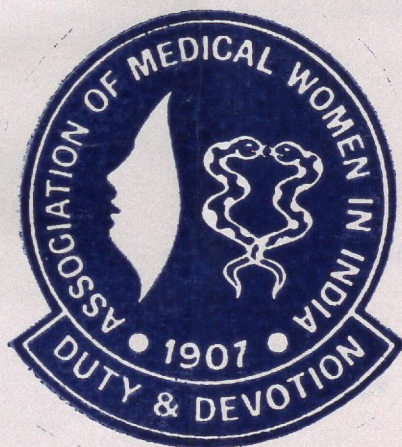


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**On Harmony :
East And West, Old And New**

**Oration
29 July, 2000**

4th Dr. Marie Catchatoor Memorial Oration

**by
Michelle Harrison, M.D.***

The following is a summary of the oration delivered on 29 July, 2000 Calcutta, India

We live in a world of polarities, but as individuals we have to find that middle ground upon which to talk and lead our lives. This is how we find harmony, by blending some of the old with some of the new, some from the East, some from the West. Yet often in our professional lives, we are asked to "believe in" one system or the other, "believe in" the old or the new. While our patients often ask us to help them find the harmony of mixtures, our colleagues more often ask us to declare ourselves in one group or another.

The Polarities

- East or West ?
- Old or New ?
- Mind or Body ?

The Moral Society

East or West ?

The roots of healing are ancient. From our earliest origins, we have tried to understand illness and to relieve suffering. The methods have always been reflective of a society's culture and values. Each system of healing has its successes and its failures. We have theories, but we do not really know why this is so.

While Eastern healing is often based upon the concept of energy and energy fields. Western medicine is founded on a framework of molecules. These are the tiniest bits of matter, which themselves function in fields of energy. Common to all systems of healing is the healer, the person who administers the treatment, within his or her own system of belief. In all systems there are some who are better than others at this work. In all systems there is a certain mystery as to the effect of the practitioner on the patient.

The morning *Times of India* on this day, 29th July, 2000, had two articles reflecting current efforts to recognize the value in seemingly conflicting practices. In the United States, the NIH (National Institutes for Health) is conducting research about homeopathy and other non-Western methods of healing. Another article described the "Aum Cult's" soothing with sound therapy. The newly initiated study of the treatment of cancer pain at the AMWI (W.B.) Mission Hospital will include yoga and meditation as well as pharmaceuticals in the treatment protocol. In this

*Assistant Professor of Psychiatry University of Pittsghat School of Medicine.

model of care, the patient receives the benefit of more than one discipline and thus more cumulative care.

All systems of healing require training and discipline. It is the discipline of learning, and concentration, that determines what medicines to prescribe, or where to place acupuncture needles, or where to direct energy.

Science is not the same as truth. Hopefully it is a progression of knowledge. But it exists within a culture and set of political beliefs that form the questions it is used to address.

Old or New

"New" is not always progress. The culture of the United States is one of youth. Increasingly the old are left alone, and their wisdom and their experience go unused and unappreciated. In medicine there is the perception that anything done or made yesterday cannot be as good as what is done or made today. Newer is better, a concept that fuels competition, consumption, and waste. New medicines, like new clothes replace once that are still good, still usable, but no longer new.

This is not to deny the progress that has been made. Harmony occurs when the new is added to what is valuable of the past.

Obstetrics and Gynaecology is a field where the "new" often is not better. Increasingly technology is used without evidence of its usefulness. Electronic monitoring of the fetus became widespread twenty years ago. Repeated studies show that the fetal monitoring increases C-section rate but does not change neonatal outcome. The C-section is often convenient for the doctor, but carries greater risk for the women. With time, fewer doctors are trained to listen to fetal heart rates with their ears, and so they have to rely on the technology. Many studies have shown that trained midwives are just as successful in deliveries as are physicians.

Real progress occurs when the new is blended into the old.

Mind or Body

This is the favourite dichotomy of the West. The concept of one or the other is entirely Western. Doctors are trained to treat one or the other. A disease is said to occur in one or the other. The basis for this model is one of polarity and false logic. The mind cannot order about organs or diseased cells in the same way it can make our voluntary muscles contract. The influence is usually subtle, rarely absolute, and certainly not predictable. These factors lead Western medicine to view the mind as irrelevant with regard to perceived "physical" illnesses.

When patients come for help, they want us to be able to use all methods that may help them. Whatever the "school" of the doctor, the patient must rely on the doctor's openness to a variety of methods that may offer healing. The patient does not come to us with body in one hand, and mind in the other. The patient asks us to bring together East and West, Old and New. As physicians we are responsible for creating the harmony which addresses mind, body, and spirit.

Management of Thalassaemia in Rural Health Centres Baby Chandra*

Summary :

Out of total number of 22320 patients studied over a period of 5 years, 15 pregnant patients with Thalassaemia minor were detected. These patients suffered from chronic anaemia and did not respond to iron therapy. They were given folic acid and calcium throughout the pregnancy. Labour was normal except in three cases. In one case L.S.C. section was done because of cord prolapse. There was prolonged labour with forceps delivery in two cases.

Introduction :

The name Thalassaemia is derived from the Greek word Thalassa, meaning The Sea, because the disorder was originally observed in countries around the Mediterranean sea. Surprisingly enough Thalassaemia syndrome is prevalent in a linear belt covering the countries of southern Europe and north Africa around the Mediterranean, Middle East to India, Thailand, Indonesia and far East. Thalassaemia major is a hereditary incurable blood disease characterised by impairment of synthesis of normal adult haemoglobin due to genetically determined abnormalities in the formations of globin moiety of the molecules. The defect may be qualitative e.g. productions of structurally abnormal haemoglobin (haemoglobin S, haemoglobin E Etc.) or the defect may be quantitative e.g. productions of defective normal adult haemoglobin (haemoglobin F) where the defect may be either in the alpha or in the beta chain or in both. (HbE/Thalassaemia)⁴.

As a result of the abnormal haemoglobin the patients suffer from chronic anaemia. Thalassaemia major is a homozygous inheritance and it is rather fatal. The patients with Thalassaemia major require repeated blood transfusions. Whereas the Thalassaemia minor is the heterozygous inheritance.

Except for few who get the benefit of blood transfusion, Thalassaemia major hardly lives to the reproductive age in our country. So this does not present problem in obstetrics. However most of the patients with Thalassaemia minor suffer from chronic anaemia during pregnancy. These patients need extra care.

The purpose of the present paper is to show how pregnancies with Thalassaemia minor may be managed in rural health centres.

Location of the Centre :

The study was conducted in two health centres (Maternity and Child Welfare) of Zila Parishad situated in Rajganj which is a village 18 km West of Dhanbad, and at Gomoh which is a small town 45 km West of Dhanbad.

Nature of the population :

The author attended the clinic of Rajganj thrice a week and the clinic of Gomoh once a week and the study comprised over a period of five years. A total number of 22,320 patients were examined during the period.

Method :

The anaemic antenatal patients were given iron capsules and folic acid. When it was found that, in spite of giving iron capsules and folic acid for 2 months, the haemoglobin remained below 7 gm. a detailed family history was taken. After that TC, DC, platelet counts were noted. Since Thalassaemia patients have characteristic red cell morphology, consisting of microcytosis, macrocytosis, hypochromia target cells and nucleated red cells, a blood picture also gave sufficient guide in suspecting Thalassaemia trait in patients. In Thalassaemia major the abnormality in physical developments, such as stunted growth, breech nose, furrow in the scalp etc. help in diagnosing. Ultimately the patients were referred to for electrophoresis² and other tests by the specialists.

There is a 1 in 4 chance in each pregnancy of producing a child afflicted with Thalassaemia major if both the parents have a trait of Thalassaemia. So the blood picture of the patients were also noted.

Treatment :

The patients were regularly checked up in the clinics every month up to the 28th week, then up to 36th week at 2 weeks' interval; after 36th week at weekly interval. They were given calcium and folic acid throughout the pregnancy.

RESULTS AND DISCUSSION :

In all out of the 22,320 patients studied over a period of five years, 15 cases of Thalassaemia minor were detected. In none of the cases husband was found to have Thalassaemic trait.

Although the patients were anaemic, they had no complaints. Weight gain and B.P. were satisfactory during pregnancy. There was no history suggestive of cardiac failure in spite of low haemoglobin. Labour was uncomplicated except in 3 patients. L.S.C. section was done because of cord prolapse in one case. Two cases with prolonged labour were put on drip. The delivery was done by forceps with episiotomy.

The babies' weight varied from 5 lb to 7 lb. The puerperium was uneventful. Out of 15 cases 12 cases came to the Maternity and Child Welfare Centres for postnatal check up.

6 babies came for check up until 1 year and had no complication. One died at 7 months due to anaemia as their parents refused to give blood transfusion to the child.

The obstetrical history of the woman who had L.S.C. section in the urban hospital was found to be benign. She was 5 ft. tall. Her weight was 45 kg. She was 27 years old. Her husband was about 30 years old, working as Police. She came from a low middle class family

and refused to have blood tests and investigations. She was eventually sent to an urban hospital for the management of cord prolapse.

Conclusion :

Thalassaemia minors usually are symptom free. Normal life is well adopted with slight chronic anaemia. In pregnancy there is a need to meet increased demand of foetus and mother. They are allowed normal labour. There are no complications of haemorrhage and sepsis in labour.

The life span is normal and the patients need very little medical care.

