FOETAL PROGNOSIS IN HYDRAMNIOS

by

N. S. NAIR*

and

T. C. VIMALA NAYAR**

It is well known that the prognosis for the mother and child is unfavourable in hydramnios. The paucity of reports on this condition in Indian literature, prompted us to review 75 cases met with at the Medical College Hospital, Calicut. No attempt will be made in this communication to detail or to discuss the maternal complications encountered, and maternal factors will be referred to only with regard to their effects on the foetus. A diagnosis of hydramnios was made in 75 cases during the three year period, January 1962 to December 1964. The outcome in these pregnancies is compared with that in a control group of 2000 consecutive deliveries in the hospital. These are further correlated with the findings in the recent studies by Moya et al., (1960), Buckingham et al., (1960), and Murray (1964).

Incidence

TABLE 1

	Current series	Moya et al.	Buckingham et al.	Murray
Total deliveries	5112	24316	46805	128041
Cases of hydramnios	75	74	79	846
Incidence of hydramnios	1 : 68	1 : 329	1 : 693	1 : 151

Chawla et al., (1964) state that the reported incidence of the condition has varied between 0.3 to 1.2 per cent. The frequency of the condition in the present series of 1.4 per cent is considerably higher than in the west. The lack of a unified concept as to what should be called "hydramnios", has led to wide variance in the incidence in different obstetric reports. According to Murray the recognition of hydramnios should be based on the presence of more than 2000 ml. of amniotic fluid. Rahmatulla (1961) mentions the recovery of 1500 ml. or more at amniotomy as the criterion. Benirschcke (1962) states that he has been reared in an environment where 1000 ml. was considered as the arbitrary limit between normal and abnormal. The diagnosis in the present series was made on

*Department of Paediatrics.

**Department of Obstetrics & Gynaecology, Medical College Hospital, Calicut.

Received for publication on 5-2-65.

clinical grounds alone. Consideration of the various factors responsible for the high incidence would be outside the scope of the present communication.

Maternal Age and Hydramnios

TABLE II
Maternity Pattern—age wise—per cent

Age Group in years	Hydramnios		Controls Per cent
	Number	Per cent	
15-19	2	2.6	10.44
20-24	7	9.33	20.3
25-29	16	21.33	27.35
30-34	27	36.0	22.4
35-39	18	24.0	14.7
40-44	5	6.6	3.9

The incidence of hydramnios was relatively low under 20 years of age, being higher in the older age groups; 66.6 per cent of cases were over 30 years of age, although no more than 41 per cent of subjects in the control group belonged to this age group.

Hydramnios in relation to Birth Order

TABLE III
Maternity Pattern—Parity wise—Per cent

Birth Order	Hydramnios		Controls Per cent
	Number	Per cent	
primigravida	4	5.4	26.25
2	8	10.7	14.9
3	6	8	9.8
4	6	8	12.55
5	12	16	8.65
6	15	20	8.85
7	9	12	7.05
8 and over	15	20	11.95

While 68 per cent cases of hydramnios occurred in grand multigravidae, only 36.5 per cent of controls were from this group. The incidence was least in primigravidae. The frequency at higher parities is presumably a reflection of advancing maternal age.

Pre-eclampsia and Hydramnios

Pre-eclampsia was detected in 12 cases (16 per cent). The corresponding figures in the series of Moya et al., (loc citras), Buckingham et al., (loc citras) and Murray (loc citras) were 14.9, 10 and 6.1 per cent respectively. The higher frequency of pre-eclampsia in hydramnios is obvious. There is a definite causal relationship between the two entities, but it is difficult to ascertain which is cause and which is effect. Our observations would, however, seem to be in agreement with the views of Guttmacher (1939) that hydramnios predisposes to toxaemia. The fetal hazards of toxaemia are well known. In a small series of 212 infants born of toxaemic mothers personally observed, 20.3 per cent were deadborn, 8.9 per cent died in the neonatel period, and the birthweights of those who survived were distinctly lower than normal.

