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HEART DISEASE IN PREGNANCY—A FIVE YEAR SURVEY

by

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Cardiac disease in pregnancy presents problems both to the obstetrician and to the physician. With a modern understanding of haemodynamics during pregnancy, a cardiac patient needs special care during labour and in the immediate postpartum period. All these go a long way to reduce maternal mortality and morbidity.

A total of 143 pregnancies in 142 patients with heart disease were studied from 1969 to 1973 at the Lady Hardinge Medical College, New Delhi. During this 5-year period there were 58313 admissions into the obstetrical wards and 30521 deliveries, giving incidences of 0.25% and 0.46% respectively.

Congenital lesions were found in only 3 (2.1%) in the form of patent ductus arteriosus, pulmonary stenosis and atrial

septal defect. There was one case of viral myocarditis with pericarditis and none of cardiac disease due to syphilis or hypertension.

Rheumatic heart disease was found in 139 (97.2%). Mitral lesion predominated in 134 (93%) with a single mitral lesion alone contributing to 90, i.e., 62.9%.

Patients were classified on the criteria of the New York Heart Association with 56 belonging to Grade I, 18 to Grade II, 8 to Grade III and 61 to Grade IV.

Agewise the majority (76.2%) were young and between the ages of 18-30, while 34 (23.8%) were above 30. Among the older age group 26, i.e., 76.5% belonged to Grade IV. One-third of the deaths occurred in the later age group.

Gravidity

There were 34 primigravidae (23.8%) with 4 deaths among them. One-fourth, 36 (25.2%) were grand-multi gravidae and the majority of them (63.9%) were in Grade IV.

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TABLE I
Type of Heart Lesion

S. No.	Type of Heart Lesion	No. of cases	Percentage
1	Congenital	3	2.1%
	(i) Atrial septal defect	1	0.7%
	(ii) Patent ductus arteriosus	1	0.7%
	(iii) Pulmonary stenosis	1	0.7%
2	Rheumatic		
	(a) Single lesion		
	(i) Mitral stenosis	90	62.9%
	(ii) Mitral regurgitation	17	11.9%
	(b) Double lesion		
	(i) Mitral stenosis with re-gurgitation	27	18.9%
	(ii) Aortic stenosis with re-gurgitation	5	3.5%
3	Infective myocarditis pericarditis	1	0.7%
	Total	143	100%

Over half the cases, 18 (56.6%) were emergency admissions and it was in this group that the majority (77.7%) of deaths occurred, whereas among the 21 who had attended the antenatal there was no death. The period of gestation on admission showed that almost half (49.6%) were 36 weeks or above when first seen.

Complications

Only 11 had haemoglobin of 11 gms.% whereas 92.3% were anaemic, 5 being severely ill with haemoglobin levels of less than 6 gms.% Four had toxæmia, 2 had Koch's lesions and 1 had suppurative lung disease. Obstetrical complications were found in 2, one with accidental haemorrhage and one with placenta prævia.

Behaviour in Pregnancy

Eleven patients gave a history of previous failure, 5 improved with treatment in the antenatal period and this included 1 who had repeated pulmonary oedema. Five did not respond to the treatment while 3 died.

Behaviour in Labour

During labour and puerperium 9 deteriorated. Three of these lived and 6 died.

Thirtyfive left the hospital before delivery either against medical advice or were discharged and 3 died undelivered. Out of the remaining 105, fourteen aborted and 91 delivered. Of the latter 28.6% had premature deliveries. Labour was spontaneous in 51 and forceps was applied in 40. There were 2 who had caesarean section for obstetrical reasons and both stood the operation well.

Labour was quick, 86.6% delivering within 24 hours and 40% within 8 hours.

A study of 61 in Grade IV showed that 26, (42.6%) were above the age of 30 and 23, (37.7%) were grand Multigravidae. Again the emergency admission rate was high—52.5%. Two-third (64%) were admitted at the period of maximum stress. In this group also labour was quick and 88% delivered within 24 hours and 32.8% within 8 hours. All the deaths were from this group.

Puerperal morbidity was found in only 11 (10.4%). In this hospital antibiotics were given as a rule during the puerperium.

Fetal Outcome

Out of 143 pregnancies the overall fetal loss was 34 (23.8%). Three mothers died undelivered with fetal loss of 3 and 14 aborted. There were 10 neonatal deaths and out of these 9 were associated with prematurity. Of the 7 still births in addition to anoxia, 6 were associated with prematurity and 2 of them had added factors of toxæmia and Koch's disease in the mothers. The perinatal mortality was 187/1000 births.

Pregnancy wastage could be correlated with functional capacity of heart and after excluding first trimester abortions, rose from 6.21% in Grade I to 19.4% in Grade IV.

Weight

Only four babies weighed over 2725 grams. One-third were premature by weight weighing less than 2250 grams. Of these 10 were full term by gestation showing the effect of the maternal environment in causing dysmaturity. In addition, 2 mothers had toxæmia and 1 had accidental hæmorrhage.

Maternal Mortality

There were 9 maternal deaths giving a maternal mortality of 62/1000 births. Of these 77.7% were emergency admissions, 4 were primigravida and among the latter only 1 reached full term and the rest died undelivered at the period of maximum stress. Seven out of 9 deaths (77.7%) were between 28-34 weeks and when labour did come on it was premature in all except one. Deaths occurred within 45 minutes to 7 hours in 3 and within

6 days in last 3. Fetal loss among mothers who died was 88%. From among 30,521 deliveries, maternal mortality in these 5 years was 302, i.e., 98/1000 births, and that due to heart disease was 29/1000 births.