When a person with a Thalassaemia trait marries a person with normal blood there is a 50 per cent chance that their children will have Thalassaemia trait. But when both parents have Thalassaemia trait, there is a 50 per cent chance of their child to be a carrier of Thalassaemia trait and a 25 per cent chance of becoming a Thalassaemia major.

The all India incidence of traits is 3.3 per cent. In Gujaratis it is 12 per cent, and amongst Sindhis it is 10%³. 31.3 per cent among tribal population of South India and also from Orissa in western part.⁴

Thalassaemia major poses a great social problem. If the Thalassaemia major patients are not given blood transfusion regularly, they die of anaemia. On the other hand, due to regular blood transfusion they usually die of transfusion iron over load.

The family life of the couple and the child with Thalassaemia major is ruined. In India about 5000 children are born every year with Thalassaemia major.¹ To stop the proliferation facilities, at least for detection of Thalassaemia minor, should be available in rural health centres. Also each person with Thalassaemia trait should be counselled about the consequences of the trait. Attempts should also be made to bring about an awareness of this dreadful disease (Thalassaemia major) through mass media, like T.V., radio, newspaper articles, ladies cornet etc.

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1. HAEMOGLOBIN LEVELS DURING PREGNANCY

HAEMOGLOBIN LEVELS gm%	WEEKS OF PREGNANCY			
	16-24 WEEKS	25-28 WEEKS	32 WEEKS	36 WEEKS
	NUMBER OF PATIENTS	NUMBER OF PATIENTS	NUMBER OF PATIENTS	NUMBER OF PATIENTS
LESS THAN 7	15	6	7	4
STATIC 7		2	5	8
ABOVE 7.5		5	NILL	1
ABOVE 8		2	3	2

12. HAEMOGLOBIN LEVELS IMMEDIATE POST DELIVERY

THIS IS NOT DONE IN DISTRICT RURAL HOSPITALS IN COAL BELT AREA AS NO DOCTORS OR TECHNICIANS ARE AVAILABLE ROUND THE CLOCK.

3. HAEMOGLOBIN LEVELS IN POST PARTUM

NUMBER OF PATIENTS	NUMBER OF DELIVERY	POST PARTUM DAYS	HAEMOGLOBIN LEVEL gm%	REMARKS
1				THE PATIENTS WAS SENT TO URBAN HOSPITAL. SO THERE IS NO RECORD.
1	FORCEPS	2ND DAYS	5	BLEEDING DUE TO REMNANTS OF FOETAL MEMBRANE. SO THE PATIENT STAYED FOR 6 DAYS.
		7 DAYS	6.5	
		4 WEEKS	7.5	
1	FORCEPS	2ND DAY	6.2	
		4 WEEKS	6.7	
6	NORMAL	2ND DAY	6.5 - 6.8	
		4 WEEKS	7.0 - 7.3	
4	NORMAL	2ND DAY	6.0 - 6.2	
		4 WEEKS	7.0 - 7.3	
2	NORMAL	2ND DAY	7.0 - 7.2	
		4 WEEKS	7.9 - 8.0	

DIARRHOEA, AND NUTRITIONAL MANAGEMENT

DR. SUSHIL MADAN M.B.B.S, DCH M.D. (Cal) FIAP (Bombay)

Abstract

Diarrhoea and Malnutrition are dangerous partners and are the foremost cause of morbidity and mortality in infants and young children all over the world. They are responsible for 20-30% of hospital admissions and 40% of mortalities among children upto the age of 5 Years. Both Social factors such as poverty, overcrowding, undernutrition, inadequate clean water, low standards of hygiene and risk factors such as poor health of mother, bottle feeding rather than breast feeding and infrequent bulky staples aggravate the gastroenteritis of an infectious cause leading to malabsorption diarrhoea malnutrition and so on.

Diarrhoea has been shown to have significant impact on nutrition. Each infant may incur loss of 2-15% of body weight per diarrhoeal episode. Encouragement of breast feeding better food hygiene, good environmental sanitation and better nutritional management of infant during and after diarrhoea are important strategies in preventing diarrhoea and its consequences such as malnutrition. Mother should be encouraged to feed the baby with simple home made fluids from the onset of diarrhoea. Oral Rehydration Therapy (ORT) with Oral Salt Sugar Solution (ORS) prevents death due to dehydration but by itself is not enough to provide long term health benefits and reduce the overall infant and child mortality. Breast feeding should be continued to a breast fed baby. Both breast fed and formula fed child should be soon put on semisolid soft locally available foods. Early feeding hastens recovery. During convalescence extra nutrient-rich food should be given to ensure rapid and complete nutritional recovery.

The crucial period is the first two years of life. During this period diarrhoeal disease is most common when the child's energy needs are greatest, when growth is rapid and feeding is rather difficult. Thus it is possible to prevent malnutrition from diarrhoeal disease before it becomes established.

Key words : ORT (Oral Rehydration Therapy), ORS (Oral Salt sugar Solution), Enriched ORT (Super ORS)

NUTRITIONAL MANAGEMENT OF A CHILD WITH DIARRHOEA AND MALNUTRITION

Diarrhoea and malnutrition are dangerous partners. Diarrhoeal disease both acute and chronic are the foremost cause of morbidity and mortality in the developing countries¹. There is undoubtedly a close association between the kind of environment where most malnutrition cases are encountered and that where diarrhoea is found as well, since poverty is common factor to both².

Cumulative mortalities of 25-40% are common among children upto the age of 5 years in developing nation. Forty percent or more of these deaths are caused by dehydration or chronic malnutrition associated with diarrhoea³. Mortality at the University Hospital in Haiti has been almost confined to the malnourished. Fifteen percent of severely malnourished patients are

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responsible for 85% of diarrhoea related mortality. According to Kielman if relative risk of death is one for the normally nourished child, then it doubles for each 10% fall in weight for age. (Table 1). Out of annual deaths of 5 million in a developing country. 2.7 million deaths are excess diarrhoeal deaths associated with malnutrition. In India alone nearly 1.5 million children die annually with the deadly combination of malnutrition and diarrhoea⁴. Most diarrhoeal deaths in hospitals are due to late reporting, mismanagement of early cases since diarrhoea is just not recognised for its contribution to creeping malnutrition. Given only fluid therapy this child will die if not from this acute episode, possibly a few weeks later from another diarrhoeal episode with malnutrition. So the nutritional management of the diarrhoea child must be considered as important as the management of acute fluid electrolyte malnutrition.

DIARRHOEA AND HOSPITAL ADMISSIONS

Acute gastroenteritis with dehydration in young malnourished infants remain an important cause of morbidity and approximately 20% of admissions to hospitals in developing countries as seen here from the Statistics of Institute of Child Health Calcutta (Table 2). Repeated attacks of diarrhoea lead to malnutrition which in turn lead to increased susceptibility to infections and mortality.

In a study at the Institute of Child Health Calcutta poorly nourished children were found to suffer from diarrhoeal with a much higher frequency than the well nourished children⁵. Diarrhoea in a severely malnourished child poses a different clinical challenge⁶. Diarrhoea lasts longer, is more severe and is accompanied by complex electrolyte changes.

SOCIAL CHALLENGES - DIARRHOEA AND MALNUTRITION INTERACTIONS

Underlying the causes of gastroenteritis in children we face widespread problems of Social Challenges such as poverty, overcrowding, undernutrition, inadequate clean water, poor sanitation and low standards of hygiene. They not only cause but aggravate the gastroenteritis of an infectious leading to malnutrition-malabsorption origin-diarrhoea - malnutrition and so on Thus there is increased risk of death from all causes that lead to undernutrition in a given child².

RISK FACTORS FOR DIARRHOEA & MALNUTRITION

Diarrhoeal disease and malnutrition disease are particularly common during the weaning period due to combination of infection and low food intake, there are several interacting factors such as poor nutritional health of mother, bottle feeding rather than breast feeding and feeding frequently bulky staples. They encourage microbial contamination of the upper gut, another expression of the synergism of malnutrition and infection. Malnutrition itself causes structural changes of the villi, reduced disaccharidase activity, decreased production of conjugated bile acids and decreased secretory IgA and complement C³ production. These changes are less severe in mild to moderate than in children with advanced PEM.

AETIOLOGICAL AGENTS & PATHOGENESIS

Most cases of acute diarrhoea in young children are due to bacterial and viral infections of the gut. *Escheria coli*, *Vibrio Cholerae* and *Shigella* are the common bacterial agents and Rotavirus is the commonly found viral agent. Many children normally nourished during the initial episodes of diarrhoea will become malnourished in due course.

Secondary Lactose Intolerance is a common cause of gastroenteritis in malnutrition. It is found more commonly in artificially fed than breast fed infants⁸.

Cow's milk enteropathy can develop in young infants who are weaned very early. This is due to the development of intolerance to cow's milk proteins just because they were introduced early in weaning period.

Parasitism is world wide. Biological social, cultural and economic environments of the man and his Interaction with poverty, low educational level, ignorance, poor housing, poor personal hygiene, continue to perpetuate parasitism and diarrhoea, Giardiasis has been found to be more common in cases with PEM from Pakistan⁷. Amoebiasis is found more commonly in children from poor families in a study conducted at Institute of Child Health Calcutta⁵.

DIARRHOEA IS FLUID ELECTROLYTE MALNUTRITION⁸.

