)	02 (22.22)
30-34	16	07 (43.75)	06 (85.71)	01 (14.29)	00
35-39	06	02 (33.33)	01 (50.50)	01 (50.00)	00
40-44	04	01 (25.00)	01 (100.00)	00	00
45-49	05	01 (20.00)	01 (100.00)	00	00
50-54	04	01 (25.00)	00	00	01 (100.00)
55+	03	01 (33.33)	01 (100.00)	00	00
Total	194	89 (45.88)	52 (58.43)	28 (31.46)	09 (10.11)

Figures within parenthesis indicate percentage

Highest percentage of malarial parasite (MP) positivity was found in the age group 1-4 years. In the higher age groups (>30 years) the percentage of MP positivity began to reduce (Table-I). P. f. was more in all age groups except 1-4 years. About 52% non-tribal (settler Bengalee) fever cases were MP positive as against 16% of tribal fever cases (P<001) (Table-II).

MP positivity was observed highest among the bamboo/wood cutters (61.90%), followed by cultivators (51.52%) and lowest among the service holders (16.67%) (Table-III).

MP positivity was found more (57.35%) among the forest residents than those living outside the forest (39.68%) (P<.05).

Table-II : *Distribution of Plasmodium species by race*

Race	No. of fever cases	No. of MP positive cases	P. falciparum	P. Vivax	Mixed (fal.+ vivax)
Tribal	31	05 (16.13)	04 (80.00)	01 (20.00)	00
Non-tribal	163	84 (51.53)	48 (57.14)	27 (32.14)	9 (10.72)
Total	194	89 (45.88)	52 (58.43)	28 (31.46)	09 (10.11)

Figures within parentheses indicate percentage.
P<. 001 when M.P positivity of Tribal & Nontribal population was compared.

Table -III : *Distribution of Plasmodium Species by occupation*

Occupation	No. of fever cases	No. of MP Positive cases	P. falciparum	P. vivax	Mixed (fal+ vivax)
Cultivation	33	17 (51.52)	11 (64.71)	04 (23.53)	02 (11.76)
Bamboo/wood cutter	21	13 (61.90)	10 (76.92)	02 (25.39)	01 (7.69)
Business	15	04 (26.67)	02 (50.00)	01 (25.00)	01 (25.00)
Labour	10	03 (30.00)	01 (33.33)	01 (33.33)	01 (33.33)
Service	06	01 (16.67)	00	01 (100.00)	00
Housewife	33	13 (39.39)	08 (61.53)	02 (15.39)	03 (28.08)
Student	30	13 (43.33)	09 (69.23)	04 (30.77)	00
Non occupation (under 10,children)	46	25 (54.34)	11 (44.00)	13 (52.00)	01 (4.00)
Total	194	89 (45.88)	52 (58.43)	28 (31.46)	09 (10.11)

Figures within parenthesis indicate percentage.

Table-IV : *Distribution of plasmodium species by housing environment*

Housing Environment	No. of fever cases	No. of MP positive cases	P. falciparum	P. vivax	Mixed (fal. + vivax)
Within forest	68	39 (57.35)	23 (58.98)	13 (33.33)	03 (7.69)
Outside forest	126	50 (39.68)	29 (58.00)	15 (30.00)	06 (12.00)
Total	194	89	52 (58.43)	28 (31.46)	09 (10.11)

Figures within parenthesis indicate percentage.
$X^2 = 5.55$ df = 1 P<.05 MP positive cases within forest and outside forest were compared.

Discussion :

In this study the Parasite Rate (PR) was found 45.88%. Similar PR (42.4-43.1%) was also observed in many other studies in Bangladesh and Africa[7,8,9]. Much higher PR (80%) was observed by some[3] authors in Tanzania and much lower rate (27%) was observed in Dares Salam[10]. This difference may be due to geographical and seasonal variation.