Hydramnios in Multiple Births

One out of every 7.5 deliveries associated with hydramnios was a multiple birth (10 cases). The incidence of multiple pregnancies reported in cases of hydramnios has varied between 3.6 and 10.6 per cent. Since there were 142 multiple births during the period under review, the incidence of hydramnios in plural births was 7 per cent. Hydramnios is reportedly commoner in uniovular twins, but dizygotic twins accounted

for 7 of the 10 multiple births in the present series. Chandra (1964) attributes the high frequency of hydramnios in multiple births to the increase in number and size of the glomeruli, and the higher glomerular filtration. It is of interest to recall that a perinatal mortality rate of 16.6 per cent was recorded in twin pregnancies in this hospital (Nair and Abdulla, 1964).

Hydramnios and Premature Onset of Labour

The delivery was premature in terms of the period of gestation in more than a quarter of the cases (20 cases). The stretching of the uterine walls by the accumulated fluid within presumably leads to premature labour. The degree of prematurity is related to the severity and acuteness of the hydramnios. The high frequency of multiple births may have been another contributory factor. The significant role of prematurity in the genesis of perinatal fatalities has been commented upon previously (Nair et al., 1964).

Obstetric Interference

Delivery had to be actively interfered with in 30 cases. These included amniotomy (16 cases), forceps application (3 cases), administration of pitocin drip (3 cases), perforation of the fetal head (2 cases) and breech extraction (2 cases). Caesarean section was resorted to in one case with obstructed labour and threatened rupture of the uterus, after forceps application had failed. It was done in two other cases in view of foetal distress with unengaged head.

Birthweights in Hydramnios

TABLE IV

Birth Weight Pattern—Per cent

Birth Weight in Gms.	Hydramnios		Controls
	Number	Per cent	Per cent
455-910	8	9.09	1.6
911-1365	12	14.0	3.8
1366-1820	11	12.8	6.6
1821-2275	17	19.7	10.2
2276-2730	9	10.4	20.2
2731-3185	13	15	33
3186-3640	7	8.15	7.0
3641-4095	6	7	5.8
4096-4550	3	3.5	1.44

The birth weights were appreciably lower than the normal average. This may have been due to several factors. Infants with congenital anomalies have lower birth weights due to a shortened period of gestation, as also a greater frequency of intrauterine growth retardation. The fact that birth weights are low in premature deliveries needs no mention. Each infant in a multiple birth is generally smaller than a singleton. Toxaemias of pregnancy have been shown to have a deleterious action on birthweights.

Placental weights in hydramnios

The placental weights have been observed to be higher than average in hydramnios (Taussig, 1927). This feature, however, was not evident in our study.

Fetal Malformations in Hydramnios

The relationship between hydramnios and foetal malformations has been well documented. Hydramnios was observed in 16 per cent of 50 consecutive deliveries associated with the

birth of malformed infants in this institution (Nair and Mathai, 1964). Rahmatulla (loc citras) detected malformations in the offspring in 41 per cent, while Macafee (1950) recorded a figure as high as 47.1 per cent. Only less than a quarter (19 cases) of infants were malformed in the present series. These included anencephaly-4 cases, hydrocephalus-6 cases, harelip with/without cleft palate-2 cases, exomphalos-1 case, intestinal atresia—1 case, congenital heart disease—2 cases, urethral valves-1 case, foetal ascites-1 case, and acardiacus anceps-1 case. The relatively low incidence in our study may be due to the fact that autopsy studies which would have brought to light internal anomalies as well, were not possible to any significant extent. The 19 deformed infants showed an aggregate of 29 gross malformations.