Diarrhoea has been shown to have significant impact on nutrition⁸. Even a brief episode of diarrhoea leads to the loss of 1-2 percent of body weight per day. A child with multiple episodes of diarrhoea suffers most severely from PEM. In such a child (1) there is decreased food intake due to anorexia or withholding of food. (2) there is loss of major nutrients as well as minerals (3) there is increased catabolism due to infection. (4) Child is commonly intolerant to food and ORS. Each of the above factors single or combined plus repeated episodes of diarrhoea lead to PEM. (5) There is insidious but devastating effect of diarrhoea on growth. (6) Peak incidence of growth faltering coincides with the highest incidence of diarrhoea in late infancy strongly suggesting that diarrhoea is a nutritional disease².

PROTRACTED DIARRHOEA (PD) AND MALNUTRITION

Malnutrition is often associated with immunodeficiency states and therefore malnourished child is susceptible to persistent infection. This sets up a vicious cycle of malnutrition - infection - malnutrition. Diarrhoeal episode may last for more than 2 or 3 weeks because of persistent colonisation of upper small intestine by microbes. Dietary allergies especially in very young infants by cow's milk proteins, carbohydrates intolerance due to low level of brush border enzymes and decreased host immunity after an attack of measles are other contributory factors. Infections combined with allergic diet, deconjugated bile acids and toxins causes persistent mucosal injury leading to malabsorption and persistent diarrhoea, ineffective repair, micronutrient deficiency and PEM. It is also due to inadequate energy intake in response to diarrhoeal illness by the family or the physician.

MANAGEMENT OF DIARRHOEA & PEM

Essentially it consists of two important components. (1) Fluid, Electrolyte and acid base homeostasis and (2) Nutritional Management. Drugs like antimicrobials and chemotherapeutic agents have limited role to play only in infections caused by invasive organisms viz. Shigella, Enteroinvasive E. coli, Campylobacter Jejuni, nontyphoid Salmonella and protozoal infections (giardiasis and amoebiasis).

Symptomatic control of complications such as vomiting, abdominal distension and convulsions need appropriate therapy with one or more doses of metaclopramide, potassium chloride and diazepam respectively.

FLUID & ELECTROLYTES MANAGEMENT

Large amounts of water, water soluble electrolytes, metabolites and vitamins are lost from the body during diarrhoeal episodes (1) Mother should be advised to continue breast feeding for a breast-fed child. In a study from Bangladesh the energy intake from mother's milk showed very little decrease in children with diarrhoea as compared to that of matched controls, in spite of

anorexia present in the former group. In addition they should be offered fluids in as much quantity as the child can take orally without vomiting. Thus carrot soup, coconut water, rice kanji, weak tea may be given with a teaspoon or in small sips from a tumbler. This will help in stoppage of diarrhoea and generally dehydration does not develop. (2) Oral Rehydration Therapy (ORT) with home made salt and sugar (OSS) solutions can be started in case diarrhoea continues and dehydration develops / recognised by persistent thirst and irritability inspite of giving fluids available at home. A fairly satisfactory solution can be prepared at home by mixing eight level teaspoon of table salt with or without lemon squeezed in one litre of potable clean water, in a few countries molasses are used instead of white sugar, it has the advantage of containing some potassium chloride and sodium bicarbonate. As these home remedies have varied composition and usually lack or have insufficient amounts of ingredients in ORS particularly potassium and bicarbonate, they are not ideal for the treatment of dehydration at any age¹¹. But they must be tried as initial strategy at home to prevent dehydration and maintain hydration.

The treatment of dehydration requires the use of a balanced glucose-electrolyte solution. WHO and UNICEF recommends use of ORS as a universal ORT solution. It can be used to treat dehydration from diarrhoea of any cause in all age groups. Even in the new born and young infants ORS has been found safe provided additional fluid such as breast milk, juices, weak tea or plain water is given during the maintenance phase of treatment. The presence of potassium in ORS is particularly important for undernourished children who have suffered from repeated diarrhoea, and are likely to have blood level of potassium below normal. The bicarbonate / citrate in ORS is needed for the treatment of acidosis which occurs frequently with dehydration. Glucose is included in the solution principally to help the absorption of sodium and not as a source of energy.

Broadly speaking a one year old infant needs about 1000 ml of ORS in 24 hours. To compensate for additional losses with continuing diarrhoea an extra 100 ml of ORS should be given for each diarrhoeal stool¹².

About 90-95% of all patients with acute watery diarrhoea including infants can be treated with ORS alone. Intravenous therapy is required in remaining 5% to replace the deficits rapidly. They should be referred to the nearest hospitals and health centres where such facilities exist.

ENRICHED ORAL REHYDRATION THERAPY (ORT)

ORT with Oral sugar salt solution reduces nausea, vomiting and restores appetite. Food especially cow's milk increases diarrhoea through osmotic fluid loss due to incomplete digestion and damage to intestinal enzymes. Recently oral rehydration fluids have combined a sugar and amino acid (glucose and glycine) or starch and protein (Rice powder and breast milk) with electrolytes. In each study, stool output was actually reduced by about half and duration of diarrhoea shortened by one - third-a treatment that prevents dehydration, reduces stool output and at the same time, provides the nourishment to hasten recovery. Research on optimal food electrolyte combinations is now underway¹³.

NUTRITIONAL SUPPORT FOR DIARRHOEA AND MALNUTRITION

Complete treatment of diarrhoea requires feeding in addition to fluid and electrolyte replacement. There are special advantages to extra feeding during and after diarrhoea. Studies have shown that malnourished children have capacity for catch-up growth at a faster than normal rate, when they are fed calories and proteins above the normal requirements*. Diarrhoea is indeed a nutritional disease and mothers should be convinced that there is importance of feeding particularly extra feeding during the convalescent period.

1. BREAST-FED BABIES :

Breast milk must be continued during diarrhoea for breast fed babies. In fact there are numerous powerful substances both in human colostrum and milk which protect against infectious diarrhoea. Yogurt may be good alternative in cases with P.D.

2. NON-BREAST FED INFANTS :

The formula milk should be diluted with equal volume of water to reduce lactose and fed alternatively with ORS until the diarrhoea stops, Thereafter the child should receive regular full strength formula milk.

3. OLDER INFANTS :

Semi-solid foods including breast milk must be continued during diarrhoea¹⁴. Food has no deleterious effect on the duration or volume of diarrhoea. Mothers should be advised to give home made easily available local foods such as porridge, gruel, boiled rice. Khichri, yoghurt, washed potatoes, carrot soup, etc. Children with severe anorexia or malnutrition need careful reintroduction of food¹⁰. The bulk of cereal can be reduced by roasting it before cooking or better still by making a process involving germination drying and then roasting again. Adding some oil or butter will increase the energy. Fish and egg can be given where culturally acceptable and favourable¹⁰. Upto 50% of calories can be derived from that sources preferably vegetable Oil. Give small frequent feeds at least 6 times a day. Just as thirst is a good indicator for fluid therapy, effective growth monitoring through the Primary Health Care Services can provide feedback¹⁶. Each infant may incur loss of 2-15% of body weight per diarrhoeal episode. Recent studies in Bangladesh confirm poor weight gain or weight loss as sensitive indicators of the risk of child death in the succeeding two months¹⁷. Deficient growth can stimulate and convince mother and health worker for an appropriate corrective response during diarrhoea and convalescence. Provide Vitamin A, Zolate, B12, and Zince + Iron as supplements & Shift to normal diet soon.

4. DURING CONVALESCENCE

During the recovery phase of diarrhoea the appetite increases and the mother should take advantage of this to offer more food to the child. Extra food is important at this stage. It helps the child to catch up the loss which occurs during the illness, The child should be given increased amounts of water and food for at least four weeks after recovery.

Food acts as super ORS.

Presence of nutrients in the gut promotes absorption of sodium and water and hastens recovery of the intestinal epithelium because food in the intestine stimulates rapid cell turnover and renewal of intestinal lining.

VITAMIN A MALNUTRITION & MEASLES LINKED WITH DIARRHOEA

Lack of sufficient Vitamin A puts millions of children at risk not only of blindness but also of getting diarrhoea and other infections.

All malnourished children with measles, premature infants in particular are at high risk of becoming blind. Measles and diarrhoea interact synergistically²⁰. Average diarrhoea associated mortality rate is 1.4% as against 5.29% in cases of measles associated diarrhoea²¹. An epidemic of diarrhoea was reported from a village close to Vellore in Southern India following an epidemic of measles one month earlier in the same village. This hurdle can be overcome by immunising

each child against measles. between the age of 6-15 months. Since all malnourished children with measles are at risk of becoming blind, they should be given an extra dose of (2 lac) Vitamin A in addition to routine six prophylactic doses of Vitamin A being given at six months interval.