Discussion

Rheumatic heart disease is more common in the West. As against Mendelson's (1960) incidence of 3.6% and that of 2.3% of Burwell and Mecalfe. This hospital had an incidence of 0.2% of obstetrical admissions and 0.46% of deliveries. This incidence is comparable to 0.45% of Bose (1957) in Calcutta and to that of 0.53 of Asher *et al* (1970) from Bombay. Other Indian workers reported different incidences. Masani (1957) gave an incidence of 0.2%, while Mudaliar and Menon (1967) gave incidence of 0.9%.

Comparable to 95% of Hemlatha and Kunders the predominant disease was rheumatic in 97.2% with mitral lesions accounting for 93% and mitral stenosis alone for 62.9%. Barnes (1969) found 91.4% and Jones (1951) 90% being of rheumatic origin with the mitral valve affected in 85%.

The age factor played a decisive role in the prognosis which was worse in the older age group. One-third of the deaths occurred in 23.8% who were over the age of 30 and of these 76.5% were in functional Grade IV.

Parity does not influence subsequent condition of the heart (Maynard and Groven 1960 and Chesley 1967). However, parity is certainly associated with more obstetrical complications, with anaemia and with socioeconomic problems. A significant finding was that grand multipara formed one-fourth of the cases with 63.9% of them being in Grade IV. This

reveals ignorance of contraceptive methods and of family planning and disregard on the part of the patient and her relatives towards her well being. The functional incapacity of the heart to stand up to the demands of pregnancy were also noted among 44.4% of deaths which occurred among primigravida revealing the inability of the badly damaged heart to take up any further burden. One primigravida had several attacks of failure before she became pregnant and died at 22 weeks of pregnancy. Pregnancy could have been countermanded in such a patient, until corrective measures were instituted.

The effect of lack of antenatal care was very evident. Emergency admissions formed the main bulk—56.6%. Also, when first seen half were 36 weeks and above and were already in Grade IV. It was in this emergency group that 77.7% deaths occurred. Patients in India only attend hospital when in dire straits. The lack of awareness of the gravity of the cardiac disease and apathy towards antenatal care contributes most to mortality in this country. Only 14.6% had attended the antenatal clinic and there were no deaths among them. The remainder had come sporadically to the cardiac clinic. This reveals the necessity of cooperation between the physician and obstetrician.

Anaemia was a complicating factor in 92.7%. Prematurity rate was 28.6%. The duration of labour was less than 8 hours in 40%.

Hemlatha and Kunders (1972) noted 62.9% having spontaneous deliveries whereas in this series it was 55.5%. In 44% forceps was used to cut short the second stage.

The study of patients in Grade IV showed that 52.6% were emergency admissions and that 64% were admitted

for the first time at the period of maximum stress—28 to 34 weeks. Again labour was quick and in 47.6% it was less than 8 hours duration.

Fetal Outcome

The overall pregnancy wastage was 23.8% and the Perinatal mortality was 187/1000 births. Perinatal mortality was heavily weighted by prematurity and only 2 of 17 were mature. Hemlatha and Kunders (1972) had a perinatal mortality of 10.2%. Devi reported a fetal loss of 20%. Fetal loss could be correlated with the functional capacity. After excluding first trimester abortions the loss rose from 6.2% in Grade I to 19.4% in Grade IV.

Maternal Outcome

Maternal mortality was 62/1000 births and was comparable with 6.4% of Masani and that of Maternity Hospital Egmore. Hemlatha *et al* gives a figure of 7.8%. Indian figures are much higher than 0.3% reported by O'Driscell *et al*, 1% by Burwell and Mecalfe and 1.4% by Sutherland and Bruce. The most prominent avoidable factor in these cases was lack of antenatal care since 77.7% were emergency admissions. Toxaemia, anaemia and Koch's disease were added factors which contributed to the mortality. In 4, pulmonary oedema was a significant finding. Auricular fibrillation was found in one and cardiac arrest in another.

Significant also was the time of death. Three primigravidae died during the period of maximum stress of 28-34 weeks. The rest of the deaths occurred during the second period of stress, i.e., immediate postpartum and early puerperium. The fetal loss was also high in these cases—88.8%.

Heart disease in pregnancy necessitated early diagnosis and intensive care by two

major disciplines during pregnancy and particularly during the period of maximum strain on the heart. Intranatal and postnatal cares go a long way to prevent death. Proper contraceptive advice is mandatory if one is to avoid the picture of an emergency admission of a grand multipara admitted in failure without any prior medical care due to her apathy and to socio-economic conditions which make it difficult for her to avail of antenatal facilities. In India this picture is unfortunately only too common and places responsibility heavily on medical and paramedical staff and health authorities.

Summary

Rheumatic heart disease with mitral involvement was the most predominant finding. Three-quarter of the older age group was in functional Grade IV with one-third of deaths in them. One-fourth of cases were grand multipara and again two-third of them were in Grade IV. The emergency admission rate was 56.6%. Half the patients were in failure and over 36 weeks when first seen. Perinatal mortality was 187/1000 births and pregnancy wastage 28.6%. Maternal mortality was 62/1000 births.

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