In the present study, Pf was responsible for 58.43% M.P. positive cases, Pv for 31.46% and 10.11% were due to mixed Pf and Pv (Table-I). Other investigators in our country found similar distribution with higher percentage of Pf (62.-69%) [11,12]. However, in one study Waiz in CMH, Chittagong found 82.45% Pf, 9.09% Pv and 8.26% mixed infection[7]. The lower rate of Pf in our study is due to the fact that our study period was not in transmission season during which time the ratio of Pf is much higher. The percentage of Pf is much higher than Pv in other country also[8, 13].

Higher percentage of Pv (89%) was observed in west Bengal by Hati and Mukophodhaya in 1980 and by Mitra and Kunte (1977)[14,15]. In Iraq 97-99% of infection were due to Pv[16]. These differences in species are due to the geographical variation in the distribution of plasmodium species.

In this sdtudy only 16.13% tribal population were M.P. Positive in contrast to 51.53% nontribal population (Table-II). A highly statistically significant association was found between the racial distribution M.P. positivity (P<.001). It is possibly because of the higher degree of immunity among the indigenous tribals than the non-tribal Bengalee settlers. The number of tribal fever cases were much less (31) than non-tribal fever cases (163). This difference is due to the fact that the tribal population avail less medical facilities than non tribal population (Table-II). They usually go to their traditional healers for their health problems.

A significant difference (P<0.05) was observed in the M.P. positivity between those who lived within the forest and those who lived outside the forest (Table-IV). This is possibly due to more exposure of the people who lived within the forest than those living outside the forests to mosquito bites.

The rate of isolation of the parasite was higher among the bamboo/wood cutters (61.9%) and cultivators (51.52%) and the lowest rate (16.67) was observed among the service holders (Table-III). This may be due to the fact that bamboo/wood cutters and cultivators are more exposed to mosquito bites

and most of them were non-tribal of non-immune Bengalee settlers.

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Low cost sterile fluorescein strips

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Summary :

The use of fluorescein in ophthalmic practice is of immense value. Fluorescein eye drops have been discarded in most of the developed countries because of its contamination with pseudomonas. Instead single use mini drops or sterile fluorescein paper strips have been commercially marketted. But the cost of these refinements is very high. In Bangladesh where fluorescein is so frequently used, we cannot afford such cost. This paper describes a method of preparing cheap, safe & efficient fluorescein strips from 20% fluorescein solution & country made filter paper. Our Ophthalmologists can prepare this very easily & can use it in thier ophthalmic practice & be of benefitted.

(J Bangladesh Coll Phys Surg 1992; 10 : 19-22)

Introduction :

Fluorescein 2% solution has long been used in ophthalmic practice for detecting corneal epithelial defects, applanation tonometry, Seidel's test for aqueous leakage & for evaluating hard contact lens fitting[1,2]. By good slitlamp examination, the use of fluorescein for corneal staining can be greatly reduced. But for applanation tonometry, hard contact lens fitting & Seidel's test for aqueous leakage, the use of fluorescein is inevitable. With applanation tonometry & hard contact lens fitting, eyes with normal corneas are subjected to risks of minute abrasions which if infected could lead to a disaster[3].

To reduce the risk of iatrogenic infection of corneal abrasion single dose applications of fluorescein eye drops or sterile fluorescein paper strips have been marketted commercially in developed countries. The cost of these refinements is very high. This is only possible where countries can afford to pay for it but where fluorescein is frequently used they tend to be wasteful.

In Bangladesh fluorescein is very much frequently used & every attempt should be made to produce our own sterile fluorescein strips which would be cheap, safe & efficient. Considering this fact a simple method of preparing sterile fluorescein strips from 20% fluorescein solution & country made filter paper is described which is very cheap & efficient.

Materials & methods :

An absorbent pliable paper is required & Whatman filter paper no 1 (12.5cm) has been found suitable[3]. Twenty percent fluorescein solution has been found to be best strength. It forms a high concentration of dye in the filter paper so that the tear film stains adequately & quickly when the fluorescein paper is touched in the lower or upper conjunctival fornix. Country made filter paper can serve this purpose suitably & steps of preparing fluroescein strips are described below.

i) The filter paper is folded so as to make 4 quadrants (Fig-1).
ii) A template measuring 4.4X4.4cm. is made from card board. (Fig-2).