SUMMARY :

Diarrhoea in combination with malnutrition is the major killer beyond the first month of life. The hazards of unprotected water supply, environmental sanitation and unsafe waste disposal leading to diarrhoeal disease have been known for quite some time. But recently more attention has been given on the role of bottle feeding, contamination of weaning foods and most important of all the poor nutritional states of children as determinants of diarrhoeal mortality and morbidity,¹⁶ Some of the current important trends in diarrhoea prevention programme in primary health care services are :

- (1) Improve nutrition of mother by improving quality and regularity of food distribution to bring down rate of LBW babies.
- (2) Promote breast feeding for minimum of first 6 months and during diarrhoea the loss of appetite is mainly associated for supplementary foods.
- (3) Introduction of proper weaning foods by the age of 4 months and to be continued during diarrhoea along with breast feeding.
- (4) Discourage bottle feeding.
- (5) To make available ready to eat low cost weaning foods and nutritious snacks for children below 3 years.
- (6) Clean drinking water should be available. If necessary hypochlorite solution or chlorine tablets may be used for disinfecting water in wells.²³
- (7) Improve living conditions in slum areas
- (8) There should be proper sewage disposal
- (9) Expansion of ICDS programmes to cover vulnerable children of 0-3 years in addition to 3-6 years as being practised now.
- (10) Use all types of media and aids to promote health and nutrition education and ORS therapy.
- (11) Growth monitoring sessions during primary health care is the appropriate forum for the health worker to demonstrate proper use of ORS, to immunise the child and provide periodic high doses of Vitamin A.
- (12) Adequate direct experience should be given to the mother in the community and in health centres. Mothers should learn how to hydrate children with mild to moderate dehydration with home available fluids failing that ORS packet, may be given for home use.
- (13) Mothers could learn how to feed their child during diarrhoea and afterwards.
- (14) Improving training techniques for health workers at all levels.
- (15) Understanding of traditional beliefs and practices about the causes and treatment of diarrhoea so that messages can be appropriate.
- (16) Basic research should be carried out.
 - (i) For development of vaccines against rotavirus, enterotoxigenic E. coli, Shigella and cholera organism.
 - (ii) to find out causes and pathophysiology of chronic diarrhoea.
 - (iii) To evaluate antidiarrhoeal drugs that will safely and inexpensively decrease stool loss and therefore the risk of dehydration.

To achieve effective control of diarrhoeal disease morbidity and mortality, both basic and applied research efforts must continue. Pediatrician has to play the role of advisor to influence bureaucrats teaching, training and research in medical colleges, periphery and community at large.

Table—I : Showig Nutritional and Diarrhoea Mortality

	Nutritional status (percentage of standard nourishment)			
	Adequate 80%	Mild 70%-80%	Moderate 60%-69%	Severe 60
Percentage of children in developing world (WHO)	50%	25%	20%	5%
Relative risk of death (Kieiman)	1	2	4	8
Diarrhoea deaths (millions)	1.14	1.14	1.82	0.19
Excess diarrhoea deaths from malnutrition (millions)	0	0.57	1.36	0.80

Table—II : Hospital Statistics of Diarrhoeal Diseases (ICH)

	1985 No (%)	1987 No (%)
Total Admissions	5000	2598
Acute Gastroenteritis	867 (17%)	341 (13.1%)
" " Deaths	50 (13.3%)	26 (13.1%)
Chronic Diarrhoea with PEM	59 (1.2%)	26 (1.3%)
" " " "	9 (15%)	7 (27%)

Table—III : Risk Factors - Diarrhoea & PEM

Poor Nutritional health of Mother	Too many births	Too close births
Measles	PEM	Diarrhoeal Disease
Bottle feeding rather than breast feeding	Feeding infrequently & Bulky staples	Infection during pregnancy.

Table—IV : Causes and Mechanism of Protracted Diarrhoea

Persistent Infections	Allergic diet	Toxins, Deconjugated bile
Immune deficiency		Acids, Disaccharides
PERSISTENT MUCOSAL INJURY		
Protein Macromolecules absorbed	Persistent diarrhoea	Reduced Brush border enzymes
PEM+MICRONUTRIENT DEFICIENCY		

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Women's Health : New Models of Care and a New Academic Discipline

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ABSTRACT

Shortcomings in the delivery of health care to women have become evident. One proposed solution is the creation of a separate specialty of women's health within medicine. This article views the debate as having two components, the first being that of clinical services for women, the second that of women's health as a body of knowledge. With regard to women's health programs, a model is proposed using allied health professionals and nursing advanced practitioners. In that context, the question of medical speciality in women's health is less relevant because the physician is not the primary care provider. With regard to women's health as a body of knowledge, the need for education and research in women's health is recognized. A framework is proposed for the development of an applied discipline in women's health with education and teaching at the master's level. Further recommended changes are (1) creation of wellness models of care for women, (2) restructuring of medical specialities, with internal medicine and family medicine to include routine gynaecologic care so that healthy women do not need two physicians, (3) reassessment of medical liability in conjunction with use of allied health problems and nursing advanced practitioners, (4) use of technology to expand women's access to health education and services, (5) creation of partnerships across disciplines, including public health, medicine, nursing, women's studies, medical sociology, Psychology, and (6) re-examination of the hierarchy of power within medicine and the assumption that medical care is health care.

INTRODUCTION

The debate as to whether there should be a specialty of women's health has been limited primarily to the question of whether there should be a formally structured separate specialty of women's health within medicine.¹⁻⁶ The debate attempts to solve two separate problems : one is that of improved clinical care of women ; the other is how to create and institutionalize a body of knowledge about women's health. This addresses the clinical care of women and then proposes a framework for interdisciplinary research and education in women's health at the level of master's degree.

The need for new models of clinical care evolves from a growing awareness of ways in which the current medical system has failed to meet the needs of women. Recent literature has addressed differential treatment of women with cardiac symptoms^{7,8} and other complaints.⁹ Women have been excluded from clinical trials,¹⁰ and little research has been done, for example, on the effect of the menstrual cycle on various medications—which are then prescribed for women. Marketing research has shown that women are concerned about such issues as nutrition and preventive care, and "They just wanted a doctor who was personal with them and willing to answer their questions."¹¹

The debate about a medical specialty assumes that the solutions to women's health care needs lie within the scope of medicine and clinical practice. However, the reframing of women's

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health requires that the question be changed from, "Should some physicians specialize in women's health ? to "What model of women's health best meets the needs of women as patients?" Answering the latter question places the emphasis on the woman rather than the provider and requires that the health care industry overcome its traditional historic roots to adapt to contemporary social structures and values with regard to class, race, and gender.

ORIGINS OF CONTEMPORARY MEDICINE

The current organization of women's health care with its separation of reproductive from nonreproductive health has its historic roots in the nineteenth century. Medicine was founded on the model of a male body, with woman as "other."³ With the development of obstetric instrumentation and gynecologic surgery, female midwives were replaced by male obstetrician/gynecologists. In theory, these new specialists could meet the medical needs of women, but they could not replace the more complex and social role of midwives in the lives of women. Midwives did not just deliver babies but attended to a vast array of female conditions, often becoming friend and confidant of the women they served and passing on the lore of conception, contraception, childbirth, menstruation, sexuality, lactation, and mothering.

In attempting to address women's needs, medicine was further burdened by the legacy of nineteenth century sexist attitudes toward women that appeared in medical textbooks into the 1970s.¹² Women were defined by their reproductive organs and roles. Dr. Charles Meigs, in a series of 1859 medical lectures, wrote, "for her mere human or generic nature is modified by her sexual or female natureShe demands a treatment adapted to the very specialties of her own constitution, as a moral, a sexual, germiniferous, gestative, or parturient creature."¹³ Describing differences between men and women he wrote, "He enters on the path of ambition, that dark and dangerous, or broad and shining road....She sits at home to adorn the tent or the cottage with wreaths of flowers....All rude, boisterous, and immodest speech or action unsexes and disgraces woman."¹⁴ Rudiments of such attitudes are found today in myths about premenstrual syndrome and hormonal explanations of women's anger.¹⁵⁻¹⁶

The early twentieth century saw yet another development that affected the current organization of care with respect to gender, class, and race. The Flexner Report of 1910¹⁷ and its use by state licensing boards and accreditation boards catalysed the process of eliminating the less well-established and less endowed medical schools,¹⁸ which were less expensive and accepted more women and minority students. Although Flexner's assessment of schools may have been valid with regard to inadequate facilities, the decisions of the accreditation bodies to close these schools rather than improve them led to markedly fewer schools and students, with even fewer women and minorities matriculating.

Hudson¹⁹ describes three major effects of the German influence on American medicine in the late nineteenth century : the idea of research became important, medicine developed specialties based in part on technology and surgical procedures, and innovations in American medical education with the establishment of Johns Hopking University School of Medicine included many features of German medical education. The increasing cost medical education and the exclusivity of the education and skills often influenced physicians to enter more lucrative surgical and technology-related specialties.

These changes, along with Flexner's strong recommendation that all faculty be full-time hospital-based physicians,²⁰ strengthened the medical model of health care. The changes mirror what Kiesler describes as the current medical system, in which, "Short-term, acute care hospitals are

the cornerstone of health care. . .the hospital is regarded as the doctors' workshop—which others pay for but physicians control.

The legacy of this history of changes in the past 100 years is a medical system heavily weighted toward private enterprise,²²⁻²³ with substandard care for those who lack money or insurance. For the poor, the nearest hospital emergency room is often the primary care site. It is estimated that as many as 31 to 37 million Americans under 65 lack health insurance. These combined characteristics of medicine have created a vacuum, one being met by the development of new groups of practitioners to address unmet health care needs of women.

ALLIED HEALTH PROFESSIONALS AND NURSING ADVANCED PRACTICE

Physician assistant (PA) programs grew initially out of the return from Viet Nam of a sizable force of medically trained midlevel professionals with no comparable role outside the military. Their success in the military led to a movement to use them and similarly trained professionals in civilian settings. Soon after, partly emboldened by the PA success and partly as a result of the women's health movement, with its focus on bringing midwives back to childbirth and to women's health, nursing expanded the training and roles of nurses. Three major groups evolved, the nurse practitioners, nurse clinicians, and midwives. In 1919, the American Nursing Association formed the Council of Nurses in Advanced Practice and created standards for membership.

