THE OBSTETRICAL BEHAVIOUR OF THE ANAEMIC PREGNANT WOMAN

by

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The association of anaemia with pregnancy is so often met with in India that its occurrence is almost commonplace. Yet it plays no small part in the causation of a high death rate both for the mother and the baby. At the Lady Hardinge Medical College, New Delhi, over a 2½ year period from January 1967, 9.8% maternal deaths were due to anaemia alone. From Madras, Krishna Menon found it responsible for 20% of maternal deaths, while Chatterjee *et al* (1970) assigned 30% of all deaths to anaemia. By Western standards, levels below 11 gm% are regarded as anaemia but in India these levels are not easily obtained in an every-day hospital practice. Krishna Menon has drawn attention to 2 levels, 8.7 gm%, below which there is impairment to the prognosis for mother and foetus, and 6.5 gm% which he regards as dangerous, making hospitalisation imperative. Utilising these two levels, 238 pregnant anaemic women admitted in 1969 in the wards of the Lady Hardinge Medical College, New Delhi, were studied with regard to their behaviour during pregnancy and labour, and to its outcome. No patient with haemorrhage was included. These patients were divided, 80 into group I, the severe type, who were hospitalised for Hb levels of 6.5 gm% and below. Group III consisted of 73 patients with mild anaemia with levels above 8.7 gm% and up to 11 gm% and were selected at random when they came for delivery, while 85 patients in group II, had moderate anaemia with Hb. level in between these.

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The majority of patients attending this hospital belong to the lower socio-economic group. They do not consider regular antenatal check up as necessary and hence significantly enough, only 8 (10%) of those with severe anaemia and 16 (18.5%) of those with moderate anaemia, had been booked at some time or other as against 32 (43.8%) of the mild variety.

Parity varied from 0-10, with 23.5% primigravidae having Hb. below 8.7 gm% while grande multiparity, an important aetiological factor, was found twice as often—12.6%, when the Hb. level was below 8.7 gm%. Helminthiasis, causing a persistent blood loss, also played its role in the causation of anaemia where 19 had intestinal parasites of which 14 suffered from ankylostomiasis. All except 3 who were between 24-28 weeks, were in the 3rd trimester. On admission 52% of group I were in a poor state of health of which 17.5% were serious or critical, with 35% having dyspnoea.

Congestive cardiac failure was present in 13 and developed later in 2, while 4 were admitted with signs of cerebral anoxia. In all 238, a raised blood pressure was found in 33 (13.8%). Among the severely anaemic patients 25% had a raised blood pressure as against 9.3% of the moderate and 6.8% of mild group.

An association with toxaemia was found in group I, where, in addition to a raised blood pressure (11) 13.7% had oedema and 5 (6.2%) had albuminuria also as against zero in group II and one in group III.

Investigations of group I showed that 32 (40%) had Hb. levels of 4 gm% and below, 17 (11.4%) being 2 gm% and below. Peripheral smears done in 56 showed that a microcytic hypochromic picture was predominant in 51.8% while 48.2% showed a dimorphic picture with 2 also having megaloblasts. It was noticeable that of the 15 who developed congestive cardiac failure 73.3% showed a dimorphic picture and 80% had levels below 4 gm%, and that 61.5% of those associated with toxaemia also showed a dimorphic picture. After instituting the necessary therapy, 18 left undelivered. One died in the antenatal period. A prolonged labour was not a noticeable feature—only 4.1% of those below 8.7 gm% as against 7.2% of those above had labours lasting over 24 hours. On the other hand, delivery within 6 hours was noticed in 19 (31.8%) of group I with 9.7% delivering within 3 hours. Foetal distress necessitated forceps applications in two, and in 2 of the 7, caesarean sections. Two of the 3 who had forceps to cut short a 2nd stage, were in failure.

As prophylactic ergometrine was used routinely, postpartum haemorrhage was not encountered, though in 3 cases, with Hb. of 3.5 gm% and less, haemorrhage varying from 5-10 oz was noticed.

The sepsis rate showed a marked rise from 4.1% when the level was above 8.7 gm%, to 15.1% when it was below, being highest in the severely anaemic group (26.2%).

Of 15 who had congestive cardiac failure, 4 left when the condition improved, 6 recovered before labour and 5 were in failure during labour. Two did well in labour with transfusions being withheld, and one became acutely dyspnoeic after delivery and transfusion and expired 17 days later, while one expired post-partum and after a transfusion, due to aggravation of the failure. One developed failure after labour and transfusion.

Blood Transfusions

No case with Hb above 6.5 m% received blood except during a section. Among those with an Hb. level of 6.5 gm% and less at delivery, 30 (49.1%) received no transfusions at all and of these 4 (6.5%) were below 4 gm%. All stood labour well.