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iii) With the help of the template the folded paper is cut into a single piece thus obtaining the necessary number of squares (Fig-3 &4).

iv) Using a blade this folded piece of paper is cut into 4 separate squares (Fig-5).

v) 20% solution of sodium fluorescein is put into a small kidney tray, made by mixing 5 gm Na-fluorescein dye & 25 ml of normal saline or tape water upto a depth of 1-2 mm (Fig-6).

Fig-1 : *Filter paper folded into a quadrant*

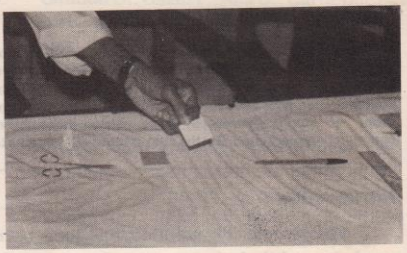

Fig- 4 : *Single square piece of filter paper*

Fig-2 : *Template of Cardboard measuring 4.4 X 4.4 cm*

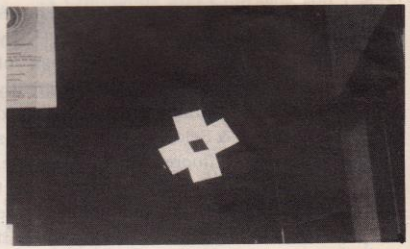

Fig-5 : *Four squares from a single filter paper*

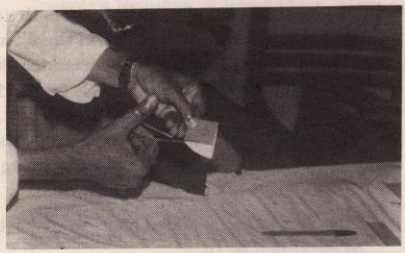

Fig-3 : *Cutting Square piece from folded filter paper with the help of Template*

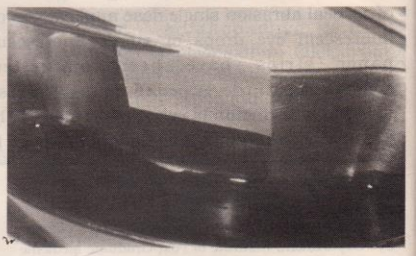

Fig-6 : *Fluorescein Soaked filter paper*

vi) One edge of the filter square is dipped into the fluorescein solution & brought at almost atonce making an approximately 5 mm soaked strip. The required necessary number of squares can be similarly made. All of them are left to dry (Fig -7).

vii) Each fluorescein painted filter square is now cut into 3 mm wide vertical strips. leaving an intact border of a few mm at the top. Thus from a single square filter paper 13-14 fluorescein strips can be made (Fig-8).

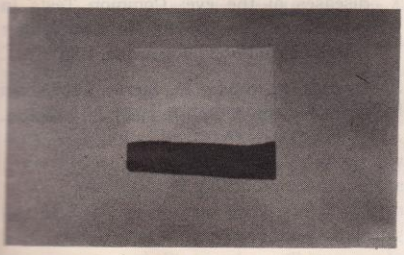

Fig-7 : *Painted Dried fluorescein*

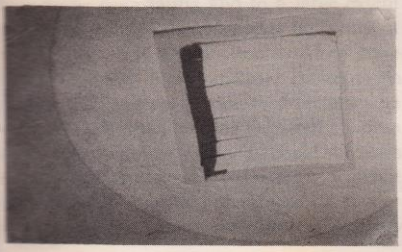

Fig-8 : *Fluorescein Strips*

viii) A cardboard template measuring 5X4.8.cm is made by which the necessary number of pieces of plain white paper can be cut in order to make covers for the fluorescein strips.

ix) Five layers of fluorescein strips, (each layer containing 26-28 strips) are placed together. This is covered by 2 pieces of plain white paper one on either side & then stapled along the intact border by 2 pins.

x) An 11.2X5.2 cm piece of art paper is now taken. The top 8 mm of length is folded, & then the remaining part folded into 2. This is labelled on one side & can now be used as a fluorescein strip packet. After placing the covered strips in the packet it is stapled at the top in the centre by a single pin.

xi) Required number of prepared packets can now be stored in a glass Jar, paper bag or in a kidney tray & autoclaved. The fluorescein strips are now ready for use. This will remain safe unless otherwise damaged.