The combined groups, PAs, Nursing Advanced practitioners (APs) and Nurse-Midwives (CNMs) have established programs and provided services in a wide variety of settings. The expanded role of nurses has been found to be acceptable to consumers and effective in providing quality care. A 10-year review showed that "nurse practitioners and physician's assistants provide office-based care that is indistinguishable from physician care."³⁰ Acceptability and effectiveness of nurse practitioners were further documented in a 1987 comprehensive review and analysis of published studies. Care has been provided in rural settings,³² in urban settings in conjunction with community groups, for the elderly, for the chronically ill,³⁷ in screening for Pap smears, and in community education to reduce cardiovascular and cerebrovascular risk among women

Granting of prescriptive privileges in some states to nurse practitioners⁴⁰ has enhanced their value in medically underserved communities.⁴¹ In a study of prescribing patterns, nurse practitioners were more likely than physicians to ask more questions of the patients and to take a sleep history and less likely to prescribe psycho-active drugs for insomnia in the elderly. Programs administered by and APs tend to be based on a wellness model,⁴³ to emphasize education⁴⁴ and communication,⁴⁵ and to be sensitive to issues of access to care.⁴⁶ Such primary care programs recognize the woman in the context of her environment, focusing on emotional well-being and prevention.

Different characteristics and motivations characterize students who enter medicine, nursing, and the allied health professions. Students applying to medical schools learn that "wanting to combine practice with research" is a more acceptable motivation than "I want to help people."⁴⁸ Medical students must successfully master the basic sciences to enter and remain in medical school, yet those skills are not the ones best suited to the interpersonal requirements of comprehensive care of patients. In contrast, PAs and nursing students enter their respective clinical fields with an emphasis on caretaking, education, and preventive care. They are able to

give quality care that is experienced by patients as acceptable for considerably less cost than that of a physician, often in underserved communities that are unable to attract physicians.

SHIFTING THE FOCUS TO PATIENT NEEDS

The creation of a model of care based on patient need requires first that those needs be identified. The health care needs of two women, one in her 20s, the other in her 60s, vary in the health services needed, the best provider, and the most cost-effective provider.

Examination of Table 1 makes it clear that for the vast majority of primary care needs, a physician is an optional choice. Although internal medicine, family medicine, and obstetrics/gynaecology have fought with each other for designation as primary care physicians for women with regard to third party reimbursement, most primary care does not require a physician other than for consultation and referral. Once a physician is needed, the question of women's health as a specialty diminishes. Gender differences in health care are matters of degree, not of type. In other words, cardiac illness in women is a variation of cardiac illness in men. Although health care continues to function as if women were always the exception to the rule, women use proportionally more services than men in almost every area of health care.⁴⁹ In health care, women are the invisible majority. How do we bring the majority back into the health care model?

A MASTER'S DEGREE IN WOMEN'S HEALTH

Women's health has been defined as, "the field of practice, education and research that focuses on the physical, social-emotional and political-economic well-being of women, and encompasses women's internal and external worlds of reality."⁵⁰ The creation of master's programs in women's health acknowledges and legitimizes the study of women's health. It provides a focus for research on women's health, and it produces teachers in women's health. Established as an applied discipline, it places the field in an academic context, insuring that it is founded in theory as well as practice. Linkages between schools and departments could form the basis for master's programs that would combine disciplines of public health, nursing, allied professions, psychology, medical sociology, gender studies, management studies, health policy, and so on.

The establishment of master's level programme in medical ethics may serve as a model. Ethics programs vary by institution, in that the degree may be granted by a school of public health, a department of philosophy, or a center for medical ethics. What they have in common is the knowledge base applied to clinical, thus bringing the strictly philosophical with the strictly clinical. Students in medical ethics may be clinicians, sociologists, epidemiologists, or lawyers, who then take back the perspective of medical ethics to their respective disciplines or specialties. The production of master's levels experts in ethics does not free the rest of medicine from acting in an ethical manner but provides a group of experts to whom one can turn. Likewise, granting master's degrees in women's health does not exempt the rest of medicine and health care from addressing the needs of women, but it does create a body of experts who can be called on to develop programs, design research, develop curriculum, and teach a varied student constituency.

Curriculum for a master's degree in women's health

A curriculum in women's health at a master's level could include some of the following: History of women's health, cross-cultural women's health, research in contemporary women's health, models of user-friendly women's health care. developing curriculum in women's health,

theories of women's psychological development, women and health care financing, models of wellness and prevention, women's health in relation to family and to society, feminist theory in women's health, access to care for women, societal violence in relation to women's lives, women's sexuality, history of reproductive health issues, the menstrual cycle in relation to women's health, women's health and employment, women and AIDS and STDs.

Women's health is a legitimate area for research, study, and teaching. The creation of master's level programs will help bridge the gap between clinicians and behavioral scientists by creating channels of communication among clinicians, theorists, and educators. Its placement within academic institutions and in partnership with health care institutions would facilitate cross-listing of courses in public health, medical sociology, economics, medicine, nursing, political science, women's studies. It would facilitate communication between individuals in respective fields and create networks nationally and within universities for collegial communication and collaboration in women's health.

DIRECTIONS FOR THE FUTURE

The creation of user-friendly models of women's health care and the development of master's level educational programs in women's health are complementary solutions to the identified problems in women's health. It is essential that work continue on both fronts, that direct impact on design and implementation be felt, and that the body of knowledge about women's health be legitimized, developed, and expanded. The following actions list indicates the steps necessary for achieving the outcomes of making health care adaptive to women's needs and establishing the applied discipline of women's health with training at the master's level.

Creation of models of primary care for women that are based on wellness and preventive health, with attention to complexity of the psychosocial roles of women. Allied health professionals and nursing advanced practitioners will provide primary care to women, with continued emphasis on wellness and prevention. Women's health may include reproductive health, but it is not limited to it. A recent needs analysis showed women's health priorities to be those of breast cancer, use of tranquilizer drugs, stress, other cancers, incest, and physical violence. The same study, however, showed that the areas in which the women would also have appreciated help were weight problems, stress, money problems, smoking, caring for elderly and sick relatives, menstrual problems, and the cost of medical care.

Restructuring of medical specialties so that women do not need two primary care providers. Gynecology and reproductive health belongs in the body of internal medicine and is not to remain in the body of family medicine, Obstetrics/gynecology is to be the consultative, referral specialty for reproductive disease and obstetric and gynecologic surgery.

Reassessment of the issue of liability in health care, including questions of consumer responsibility. Physicians cannot be expected to relinquish control as long as they carry full liability for the decisions of other practitioners, nor can they be held responsible for patients who do not follow their advice. Increased consumer education must be matched with increased consumer responsibility.

TABLE 1. REPRESENTATIVE HEALTH CARE NEEDS OF WOMEN : PROVIDER OPTIONS

Type of Cast	Needed care	Physician : Needed or optional	Advanced practitioner
<i>Woman in her 20s</i>			
Routine care	Yearly physical and Pap smear	Optional	Yes
	Health education on nutrition, exercise, sport injuries, smoking, alcohol	Optional	Yes
	Breast care, self-examination	Optional	Yes
	Sexuality concerns, education about contraceptive options, sexually transmitted diseases, AIDS, possible diaphragm fitting	Optional	Yes
Pregnancy	Education counseling regarding Effect of working, weight gain or loss, exercise, harmful agents, fertility changes in relation to age	Optional	Yes
	Prenatal care	Optional	Yes (midwives)
	Potential illnesses	Cold/flu	Optional
	Allergy	Needed for diagnoses, optional for ongoing treatment	Yes for ongoing care
	Fractured arm in accident	Needed	No
	Abdominal pain, uncertain as to gastrointestinal or gynecologic etiology	Needed, internist and gynecologist for differential	No
	Depression, eating disorder	Physician, psychologist, social worker	If has psychiatric training
<i>Woman in her 60s</i>			
Routine care	Yearly physical with Pap smear	Optional	Yes
	Breast care, self-examination, mammography	Radiologist for reading	Yes for teaching self-examination
	Health education on nutrition, exercise, information about osteoporosis, information about cardiovascular health, hormone replacement therapies, information about vitamins, smoking, alcohol, habituating medications, like sleep medication	Optional	Yes
Potential illnesses	Sexuality information, changes with aging	Optional	Yes
	Cold/flu	Optional	Yes
	Pneumonia	Needed	No
	Cardiac ischemia	Needed	No
	Depression, concerns about aging	Physician, psychologist, social worker	With psychiatric training

WOMEN HEALTH : NEW DISCIPLINE

Use of technology to expand women's access to health education and services. Women's health must reconcile itself to an increasingly technologic society. The question must be asked, "How can management information systems (MIS) assist in the health care of women?" If not, this will remain one more area in which women's health concerns are left out of health inventories or are included only when there is a product to sell. Home computers and interactive video programs may be an ideal source of information and consultation for women isolated at home with children. Television is an ideal means of providing women with access to an education in health care.

Creation of partnerships across disciplines. An interdisciplinary organization constituted by medicine, nursing, and allied health professions fused with psychology, social work, sociology, public policy and health, and women's studies is needed to address the social, psychology, and specially gender-related aspects of women's health. Currently, there is little communication across health-related disciplines. For instance, a literature search for primary care of women in Medline reveals little information because the extensive literature that does exist resides in a nursing data bank and, therefore, is accessible only if one knows to look there. In medicine, there is a professional disincentive to look in the data banks or quote literature from other disciplines. Forging links between medicine and the other health-related disciplines involved in women's health will require new values, attitudes, and leadership.

Re-examination of the hierarchy of power within health care. Medicine has tended to see other disciplines as competitors rather than partners in providing health care. There is an underlying assumption in the United States that medical care is health care, that all services exist in a hierarchy in which medicine is positioned at the peak. Battles have been fought over prescribing privileges, hospital privileges, licensing laws, and reimbursement. In the late nineteenth and early twentieth centuries, male physicians drove out midwives instead of establishing partnerships, thus setting a pattern that has defined medicine's current relationship to all other health-related professionals. This fundamental assumption that medicine should remain alone at the apex of the health care hierarchy must be examined and challenged.