Predelivery packed cell transfusions were given to 14, of whom (43% went into labour, two developing congestive cardiac failure after delivery with one death soon after and one after 17 days. Transfusions either during or immediately after delivery, were given in 16 with 7 (43.7%) having levels of 3.5 gm% and less. All did well except one who was precipitated into failure and died.

Deaths

All 4 deaths occurred with levels of 5.5 gm% and less. Three showed a macrocytic hypochromic picture with megaloblasts in one. One woman died in the antenatal period and one 17 days postpartum complicated by desentery. Two died following parturition. Both were hypertensive and seriously ill on admission and one was in failure and after-delivery collapse necessitated a transfusion in each with aggravation of the failure in one and precipitation into failure of the second.

Prematurity: When the Hb. was below 8.7 gm%, 24.6% pregnancies did not reach term with the rate being 37.7%

when the level was at or below 6.5 gm%.

Foetal weight: When the Hb. was below 8.7 gm% 68, 46.8%, babies' weights were below 2500 gm with a perinatal mortality of 181 per 1000, while when the Hb. levels were 6.5% and below, 40, 65.5% were below this weight and the mortality rose to 242 per 1000, doubling upto 470/1000 when the Hb was 4 gm% or less. However, in India the average weight of the mature baby is less than its western counterpart and using 2250 gm. to indicate maturity, 32.8% babies had a low birth weight when the Hb. was below 8.7 gm% as against 21.8% when it was above, with it rising to 51.6% when the Hb. was 6.5 gm% or less (Table 1).

Stillbirths and Neonatal deaths

In the severely anaemic, there were 11.2% stillbirths and 12.9% neonatal deaths as against 1.3% and 13.4% in the moderate group and zero and 9.6% in the mild. All their weights were less than 2500 gm. One neonatal death, 3088 gm., could not be assigned to anaemia as the mother was hypertensive in addition.

Discussion

The progress made in the West in the field of maternal and perinatal mortality and morbidity owes a great deal to the meticulous attention given antenataly to the patient and also to the appreciation by the patient of the value of prenatal care. This awareness has not been found in India to the same extent where women are either ignorant or careless about these facilities.

The problems anaemia poses in pregnancy are the result of socio-economic conditions like diet, social habits, cleanliness and lack of consciousness of health facilities. This last factor is seen particularly in 85.5% of severely or moderately anaemic patients who were emergency admissions and had never availed of antenatal care. That 23.5% of primiparas also had levels below 8.7 gm% reflects a dietary origin for their anaemia while debilitating repeated pregnancies significantly causing anaemia were seen when twice as many grande multiparas were found to have levels below 8.7 gm% as above. Helminthiasis, particularly ankylostomiasis, also contributed to the causation of anaemia. When anaemia was severe, the usual clinical picture was found with 66.2% having oedema, 35% being dyspnoeic and 15 having congestive failure.

The association with toxaemia in the severely anaemic was 13.7% with 6.2% having a full blown picture.

Investigations revealed that 40% of the severe, i.e. 13.4% of the entire series were 4 gm% or less. A dimorphic picture was found in 48.2%, a figure much lower than 60% reported from Madras by Menon (1960) and 58.5% by Chatterjee from Calcutta, but very close to 44.5% reported by Dass *et al* from Delhi—the difference being explained by the latter authors as due to climate and dietary habits. Of those with congestive failure, 73.3% had a dimorphic picture suggesting that multiple deficiencies adversely affect the myocardium to a higher extent. Scott found labour to be prolonged in 22% but in this series only 4.1% had labours lasting over 24 hours, while three times as many i.e. 21.8% had delivered within 6 hours when the Hb. was below 8.7 gm% and almost eight as many when the Hb. was 6.5 mg% and below.

One of the three important complications in anaemia was that the sepsis rate showed a four-told increase from 4.1% when the Hb. was above 8.7%, to 15% when it was below, with a 6½ times increase (26.2%) when the level was below 6.5 gm%. Scott found a much higher

TABLE I

Weight of the Foetus

Weight in gm.	Severe Anaemia					Moderate Anaemia					Mild Anaemia					Grand Total
	A.B.	NND	S.B.	Total	%age	A.B.	NND	S.B.	Total	%age	A.B.	NND	S.B.	Total	%age	
Less than 900 gm.	—	1	—			—	1	—			—	—	—			
900—1800 gm.	2	3	6			—	8	—			—	7	—			
1800—2250 gm	16	3	1			6	1	1			9	—	—			
2250—2500 gm	7	1	—			10	1	—			8	—	—			
2500—3150 gm	17	1	—			52	—	—			44	—	—			
over 3150 gm	4	—	—			7	—	—			5	—	—			
Total Mothers				61					85					73		219
Babies				62					87					73		222
Babies below 2250	18	7	7	32	51.6+	6	10	1	17	19.5%	9	7	—	16	21.9%	
Babies below 2500	25	8	7	40	64.5%	16	11	1	28	32.1%	17	7	—	24	32.8%	
Perinatal Mortality in relation to prematurity by weight.				15	242/1000				12	137/1000				7	98/1000	34-153/1000