Cost effictiveness: The price of a single 10 ml phile of commercially available fluorescein strips, is approximately Tk. 150/- (Taka one hundred & fifty) by which one thirty eyes can be examined on the average. Now let us calculate the cost of these hand made fluorescein strips.

The Price of approximately 5200 strips (made from 100 pieces of filter sqares).	Tk 20/-
The price of 5gm of fluorescein dye	Tk 10/-
Paper for covers, packets etc	Tk 10/-
Total cost of 5200 fluorescein strips	Tk 40/-
Thus 5200 eyes can be examined for a minimum cost of	Tk 40.

Discussion :

H A A G-STRIT fluorescein paper strips of Switzerland of international standard have been commercially marketted through out the world. But their cost is exuberant that is beyond our capability. The glaucoma unit of the Royal Victorian Eye & Ear Hospital, Melbourne, prepares its own sterile fluorescein strips for a fraction of the cost of the commercially available strips[3]. The above mentioned method of preparing fluorescein strips is so cheap that, it is within our limit.

So henceforth ophthalmologists in our country can easily prepare sterile fluorescein strips & can use in their ophthalmic practice.

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Reference :

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Incidence of Hearing Impairment Amongst the School Going Children

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Summary:

Although hearing impairment is common, little effort has been made in developing countries to find out the incidence, pathogenesis and prevention of this condition. A survey of 2005 students of 7 primary schools was made for detecting E. N. T. diseases and for assesment of hearing impairment as per gradation of World Health Organisation for comparison with the WHO statistics.

(J Bangladesh Coll Phys Surg 1992 10: 23 - 25)

Introduction:

Hearing impairment is a problem for all ages. Report by the Director General WHO, presented in 39th World Health Assembly showed that about 42 million persons (over the age of three years) had been suffering from profound, severe or moderate hearing impairment, and this number will increase to some 57 million by the year 2000[1]. The victims face many devastating and to a large extent unrecognised health and social problems. It seems that deaf infants and children have higher mortality rates than other children[2]. No survey has yet been done to determine the exact prevalence of hearing impaired children in school going stage and no national statistics is still available regarding the relative incidence of deafness & hearing impairment. To render any service for Health care delivery, it is very important to find out the magnitude of the problem.

Survey over such a vast population of school going children to find out the grade of hearing impairment is a huge and expensive task. We have attempted to identify the incidence of hearing impairment by clinical examination, tunning fork test and pure tone audiometry in 7 schools of different districts of Bangladesh which will reflect some idea about it. This work will certainly render some base line informations to others to make similar attempts so that ultimately we can come to a rational conclusion by more reliable information in this respect. This will be of great help in planning future programmes of developing medical and other related man power and to offer "Health for all by the year 2000" A. D.

Material and Methods:

The camps were organized by the Society for Assistance to Hearing Impaired Children (SAHIC) with the help of local social workers, with the co-ordination of Pathokali Authority and school teachers. A team of ENT specialist, audiometrician and ancillary staffs from

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Institute of Post-Graduate Medicine Research (IPGMR) conducted the camps. Students of Pathokali schools of Dhaka city, Gamirapara Primary School of Chandina Upazilla, Kaligonj Primary School of Narsingdi and Farayikandi Etim Khana of Matlab upazilla had been accepted for examination and investigation purpose for assessing hearing impairment.

Results:

A total of 2005 children, 1253 (62.49%) male & 752 (37.51%) female of ages ranging from 5-13 years had been examined of which 693 (34.56%) had different grades of hearing impairment. As in Table-I, 340 (16.95%) had chronic suppurative otitis media with mild to moderate hearing loss and 101 (5.03%) had unilateral CSOM, 220 (10.97%) had severe hearing loss due to secretory or adhesive otitis media. Rest 32 (1.59%) had profound hearing loss (mixed type of deafness, Table-I) may be due to central cause or genetic one.