DISCUSSION

Several forces appear to have combined to bring attention to women's leadership. Increasing numbers of women are entering medicine. Women in nursing are moving away from their role as doctors' helpers and defining their own contributions and skills. The paucity of research on women's health has been acknowledged. The women's health market, from an economic perspective, has not been fully tapped.

A call for action is needed to explore within each university setting what interdisciplinary links may be made with an eventual goal of creating relevant master's programs. An institutionalized, interdisciplinary, applied field of study has the potential to create innovative models of care and to begin, in health care at least, to give to women the attention their numbers warrant. It is time for the invisible majority to become visible. It is time for the clinicians, social scientists, and behavioural scientists to take their places, along with physicians, in the creation of wellness models of health, user-friendly services, and a strong grounding in applied theory. In an earlier time and another place, it was said, "Women's health care will not improve until women reject the present system and begin instead to develop less destructive means of creating and maintaining a state of wellness. The present call is not a new one. Historical movements result from hard work, dedication, and seizing the moment. This may well be the time to seize the moment in women's health care.

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Distribution and composition of glycosaminoglycans in the left human coronary arterial branches under myocardial bridge

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Helena B. Nader^{a*}

Abstract

The distribution and composition of glycosaminoglycans (GAGs) are reported in the anterior interventricular branch under the intermyocardial bridge (MB) and the ventricular branch without bridge, both from the left human coronary artery. Chondroitinsulfate (CS), dermatan sulfate (DS) and heparan sulfate (HS) were purified and quantified by a combination of electrophoretic migration and enzymatic degradation. The absolute amounts of GAGs in the intermyocardial bridge segment (MB) increased by 47%, when compared to the pre (PreMB) and post (PostMB) segments and the ventricular arterial branch (VB). Further more, the relative distribution of GAGs in the intermyocardial bridge segment differs when compared to the pre and post segments as well as in the ventricular arterial branch, due to a change in the proportion of DS and CS of 41.9 and 32.4% compared to 36.4 and 39.7% respectively. These findings give support to the possible involvement of GAGs in the intermyocardial bridge segment, avoiding local thrombus deposition, reducing atherosclerotic development and moreover giving protection against vessel deformation caused by the systolic pressure.

Keywords: Glycosaminoglycan; Heparan sulfate; Chondroitin sulfate; Human coronary artery; Myocardial bridge

1. Introduction

Coronary arteries and their branches run through the subepicardial tissue and penetrate into the myocardium. In some individuals these vessels run intramyocardially for variable extensions and then return to the subepicardial surface. The cardiac musculature that covers these vessels is known as the intermyocardial bridge [1-3]. Ying et al. [4] have described its presence in 27.6% of fetuses indicating a congenital original.

Due to a series of factors stemming from the definition of bridge; the practical importance attributed to the myocardial-arterial relationship; the material and the method used in the studies; and the limitation of the investigation to only certain vessels, there is a discrepancy of the incidence of myocardial bridges over cardiac arteries reported in the literature: Geiringer [5] reported 23% of intramural coronary arteries whereas the incidence for Polacek [2] is 60% and 52% for Bezerra et al. [3] Furthermore, the anterior interventricular branch of the left coronary artery was the most frequently affected artery referred by all authors.

Geiringer [5] and Lee and Wa [6] have referred to the myocardial bridge as an important factor against atherosclerotic development. These authors suggested that the support given by the surrounding myocardial minimized the stress on a mural coronary artery that, in turn, lessens atherogenesis. They have also suggested that a muscular constriction favors local blood flow. Porstmann and Iwing [7] called this phenomenon a 'milking' effect and in angiographic studies they described a typical systolic transient narrowing of the artery under the myocardial bridge.

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The authors also reported that in patients with an intermyocardial bridge, there was no collateral circulation, as shown in those with atherosclerotic formation.

The vessel wall has an abundant extracellular matrix that contains high amounts of glycosaminoglycans (GAGs). The composition and distribution of GAGs in normal coronary arteries have been studied by several investigators [8-10]. Yla-Herttuala et al. [8] showed that the concentration of GAGs in the left coronary arterial branches changes with age with a tendency for an increase in the relative amounts of dermatan sulfate (DS) and chondroitin sulfate (CS).

The composition and distribution of GAGs in coronary arterial branches and atherosclerotic development have also been studied and it has been shown that atherosclerotic development increases the expression of CS and/or DS [11-13].

The aim of the present work is to study the distribution and composition of GAGs in the intermyocardial bridge comparing this with different segments of the left coronary artery to bring new insights on the possible influence of GAGs in vessel deformation as well as in thrombogenesis.

2. Materials and methods

Eighteen fresh left human coronary arteries were obtained from hearts of individuals with ages ranging from 40 to 50 years who died of non cardiogenic diseases. After removal of the hearts they were maintained at 4°C and the arteries dissected within 5 h. In all hearts the bridges were single affecting solely the left anterior descending coronary artery, with an average length of 15 mm (10-20mm) and thickness of 1 mm.

The anterior interventricular branches under the myocardial bridge of these arteries were studied as pre (PreMB), post (PostMB) and intermyocardial bridge (MB) segments. The ventricular branches (VB) without myocardial bridge from the same arteries were analyzed and used as controls for the distribution and composition of GAGs.

Standard chondroitin 4-sulfate from whale cartilage, chondroitin 6-sulfate from shark cartilage, dermatan sulfate from porcine skin were purchased from Seikagaku Kogyo (Tokyo, Japan) and heparan sulfate (bovine lung) was prepared according to Dietrich and Nader [14].

Maxatase (alkaline protease P126) was from BIOCON do Brasil (Rio de Janeiro, Brazil) and chondroitinase AC from *Flavobacterium heparinum* (EC 4.2.2.5) and chondroitinase ABC from *Proteus vulgaris* (EC 4.2.2.4) from Seikagaku Kagyo (Tokyo, Japan) Heparitinases I and II were purified from *Flavobacterium heparinum* according to a method previously described [5].

Stained gelatin (agarose from Bio-Rad, Richnond, CA) was used for injecting human heart with myocardial bridge.

2.1. Extraction of the glycosaminoglycans

The intimal and medial layers of the anterior interventricular branches under myocardial bridge and the ventricular branches, both from the left human coronary arteries, were carefully removed under a dissecting microscope at 4°C. The arterial layers were then cut into small pieces, homogenized and kept in acetone for 24 h at 4°C. GAGs were extracted from the acetone powders by proteolysis incubating 1 g of dried tissue with 10 ml of maxatase (2 mg/ml) in 0.05 M Tris-HCL buffer, pH 8.0, 0.15 M NaCl for 24 h at 50°C [16]. Trichloroacetic acid (TCA) to a final concentration of 10% was then added to the mixture which was maintained at 4°C for 15 min. The precipitate was removed by centrifugation (10 min, 3500 x g, 4°C). GAGs were precipitated from the supernatant by addition of two volumes of ethanol (24 h, -20°C). The resulting precipitate was collected by centrifugation, dried and then dissolved in water (04 mg dry tissue/ml). Recovery of GAGs extracted from the arteries by this method was around 95%.

2.2. Identification and quantification of the glycosaminoglycans

GAGs were identified and quantified by agarose gel electrophoresis in 0.05 M 1,3-diaminopropane-acetate buffer, pH 9.0 [17]. After electrophoresis for 1 h at 100 V. GAGs were precipitated in the gel with 0.1% CETAVLON (cetyl trimethylammonium bromide) for 2 h at room temperature. The gel was dried and then stained with a 0.1% solution of toluidine blue in acetic acid-ethanol-water (0.1:5:4.9, v/v). Quantification was carried out by densitometry at 530 nm of the toluidine-blue-stained electrophoretic slide. The extinction coefficients of the GAGs were calculated using standards of CS, DS and HS. The error of the method was in the order of 5%. Identification of the GAGs was based on the migration of the compounds compared with that of standards. The identities of GAGs present in the samples were further confirmed by treatment with specific enzymes. Samples (10 mg) of the GAGs isolated from the arteries were degraded with chondroitinase AC and chondroitinase ABC in 0.05 M Tris-HCl buffer pH 7.0 at 37°C [18] and heparitinases I and II in 0.06 M 1,2-diaminoethane acetate buffer, pH 7.0 at 30°C for 18 h [15]. Results of the absolute amount of GAGs were expressed per weight of dry and defatted tissue ($\mu\text{g}/\text{mg}$), whereas the relative distribution in the same tissue and section were analyzed as percentage (%).

2.3. Statistics

All values were calculated as means with standard error of the mean. Statistical significance was determined using Student's *t*-test. A *P*-value less than 0.05 was considered to be significant.

3. Results

Sulfated glycosaminoglycans are a class of complex polysaccharides composed of alternating hexosamine and uronic acid residues. Chondroitin sulfate is composed of glucuronic acid and N-acetylgalactosamine joined by $\beta(1-4)$ and $\beta(1-3)$ linkages with sulfate residues either at the C-6 or C-4 position of the hexosamine moiety. It differs from dermatan sulfate that contains mostly iduronic acid in its structure and its hexosamine is mainly sulfated at the C-4 position. Instead of galactosamine heparan sulfate contains glucosamine which can be either N-acetylated or N-sulfated joined to glucuronic or iduronic acid residues by $\alpha(1-4)$ linkages. These differences in structure can be visualized by the use of different enzymes. So, chondroitinase AC acts on N-acetylhexosamine linked only to glucuronic acid residues, whereas chondroitinase ABC degrades hexosamine linked to both glucuronic and iduronic acid residues. On the other hand, the heparitinases act upon the glycosidic linkage involving α -glucosamine with different substitutions (for review see [19, 20]).