X Indicate twins . There were 2 premature and 1 mature sets.

rate (45%) of postpartum infection while Chatterjee's morbidity rate was 53.5%.

Scott found 11% labours to be premature, whereas Chatterjee (1970) *et al* found 95.5%. In this series when Hb. was below 8.7 gm%, 24.6% pregnancies ended prematurily, rising to 37.7% when the Hb. levels were 6.5 gm% and below. While one-third of both moderate and mildly anaemic cases were associated with babies below 2500 gm., in weight when the effect of severe anaemia was considered the figure was doubled 64.5%. When 2250 gm. was taken as the dividing line, 51.6% babies with severely anaemic mothers were low birth weight 2½ times that in the moderate and mild groups.

Perinatal mortality which was 153/1000 or 15.3% for the entire series as compared to 10% of Scott's series showed a rise from 98/1000 in the mild group to 137/1000 in the moderate and then to 2½ times 242/1000 in the severe group. When the Hb was 4.9 gm% or less the perinatal mortality was 470/1000. A stillbirth rate of 11.2% in the severely anaemic mothers contributed most to it and when Hb levels were 4 gm% less, anoxia resulted in the stillbirth rate rising 3 times to 35%.

Vyas *et al* studying women with 4 gm% and less found a neonatal mortality of 21.9% in their series.

In the severely anaemic patient the obvious answer would appear to be a packed cell transfusion. However, this is not always the panacea it is supposed to be. With increase in circulatory volume in pregnancy, and anaemia not being of an acute haemorrhagic origin, the additional load of a transfusion on an anoxic and already taxed heart can increase the pre-existing failure or precipitate failure itself and should transfusions be followed by premature labour the scales may be tipped against the patient. In the severe, 49.1% were not transfused at all with 6.5% being below 4 gm%. All did well in labour while of the 14 who received pre-delivery transfusions, 43% went into labour, with 2 developing failure followed by death.

Hence, while packed cell transfusion has its place in the management of these patients, it often carries the risk of precipitation into labour and into failure. Undoubtedly exchange transfusion as advised by Menon is the answer, though not all have the facilities to carry it out. The point of interest is that almost 50% of severely anaemic women did well in labour without transfusion.

Death was associated with levels below 5.5 gm% and with a dimorphic picture. Transfusion and premature labour played a significant role in aggravating failure.

Hence, while anaemia certainly affects maternal and foetal prognosis adversely at levels below 8.7 gm%, it is when the Hb is at 6.5 gm% and below that its effects are fully appreciated both in raised mortality and morbidity. Transfusion on occasions may be dispensed with and when given to severely anaemia women can be a danger to their lives by precipitating labour or cardiac failure, making constant supervision obligatory.

Summary

A clinical study of 238 anaemic women was done. Among the severely anaemic 48.2% showed a dimorphic picture. Labour was quick in 31.8%, sepsis occurred in 26.2%. Transfusions were not given in 49.1% with no ill effects. Prematurity rate was 37.7%, and 64.5% babies had a low birth weight and the perinatal mortality was 242/1000. All maternal deaths occurred in this severe group.

In the moderate group the prognosis was much better. The perinatal morta-

lity when Hb. was below 8.7 gm% was 181/1000 while in the mild group it was 98/1000.

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References

1. Chatterjee, J. B. and Das Gupta, C. R.: Ind. Med. Gaz. **88**: 127, 1953.
2. Chatterjee: J. Obst. & Gynec. India. **20**: 329, 1970.
3. Dass, A., Bhatt, I. and Dhaliwal, B.: J. Obst. & Gynec. India. **7**: 37, 1967.
4. Krishna Menon, M. K.: Modern Trends in Obst. & Gynec., ed, 4, Kellar London, 1969, Butterworth, P. 302.
5. Krishna Menon, M. K.: J. Obst. & Gynec. India. **15**: 117, 1965.
6. Scott: J. Am. Med. Wom. Ass. **16**: 646, 1961.
7. Vyas, R., Patel, V. R., Patel, V. G. and Patel, T. V.: J. Obst. & Gynec. India. **19**: 181, 1969.