Discussion :

Our findings amongst the school going children in the rural and urban areas show similarity with the findings of M. N. Amin et al[3] and approximates with findings of M. A. Majed[4] in respect of chronic suppurative otitis media which is the commonest cause of hearing impairment amongst the children.

The incidence of hearing impairment in our study is 34.56%. On the Contrary study performed by M.A. Mazed[4] at Dhaka Medical College Hospital out patient department shows 15.06% were suffering from hearing impairment due to CSOM. The cause of significant higher incidence in our study 19.5%, more in villages & with low socio-economic conditions. Possibly, social hygiene and habit of bath predisposes the recurrent infection and their persistence.

Table -I

Impairment Grade	Corresponding audiometric value	No. of Children	Percentage
Grade 5- Profound hearing impairment bilateral	81 dB or more	32	1.59%
Grade 4- Severe hearing imapirment bilateral	61-81 dB	220	10.97%
Grade 3- Moderate hearing impairment bilateral	41-60 dB	340	16.95%
Grade 2-Slight bilateral hearing impairment	26-40 dB	0	0.00
Grade1- Unilateri hearing impairment	25dB or better (better ear normal value)	101	5.03%
Grade 0- No impairment	Both ears normal	1312	65.44%

WHO report shows the incidence of Hearing Impairment in developed countries in 1985 gives an estimation of 15.726 million people with hearing impairment grades 3, 4 & 5 which is expected to rise upto 19.124 million people. On the contrary in developing countries and estimated total of 25.873 million people with hearing impairments in 1985 which may rise upto 37.867 million by the year 2000. (Table-II)

Acknowledgement:

We are thankful to the Director of IPGMR for allowing us to leave the station and the local elites and social worker for organizing the camps. We are also greatful to Pathokoli authority and the teachers of the same organization for their sincerest cooperation in holding the camps.

Table II : *Hearing Impairment in Developed Countries & in Developing Countries in Millions*

	Developed Countries		Developing Countries	
	1985 (millions)	2000	1985	2000
Grade 4+5	4.564	5.585	7.271	10.681
Grade 3	11.162	13.539	18.602	17.186
Total	15.726	19.124	25.873	37.867

(Report of the 39th World Health Assembly dated 27th March, 1986).

Conclusion :

The incidence of hearing impairment is higher in developing than in developed countries, a main factor being the much higher incidence of otitis media (Secretory, suppurative in these countries). On the other hand, the prevalence rates may be reduced by the fact that many diseases which causes hearing impairment can be prevented if health services are extended upto the remote villages. Early detection of hearing impairment amongst the high risk groups by screening method and immediate treatment of causes for restoration of hearing either by medicine or by surgery or by hearing aids.

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Hydatid Cyst of the Thyroid - A Case Report

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Summary:

A young cultivator, aged 22 years, was admitted with the complaints of swelling in front of the neck for one year followed by development of difficulty in deglutition, hoarseness of voice and persistent dull aching pain. All investigations including routine and biochemical tests were within normal limits, excepting eosinophilia. Ultrasonogram and scanning revealed a cystadenoma of thyroid. The cyst was excised completely. It was diagnosed as hydatid cyst after histopathological examination. A rarity of this case has led to this report.

(J Bangladesh Coll Phys Surg 1992; 10 : 26 - 28)

Introduction:

Hydatid disease is a tissue infection of human caused by the larval stage of Echinococcus granulosus or E. multilocularis[1]. The infection is generally acquired in childhood (due to intimate association with dogs and sheep), though the disease does not manifest before adult life. Infecting agent is egg in dog feaces and the port of entry is alimentary tract. The organ most commonly involved is the liver, because it acts as the first filter and the next involved is the lungs which form the second filter. A few of the embryos may pass the pulmonary capillaries, enter the general blood stream and lodge in various organs e. g., spleen, ovary, prostate, kidney, bone, heart, nervous system and thyroid[2]. Whereever the embryo settles, it forms a hydatid cyst. As hydatid cyst of the thyroid gland has not been reported so far in Bangladesh, a case of hydatid cyst of this organ is considered worth reporting.