TABLE V

Malformations	Total Number delivered during the period, under review	Total with hydramnios	Per cent anomaly presenting with hydramnios
Musculoskeletal ..	41	8	20.2
Urogenital ..	9	1	11.1
Central nervous	27	10	37
Gastrointestinal ..	15	4	26.6
Cardiovascular ..	8	2	25
Miscellaneous ..	9	4	44.4

The high incidence of central nervous system anomalies is worthy of note. Hydramnios was observed in 4 out of the 9 cases of anencephaly and in 6 out of the 14 cases of hydrocephalus which occurred during the period under review. There were 48 anencephalic births in the 147 subjects with hydramnios studied by Macafee (loc citras). Hydrocephalus was commoner than anencephaly in the present series. This is in marked contradistinction to the observations of Brews and Bender (1959) who state that hydrocephaly is rarely encountered in association with hydramnios. It has been postulated that the majority of cases of hydramnios are due to an imbalance between foetal urination and absorption. Faulty release of antidiuretic hormone accounts for hydramnios in anencephaly and hydrocephalus. Areas of the brain concerned with the deglutition reflex may be affected in such cases. Another theory holds that the exposed parts of the brain in anencephalic infants secretes excessive amounts of fluid into the amniotic fluid. Obstructive lesions of the gastrointestinal tract which would preclude foetal swallowing, naturally lead to the condition. Such cases were conspicuous by their rarity in the present series. The association between other foetal malformations and hydramnios remains to be elucidated. Lewis (1956) affirms that hydramnios must be regarded as an effect rather than a cause of malformations.

The association of hydramnios with foetal malformations and multiple pregnancies makes it desirable that antepartum x-rays be taken in such cases. This elementary procedure is

all too often omitted with unpleasant consequences. A unique opportunity to diagnose acardiacus malformation in a triplet birth — which would have been the first such case to be so diagnosed in world literature — was deplorably missed through such a lapse on our part (Nair and Nayar, 1965). Instances have also not been wanting in our own experience where caesarean sections have been carried out to deliver infants with gross malformations incompatible with life. These operations could well have been avoided, had an x-ray been taken antenatally, which would have shown the anomalies. An apparently normal prenatal radiograph does not, however, preclude malformations in the infant. Since the presence of an excess of liquor makes it technically difficult to secure films of adequate clarity, Sarma (1964) points out that there can be no objection to the removal of excess fluid from the amniotic cavity by transabdominal paracentesis. In cases of doubt it is imperative that a lateral view also be taken before conclusions are drawn. We would also stress the limitations of radiological diagnosis. This was disconcertingly brought home to us recently. In this specific instance, an antenatal diagnosis of hydrocephalus was made radiologically. A caesarean section which was otherwise unequivocally indicated for cephalopelvic disproportion was hence postponed with a view to confirm the radiological diagnosis by a vaginal examination. Our frustration at meeting with a deadborn infant without any evidence of hydrocephalus when the operation was ultimately done (by which time the infant presumably succumbed) can well be imagined. As we have had occasion to state previously, the feasibility of antenatal radiography must be assessed individually in each case after due consideration of the genetic and other risks and the possible advantages likely to accrue. (Nair, 1965).

Perinatal Mortality in Hydramnios

There were 29 perinatal deaths (17 deadbirths and 12 neonatal deaths). Macafee (loc citras) has pointed out that hydramnios carries a foetal mortality as high or higher than that associated with some of the major complications of pregnancy. He reported a foetal loss of 55.5 per cent in his series. The foetuses could not be salvaged in both the cases of acute hydramnios met with in this hospital. Gross malformations accounted for nearly half (14 cases) of the perinatal deaths. Other contributory factors were prematurity, multiple pregnancy, pre-eclampsia, abnormal presentations (breech: 12, shoulder: 2, compound: 1, and face: 2 cases) and cord prolapse (4 cases). Lewis (loc citras) has recorded that cord prolapse is eight times commoner in hydramnios than in normal cases.