GAGs obtained from the coronary arterial branches were analyzed by agarose gel electrophoresis and quantified by densitometry. Fig. 2A shows for all arterial branches studied in the present work the presence of three different components with the relative migration of standard, HS, DS and CS. HS, DS and CS.

When the arterial branches were incubated with chondroitinase AC, GAGs having the electrophoretic migration of CS were totally degraded. The enzyme had no action upon the band with migration of HS. As expected, since DS is a copolymer containing both iduronic acid and glucuronic acid in its structure, chondroitinase AC only partially degraded the band with the migration of DS. On the other hand, treatment with chondroitinase ABC totally degraded the bands with the migration of CS and DS, having no effect on the HS band. Treatment with heparitinases I and II totally degraded the band with the migration of HS. These combined results characterize the presence of HS, DS and CS in the pre, post and pontine segments as well as in the ventricular coronary branch. Fig. 3 illustrates the results obtained for the intermyocardial bridge segment. Similar results were obtained for the other arterial segments.

Fig. 4A shows the total amount of GAGs present in the arterial segments. The total amount of GAGs in coronary arterial segments under the intermyocardial bridge increased by approximately 45% when compared to the pre and post myocardial bridge segments and the ventricular branch of left coronary artery ($P < 0.01$) (Fig. 4A). Fig 4B shows a significant increase of DS (1.8 times) and HS (1.6 times). Except for the intermyocardial bridge segment, the relative amounts of GAGs were similar among the other arterial segments (38–41% of CS, 35–38% of DS and 24–27% of HS). For the myocardial bridge, a significant changes in the relative amounts of CS and DS is observed (32.4 and 41.9%, respectively).

4. Discussion

Our findings on the distribution and composition of the sulfated glycosaminoglycans in coronary arterial branch without intermyocardial bridge are compatible with those described in the literature [10,11,13], where dermatan sulfate and chondroitin sulfate account for 75% of the total GAGs and heparan sulfate for the remaining 25%.

In the present study we show that the concentration and relative distribution of different GAGs changed significantly in the intermyocardial bridge segment, when compared to the pre and post bridge segments, as well as the ventricular arterial branch.

Our results clearly show that there is a significant increase in the total GAG content, due to a significant increase in the HS and DS content in the coronary artery branch under the myocardial bridge, which is a region described as having low or no incidence of atherosclerosis [5,6]. The reported changes in atherosclerosis have been a decrease in the total GAGs content, with a relative increase in chondroitin sulfate and dermatan sulfate and a decrease in heparan sulfate, and the reverse occurring in experimental regression of atherosclerotic lesions [10–13,21–23]. Also, the age-related changes in the percentage composition of GAGs in normal coronaries are similar to those found in affected coronaries during lesion development [8]. Thus the increase in the content of GAGs, especially of heparan sulfate, in coronary artery under the myocardial bridge could be of importance.

DS and CS are found mainly in the medial layer of the vascular wall [11] and their increased concentration could lead to the protection of the arterial bridge segment, through the organization and stabilization of the collagen fibers. However, their participation in atherosclerosis would be minimized, since the content of HS is increased in the arterial bridge segment. The increase in HS could reduce thrombogenic lesions in the arterial wall, due to its anticoagulant activity, possibly decreasing the atherosclerotic lesions in this part of the artery. Thus, this antithrombotic HS, which is found mostly in endothelial cells [24–26] could lead to a decrease in thrombus deposition.

The increase in the total amount of GAGs is not a consequence of differences of thickness of the arterial wall of the bridge (intimal and medial layers), since no significant increase of thickness was observed by histological studies (data not shown).

In summary, vascular deformation caused by the compressive force of the myocardial bridge fibers during systolic pressure, as well as atherosclerotic and thrombotic development, could be decreased in part by the presence of these GAGs, contributing to the vascular integrity and remodeling.

Acknowledgements

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Fig. 1. Macroscopic aspect of the anterior interventricular branch of the left human coronary artery. PreMB, pre-intermyocardial bridge segment; PostMB, post-intermyocardial bridge segment; VB, ventricular branch.

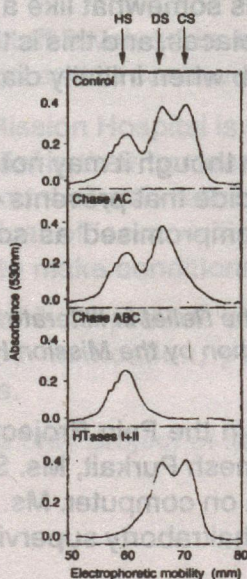


Fig. 3. Enzymatic characterization of the glycosaminoglycans present in the intermyocardial bridge segment. The GAGs extracted from the intermyocardial bridge segment were incubated with chondroitinase AC (Chase AC), chondroitinase ABC (Chase ABC), heparitinases I and II (HTases I+II). Appropriate controls were incubated without enzymes. The incubation mixtures were applied to the agarose gel as described in Fig. 2. After staining with toluidine blue the bands were quantified by densitometry as referred to in Section 2: CS, chondroitin sulfate; DS, dermatan sulfate; HS, heparan sulfate.

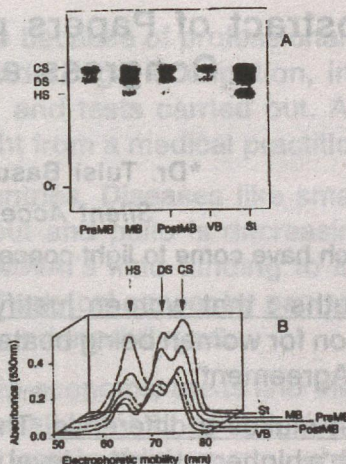


Fig. 2. Glycosaminoglycans from different segments of the left human coronary artery with intermyocardial bridge. (A) Agarose gel electrophoresis of the GAGs extracted from the coronary arterial branches: PreMB, pre-intermyocardial bridge segment; MB, intermyocardial bridge segment; PostMB, post-intermyocardial bridge segment; VB, ventricular branch; St, standard mixture of GAGs containing 5 mg of heparan sulfate (HS), dermatan sulfate (DS) and chondroitin sulfate (CS) Or, origin. The electrophoresis was run in 0.05 M 1.3 diaminopropane acetate buffer pH 9.0. After the run, the compounds were precipitated in the gel with CETAVLON, stained with toluidine blue, and quantified by densitometry as referred to in Section 2. (B) Densitometry at 530 nm of the gel shown in (A).

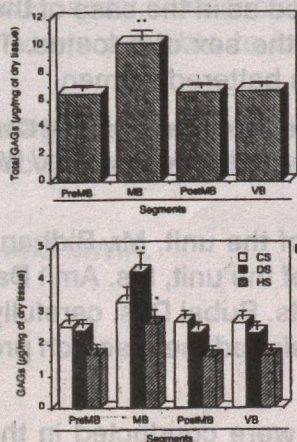


Fig. 4. Concentration of glycosaminoglycans present in the ventricular branch and in the anterior interventricular branch (pre, post and intermyocardial bridge segments) of the left coronary artery. (A) Total content of glycosaminoglycans. (B) Absolute content of each glycosaminoglycan. GAGs, glycosaminoglycans; CS, chondroitin sulfate; DS, dermatan sulfate; HS, heparan sulfate; $*P < 0.05$; $**P < 0.01$.

Abstract of Papers presented at MWAI International Congress at Sydney on April 2001

by

*Dr. Tulsi Basu, M.B.D.A. DCH. DR COG. MD

Silent Acceptance of Violence at home

Facts which have come to light concerning violence at home are :

Home truths : that women justify beating. At total of 56% agreed that there was justification for women being beaten, with 47% of those in urban areas and 60% in rural areas in Agreement.

Education makes a difference. The education level of those surveyed revealed that those with a higher education level were less in agreement with this form of punishment. The figures were: high school, 37%; middle school, 52%; barely literate, 58%; and illiterate, 62%.

Reasons for the "rod" The reasons given were cases of beating were considered permissible were : neglecting the home 40%; goes out without a nod, 37% disrespect to in-laws 34%; unfaithful 7%; bad cook 25%; and lack of dowry, 60%.

Trials and triumphs. The picture of a working woman today is somewhat like a jig-saw puzzle. To make a whole, pieces have to be fitted in the right places, and this is the case for battered women. A woman's suffering begins in the womb when initially diagnosed as a female foetus.

Conclusion : A draft law on domestic violence is needed even though it may not be fully implemented as in the case of the Law against Female Foeticide that prevents doctors disclosing the sex of a foetus. The role of NGOs is also compromised as some are themselves battered women.

Relief of the Pain of all Types of Cancer, and the Comparison of the Relief in Illiterate Under-Privileged and Literate Privileged Women and Children : Investigation by the Mission Hospital of AMWI (WB)

The head of the unit, Mr. Bidhan Purkait was fully involved in the Pain Project. Other members of the unit, Ms. Amit Das, Ms. Tanuja Kar, Ms. Animesh Purkait, Ms. Santosh Das, and Ms. Bubai Das, carefully entered the research data on computer. Ms. Suman Biswas designed the research programme, and Ms. Santa Chakraborty supervised the fieldwork.