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Case Reprot:

Mr. S.A., 22 years, a cultivator was admitted in Shaheed Suhrawardy Hospital with swelling in front of the neck for 1 year followed by difficulty in swallowing, hoarseness of voice and development of persistent dull aching pain in the throat for 1 month. The patient noticed a small nodule in front of the neck which progressively increased in size and later the patient developed difficulty in deglutition and observed change in voice. He also felt persistent dull aching pain from last one month for which he got admitted. He did not have any past history of serious illness and had no family history of goitre . He lives in a village and works in the field as a farmer and has history of contact with dogs, sheep and cattle.

On first examination, the patient had mild anaemia. His pulse, blood pressure and temperature were normal. On examination of the neck, a cystic nodule measuring about 5cm x 7cm in size, related to the lower pole of

right lobe of the thyroid gland was found: the lower limit dipped behind the right sternoclavicular joint.

Laboratory data as follows: Hb - 8.5 gm/100 ml, ESR - 15 mm/1st hr, total count of WBC -11,200/cmm, DC - Neutrophils - 50%, Lymphocyte - 36%, Eosinophils - 14%. Urine for R/E - was normal. Stool for R/E shows Ova of AL (+). Blood glucose - 80 mg%. BUN- 15mg%, Serum Bilirubin - 0.8mg%. SGOT - 12 I. U. / 100 ml, SGPT - 8IU/100ml.

Chest X-ray showed no abnormality. Ultrasonographic examination of hepatobiliary system showed liver, gall bladder and biliary tree as normal. Radioactive Iodine uptake in 24 hours was 25%. Scanning showed thyroid gland enlarged in size. Concentration of radionucleide was diminished in palpable nodule of the gland. In rest of the gland, tracer concentration was uniform. Ultrasonogram showed a big nodule in lower part of the right lobe of thyroid, which was cystic in nature, suggestive of cystadenoma of thyroid. ECG was normal, patient's blood group was B+ve. Casoni's test, precipition test and complement fixation test were not carried out because hydatid cyst was not suspected. The cyst was removed by operation.

Operation note :

Using a classical Collar incision for thyroid exploration, a solitary nodule measuring about 5cm X 7cm under high tension, was seen occupying the whole of the right lobe. As a measure to relieve tension of the cyst, stabbing was done anteriorly and clear watery fluid came out as a jet, which was sucked and mopped. After that, whole inner layer of the cyst, milky white in appearnce prolapsed through the stab wound in the cyst wall which raised the suspicion of germinal layer of a hydatid cyst (Fig - 1). Outer wall of the cyst was then removed piecemeal by careful dissection which was posteriorly adherent to the carotid sheath. The rest of the thyroid appeared to be normal. Haemostasis was achieved and the wound was closed in layers keeping a tube drain. The dissected cyst wall was sent for histopathology.

Fig - 1 : *Photograph of the Specimen*

Histopathology Report :

Gross : Opened cyst wall measured 5.5cm X 0.2 cm.

Microscopic finding : Section shows hydatiod cyst wall (Fig - 2).

Fig- 2 : *Microphotograph of the Histological Slide.*

Discussion :

Echinococciasis of the thyroid gland is a very uncommon condition[1]. It is usually acquired in childhood but a latent period of 5 to 20 years occurs before diagnosis. Enlarging cysts usually produce tissue damage by mechanical means[3]. The resulting symptoms depend upon the site, type and the rate of growth of the cystic lesions. Approximately 60% of the cyst is found in the liver and 40% in the lungs. Other sites are rarely involved. The case presented with a cystic swelling and difficulty in degluttition, hoarseness of voice by mechanical means. Routine examination of blood may show eosinophilia in less than 25% of cases[3]. Ultrasound is also helpful in distinguishing hydatid structure[4] but in our case it gave a wrong impression of cystadenoma.