What emerges out of these observations? It is evident that hydramnios may well spell disaster for the foetus. The popularly known association with foetal malformations tells no more than a part of the story. Of far greater significance are the lower birthweights, high incidence of prematurity, various obstetrical hazards like multiple births, premature rupture of the membranes, prolapse of the cord, malpresentations etc., all of

which lead to an alarming rise in perinatal deaths. The silver lining in the cloud would seem to be the fact that a good many of these perinatal fatalities can be prevented by proper obstetric and paediatric management. Hydramnios must be diligently looked for at all antenatal examinations. Particular attention should be paid to women of the older age groups and higher parities, among whom the condition is more frequent. The likelihood of subjects with hydramnios having or developing toxaemias of pregnancy needs to be borne in mind. It is needless to say that the foetal prognosis can be considerably improved by early detection and efficient treatment of toxaemias. In view of the frequency with which premature delivery occurs in these cases, skilled paediatric attention should be made available. To what extent prematurity can be prevented will depend on the associated conditions — e.g. malformations etc., and the severity of the hydramnios. Acute hydramnios is usually met with in the earlier months of pregnancy, and is very often associated with foetal anomalies. In these cases, and in the less severe types, abdominal paracentesis may be of help in reducing the intrauterine tension and postponing the onset of labour. It would appear that early hospitalization is mandatory in hydramnios. The high incidence of malformations, frequency of multiple births, the pressing need for immediate obstetric attention during labour, and for efficient paediatric care in the neonatal period, make domiciliary management most undesirable and hazardous in these cases. It is interesting to recall in this context McClure Brown's recent plea that home confinements should be abolished, "Like the coal fire, it could be pleasant, but is sadly out of date."

Acknowledgment

We are greatly indebted to Drs. Unnikrishna Wariyar and Venkatachalum for their most valuable help rendered during the preparation of this paper. Without their kind co-operation during compilation and analysis of data, this paper would not have been possible. We also thank Dr. M. Thankam, Professor of Obstetrics and Gynaecology and Superintendent, Medical College Hospital, Calicut, for permission to publish this paper.

References

1. Benirschcke, K.: The Yearbook of Pediatrics 1962-63 Series, Edited by Gellis, S. S., Chicago, 1962, Year Book Medical Publishers, p. 10.
2. Brews, A. and Bender, S.: British Obst. Practise, Edited by Holland, E. & Bourne, A., London, 1959, William Heinnemann Medical Book Ltd., p. 328.
3. Buckingham, J. C. et al.: Obst. & Gynec. **15:** 652, 1960.
4. Chandra, R. K.: Ind. J. Pediat. **31:** 85, 1964.
5. Chawla, S. et al.: J. Obst. & Gynec. India. **14:** 680, 1964.
6. Guttmacher, A. F.: Am. J. Obst. & Gynec. **38:** 277, 1939.
7. Lewis, T. L. T.: Progress in Clinical Obst. & Gynec. London, 1956, J. and A. Churchill Ltd., p. 104.
8. Macafee, C. H. G.: J. Obst. & Gynec. Brit. Emp. **57:** 171, 1950.

9. Moya, et al.: J.A.M.A. **173:** 155, 1960.
10. Murray, S. R.: Am. J. Obst. & Gynec. **88:** 65, 1964.
11. Nair, N. S.: Ind. Med. Gaz. In press.
12. Nair, N. S. and Abdulla, B.: The Madras Clin. J. **30:** 165, 1964.
13. Nair, N. S. and Mathai, N. M.: The Antiseptic. **61:** 823, 1964.
14. Nair, N. S. and Nayar, V.: J. Obst. & Gynec. India. In press.
15. Nair, N. S., Nayar, V. and Thankam, M.: Perinatal Mortality in Calicut. To be published.
16. Nair, N. S. et al.: J. Obst. & Gynec. India. **13:** 488, 1963.
17. Nair, N. S. et al.: Prematurity in Calicut. Arch. Child Hlth. In press.
18. Rahmatulla, K. A.: Arch. Dis. Childhood. **36:** 418, 1961.
19. Sarma, V.: Mediscope. **7:** 49, 1964.
20. Taussig, (1927): Cited by Brews, A. and Bender, S.: in British Obst. Practise., Edited by Holland, E. and Bourne, A.: London, 1956, William Heinneman Medical Book Ltd., p. 328.