Interviews were conducted in the areas of Tiljala, Anandpur, and surrounding areas near the eastern part of Kolkata, WB, India.

Of 5000 people interviewed, 1000 were privileged and 2001 underprivileged. Women interviewed were aged between 13-80 years. Most of those interviewed co-operated

**Professor & Head of depend of Auesthesiology R.K. Mission Seva Pratisthan & Vivekananda Past Graduate Institute of Medical Sciences.*

with the field worker: some were unable to participate because of professional duties or family problems. The questionnaire covered gender, age, occupation, income, education level, position of pain, treatment sought, and tests carried out. Another significant question was why treatment was not sought from a medical practitioner.

Cervical cancer is most common in developing countries. Diseases like small pox, diphtheria and whooping cough have been wiped out and polio is decreasing, but cancer is the challenge of the twenty-first century. MWAI's kind funding to Mission Hospital to promote awareness and early detection of cervical cancer by pap smear is bringing in more women, those who are illiterate and under-privileged.

Social workers and medical officers who visit low socio-economic areas find the plight of women and children, who are in advance stages of all types of cancer, desperate. The methods of pain relief, especially for women and female children, are unbearable and cruel unbearable and cruel to watch. Common is the application of earthen pots heated with lighted coals that cause burns. A witch doctor is sometimes called to "drive away" the disease by beating the patient with brooms, or through severe kicking, which often results in loss of consciousness and sometimes in death.

Violence, lifetime abuse, against women, physical, sexual and/or psychological, is rampant and affects women of all castes, classes and communities.

Medical staff involved in research take great care to maintain contact with those interviewed and to continue to provide assistance in the areas needed.

AMWI's Mission Hospital is project working to bring awareness to patients of methods of pain relief in their homes and its central object is to have a pain relief clinic to impart some amount of pain relief. The clinic will be at Mission Hospital, with social workers and medical officers visiting patients in their homes where possible to implement changes to make conditions more bearable.

The object is to provide pain relief by regimented analgesia, Ayurvedic medicine, systematic medication, psychological techniques, acupuncture, and alternative medicines.

This is the only project of its kind involving both AMWI and MWIA.

NEWS FROM KOLKATA A.M.W.I. (W.B.) & MISSION HOSPITAL

Calcutta's name has been changed to Kolkata & it is quite amusing to see Police Vehicles as C.P. (Calcutta POlice) and some as K.P. (KolkataPolice).

2nd Central Asia Congress of M.W.I.A. was held at Ramada Hotel. Bangkok from 24th November to 2nd December 2000. It was very well organised Scientifically culturally hospitality was excellent quite a few members of M.W.I.A. Executive Committee had attended, seven from Calcutta and two from Bombay. We were received at airport. There was plenty of food and drinks during the congress. All of us presented papers. It was pointed out during General Assembly that M.W.I.A. will become hundred years old in 2007 & International congress should be held in India. Thank you Dr. Sompong, Chamaree and other members of the organising committee for their excellent effort.

XXV International Congress of M.W.I.A. held at Sydney Australia from 16th to 19th April 2001 at Sydney Hilton. There were three members from Calcutta and three from Bombay and one male from Maheshtala attended. The organisers did not realise that attending doctor was male, Calcutta presented their project on 'Pain relief in privileged and underprivileged'. It was poster presentation. Dr. Cajsa Ranginitt very kindly awarded 1000, Swiss France on behalf of M.W.I.A. There were papers presentation by practically by all India members which should be published in next journal. A.G.M. was very noisy and not very fair but India had her share of say. I.P.P. post to continue and was passed after voting. Though we were given hospitality for four nights, the congress proved to be very expensive and A.G.M.S. were not smooth.

A.M.W.I. (W.B.) had their election and same executive committee continues. Only change is Dr. Chitra Chatterjee resigned was replaced by Dr. Mahamaya Sarkar and Dr. Purnima Chatrter was inducted.

Hospital is getting more and more popular. Nearly all departments are there including pain clinic which provides Homeotherapy, yoga and meditation. Arrangements are made for Sophisticated investigation.

Thanks to Dr. Mc.Donald who donated a new ambulance which was long needed.

Now we have a room, where executive & scientific meetings are held. The executive meeting every month. Scientific meeting every three months on 18th August workshop was held on Resuscitation of new born Dr. Michelle Harrison was Chief Guest. It was well attended so was A.G.M. we have had quite a few visitors from outside India to the hospital such as :-

Miss Marta - Daughter of Dr. Cajsa, the treasurer of M.W.I.A., Mr. Richard - a friend. They were very pleased Ms. Michelle Harrison from U.S.A., Miss Cici Harrison, Miss Kelly.

All of them were pleased. Nurses under Matron Chatterjee presented skit, songs dance programme, gifts and donation to Nurses Fund was given by Michelle.

Dr. Michelle Harrison presented very much needed scientific instruments and a good cash donation.

Now we are awaiting president M.W.I.A. Dr. Shelly Ross.

Thanks for patient reading.

Tulsi Basu.

Associatin of Medical Women in India

Statistics-2000-2001

1. Total Number of Outdoor Patients :- 7890
2. Deliveries:- 424
L.U.C.S. 133
3. Operations :- 273
Major - 140 Minor - 133
4. Immunisation :- 2740
5. Coper T - 61
6. Cancer Clinic :-
Pap Smear 235 FNAC - 5
7. Pathology - 674 8. X-Ray Dept. - 43 9. E.C.G. Dept. = 64
11. Pain Clinic - 120 12. Yoga and Meditation Clinic- 153
13. Dental Dept. - 670
13. Health Camp held - 8, 1700 patient's were seen.

One of our senior members who is closely associated with our hospital, Dr. Sabitri De was run over by bus on the road on 2nd August 2001. Her right arm had to be amputated. In spite of her great tragedy she had not lost her spirit. She wrote the following poem & sent it to the members of the association from her hospital bed-

“আকস্মিক”

ভয়ঙ্করকে আর করো না ভয়।
নিয়ে গেল ডান, রেখে গেল বাম হাত ॥
আমার সেই হাতে রাখ তোমার হাত ॥
তোমাদের সাথে আবার করিব যুদ্ধজয়।
করো না করো না কোর না করুণা।
এতো করুণা যমের নবজীবনের মহাকরুণা।
আজ বাম কলম ধরি চোখের জলে কালি—
আর লিখি এই কথা—সত্যসাধন পথে—
জীবনের পথে পথে আছে বিস্ময়
আছে চোরাবালি ॥

সাবিত্রী দে

১৭. ৮. ২০০১

In translation :-

'UNFORESEEN'

Be not be afraid of the terrible, my right hand has tabu, the left had been spared. Hold that hand in your hand. Together we will win the fight. Please do not pity me, I believe grace of God has given me a new life.

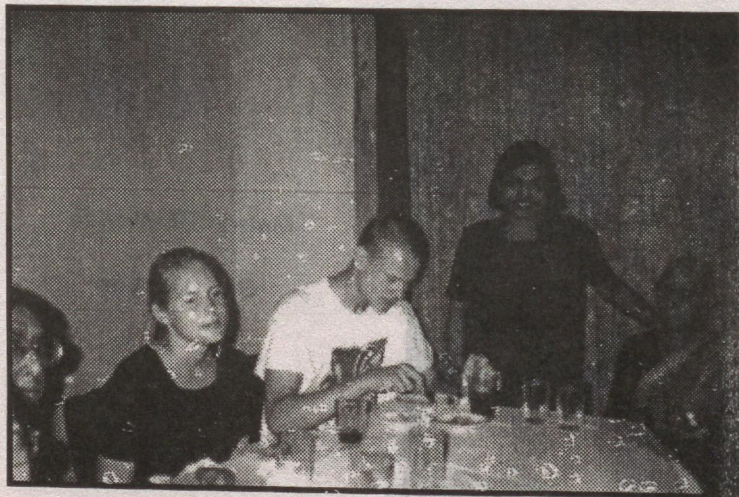
I am holding the pen in my left hand and writing with my tears I realise in following the true path of life you meet surprises and quicksands.

Sabitri De

17. 8. 2001



**Workshop—
Dr. Michelle Harrison
was the Chief Guest**

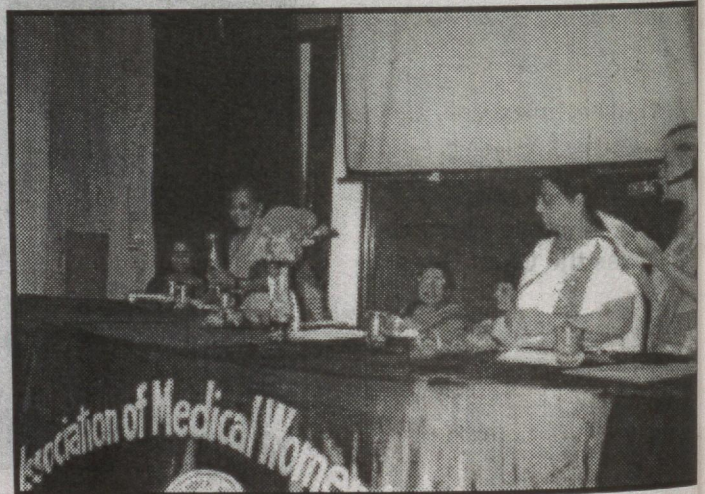


**Marta and Richard
Fim Swedenp**



**Independence Day of India
on 15th August
Flag Hosting**

**Dr. Anjali Memorial Oration
& Award on 10th July**



**Matron Chatterjee
&
G. S. Dr. Iyer**

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