Due to our biasness in diagnosis of cystadenoma, Casoni's test and serological test were not done. Specific diagnosis was best accomplished by histopathological examination[5] in this case. Small cysts do not require treatment. For larger cysts, surgical treatment is the standard therapy as there is no effective medical treatment[6]. Recently, the drug Mebendazole in doses of 400 to 600 mg three times a day for 21 to 30 days has been found to be effective in some patients[7]. The drug is still under trial but some trials suggest that it is not as safe and effective therapy as it was thought to be. Mebendazole is recommended post-operatively to prevent recurrence[8] and was used in this case also.

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Nonfunctioning retroperitoneal Paraganglioma: A Rare Clinical Entity

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Summary :

The nonfunctioning retroperitoneal paraganglioma is presented which was 13.5 X 12X9.5 cm in size and was highly vascular with marked adhesion to the duodenum and the great vessels. A radical operation was performed with concomitant resection of a part of the duodenum and the infrarenal part of the inferior vena cava. Paraganglioma is a well known tumor but nonfunctioning retroperitoneal paraganglioma is extremely rare. With the presentation of our case a review of the literature on the subject is made.

(J Bangladesh Coll Phys Surg. 1992; 10 :29-32)

Introduction :

Extra-adrenal retroperitoneal nonchromaffin paragangliomas are extremely rare. Since there is often no sign of endocrine dysfunction, preoperative diagnosis is difficult. Though a definitive diagnosis is usually only possible after resection and subsequent histopathology, the modern diagnostic aids viz. Ultrasonography, CT scan and angiography are important to assess the extent of tumor involvement. Because of the hypervascular nature of these tumors and their close location to the great vessels, surgical resection is often challenging. The present case had a huge retroperitoneal nonfunctioning paraganglioma which involved the aorta, inferior vena cava (IVC) and the duodenum.

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Case Report :

An apparently healthy 47-year -old Japanese male was hospitalized because of a large palpable abdominal mass. Physical examination revealed an abdominal mass below the right costal margin. The mass was round in shape, hard in consistency, not clearly mobile, free from skin and was 12 cm X 14 cm in size. The patient had no other complaints, particularly no abdominal pain or discomfort. Pulse, blood pressure, chest x-ray and electrocardiogram were normal. Hematological and biochemical studies showed no abnormal finding. Urinary excretion of noradrenaline, adrenaline, vanillylmandelic acid and dopamine showed no elevation and serum catecholamines also were within normal levels.

An excretory urography revealed compression and lateral displacement of the right ureter. Ultrasonography and CT scan showed a solid mass with some hypoechoic shadows within the tumor. On CT scan the tumor was measured about 12 cm in diameter and the abdominal aorta and the IVC seemed to be free from tumor involvement (Fig. 1).

Fig - 1 : *CT scan showing a large tumor*

Angiography revealed tremendous hypervascularity of the tumor. The feeding vessels were numerous but not clearly demonstrated, however the inferior mesenteric artery was thought to be the source of the main feeding artery. The abdominal aorta was found to be free from tumor involvement. A cavography was not performed. A needle biopsy was avoided due to the high vascularity.

At operation, a solid encapsulated 13.5 x 12 x 9.5 cm tumor was situated anterior to the great vessels extending from the level of the left renal vein to the aortic bifurcation. Strong adhesions were found between the tumor and both the aorta and vena cava and the 3rd portion of the duodenum. The tumor was radically extirpated. Separation from the aorta in the subadventitial layer was possible but the IVC and the duodenum could not be separated from the tumor. During the attempt to separate the tumor from the IVC, a massive bleeding occurred and a concomitant resection of the infrarenal IVC was necessary to control the bleeding. No subsequent reconstruction of the IVC was performed. A small portion of the duodenum was also resected with the tumor. No intraabdominal metastases were observed. The postoperative course was uneventful. The patient was given a pneumatic massage in both the legs to avoid any venous congestion after resection of the IVC. After about 2 years of the operation the patient is keeping well without any sign of recurrence.

Histopathology :

The cut surface of the tumor showed translucent gelatinous parts and white and tan solid parts. There were scattered hemorrhagic foci and some thrombi and cystic cavities were also identifiable macroscopically. Microscopically, the tumor cells showed pale-to-eosinophilic abundant cytoplasms and grew densely in an acinar pattern accompanied by thin fibrous stroma. In some areas the tumor demonstrated various other growth pattern, such as gland formation or solid growth patterns. The central portion of the tumor showed hyaline degeneration with numerous hemorrhagic foci. In some areas the capsule of the tumor was expanded initially suggesting invasion, however, no extracapsular spread was observed. The nuclei of the tumor cells were relatively pleomorphic. The tumor cells were intermingled with giant cells in some areas. No chromaffin granules were observed. The histopathological diagnosis was nonchromaffin paraganglioma (Fig-2).

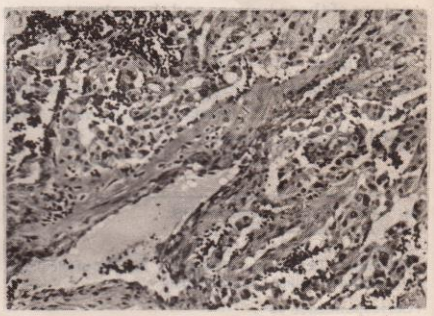

Fig-2 : *Photomicrograph showing cell in groups in a trabecular sinusoidal pattern with high vascularity. Hematosylin and eosin (HE) X 250*

Discussion :

Paraganglia are collections of neurosecretory cells intimately connected with the ganglia of the autonomic nervous system. Paragangliomas, the tumors deriving from this cell group are commonly found in the adrenal medulla. However, extra-adrenal paragangliomas though comparatively rare, are found in widely dispersed locations in the head, neck, thorax and abdomen. All these tumors are thought to have a neural crest origin.

Paragangliomas associated with the sympathetic nervous system usually show a positive chromaffin reacion and secrete catecholamines, which shows them to be functioning tumors. Pheochromocytomas are better known and the most common members of this family of tumors, are found in retroperitoneum especially in the periadrenal and organ of Zuckerkandl.

Paragangliomas related to the parasympathetic nervous system usually are nonchromaffin and nonfunctioning. Retroperitoneum is an extremely rare location for nonfunctioning paraganglioma. In 1969 Olson and A bell[1] reported 21 cases of nonfunctioning retroperitoneal paragangliomas in the international literature and since then reports on these types of tumors have been rare[2,3]. In 1985 Kryger-Baggerson[4] reviewed all 37 cases in the international literature. In 1987 Law et al[5] reported the 43rd case of retroperitoneal nonfunctioning paraganglioma and to our knowledge, no case has been reported since that time.

Nonfunctioning tumors are usually symptomless, except when they produce a big palpable mass, which also may produce some compression symptoms. Typical symptoms include abdominal pain in 50% of cases, nausea, vomiting, abdominal distension with a palpable mobile mass and weight loss. Sometimes the patient may present anemia following hemorrhage from an ulcer in an area of invasion of the gastrointestinal tract.

A review of the literature shows that, preoperative diagnosis was made in only a few cases, because only an exploratory laparotomy and subsequent pathological examination can yield a definitive diagnosis. However, ultrasonography, CT scan, scintigraphy and angiography are important diagnostic aids which demonstrate the location of even small tumors. CT can define the location, extent and nature of these tumors, in addition to infiltration into surrounding tissues. These are essential data concerning resectability of these tumors. Though angiography frequently fails to demonstrate the feeding vessels, it has some importance to evaluate the possible involvement of great vessels prior to surgery. Venography may provide important clues concerning tumor involvement into the vena cava.

Severe intraoperative hemorrhage occured in this case and it was necessary to sacrifice the inferior vena cava and a part of the duodenum. Fortunately the patient did not develop any postoperative complications as a result of resection of the IVC. Pneumatic massages of both legs was performed for some period. Some authors recommended reconstruction of IVC in such cases.

Based on reports in the literature and according to our experience we recommend a radical operation for excision of the tumor as the treatment of choice. On occasion redical operation is needed which may include splenectomy, nephrectomy, resection of some part of gastrointestinal tract or resection of the inferior vena cava and abdominal aorta.

Postoperative follow up is also necessary to detect any recurrence.

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