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MULTIPLE PREGNANCY IN ZAMBIA

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The relatively frequent occurrence of multiple pregnancies in Zambia and the paucity of literature on the incidence and etiology of multiple births in the African prompted this investigation.

MATERIAL AND INCIDENCE

The material for this study includes every patient with multiple pregnancy who was admitted to the non-paying wing of the Obstetric Unit during 1966, either in labour or subsequent to delivery of one or more infants outside the Unit. Over the 12-month period there were 151 cases of twins and 4 cases of triplets in a total of 5,654 maternities. The hospital incidence of multiple pregnancy, therefore, is 1 in 37 for twins and 1 in 1,414 pregnancies for triplets. Because this is the only maternity unit in the region and an established district midwifery service is non-existent, there is no selection of patients and all cases are admitted. Consequently the true incidence is probably close to if not higher than the hospital incidence. Stocks (1952) gives the following figures for England and Wales which compare closely with those from Canada and the United States (Percival, 1959): twins 1 in 83 and triplets 1 in 10,050.

It is evident from Table I that the incidence of multiple births is considerably higher in the African than in Whites.

TABLE I. INCIDENCE OF MULTIPLE PREGNANCY

Author	Date	Country	Incidence
Dabb, R. G.	1960	Nyasaland	1 in 32
Knox and Morley	1960	Nigeria	1 in 19
Farrell	1964	Natal	1 in 28
Lucas and Hassim	1966	Lusaka	1 in 37
Registrar General	1959	England & Wales	1 in 84

In this series 16 patients had had twins once before and 3 had had twins on 2 previous occasions.

Age: According to Stocks (1952) the maximum frequency of twin births is between the ages of 35 and 40 years. Although this is our general impression the patient's exact age in many cases was not forthcoming.

Parity: It is generally believed that twins occur more frequently with increase in parity (Anderson, 1956, Seski and Miller, 1963). Farrell (1964) found the highest incidence occurring in para 0, 1 and 2. In the present series the para 4, 5, and 6 groups showed the highest frequency with a sharp drop thereafter, while over one-third of cases occurred in the para 0, 1 and 2 groups (Table II). Cox (1963) is of the opinion that twinning is more common with ascending birth rank and that the Nigerian incidence is higher at each birth rank as compared with Whites in England and Wales. We are unable to confirm this.

TABLE II. TWINNING IN RELATION TO PARITY

Parity	0	1	2	3	4	5	6	7	8	9	10
No. of patients	13	21	19	10	23	26	22	11	3	2	1

Maternal complications of multiple pregnancy.

1. Toxaemia of pregnancy.

This occurs more commonly in association with multiple than with single pregnancies. Bender (1952) in 472 cases of twin pregnancies reported an incidence of 24% compared to 6.4% in single pregnancies. In the present series 32% of cases were found to have at least 2 out of 3 signs of pre-eclampsia (hypertension, oedema, albuminuria). This high incidence is partly due to the almost complete lack of antenatal care in the majority of cases. Only 60% attended a clinic on one or more occasions. In 33 cases at least 1 twin was delivered outside hospital. Although pre-eclampsia is a common association it is of a milder form. This is in agreement with other workers (Percival, 1959).

2. Hydramnios.

Moderate to gross hydramnios was clinically diagnosed in 8% of cases. Figures vary between 1.6% (Seski and Miller, 1963) and 12.5% (Farrell, 1964). Hydramnios occurred with equal frequency in mono- and dizygotic twins, other reports give a much higher incidence in the case of monozygotic twins. In no case was it found necessary to induce labour for the relief of symptoms.

3. Ante-partum haemorrhage.

The incidence of accidental haemorrhage was not higher compared to single pregnancies. Placenta praevia, generally considered commoner in twins because of the larger placental area which may encroach on the lower segment, was in fact met with less commonly in the authors' series.

4. Anaemia.

Anaemia is still one of the most important

problems in obstetrics in this country because of its extreme frequency and severity, and its association with maternal mortality and foetal wastage. The incidence of anaemia in pregnancy in this Unit is under investigation and our initial impressions are that 60% of pregnant patients have an iron deficiency anaemia with haemoglobin levels below 10 g./100 ml. In twins there is a significant increase in both the incidences of iron deficiency and megaloblastic anaemia. In our cases megaloblastic anaemia has been almost invariably associated with some degree of iron deficiency.

5. Prematurity.

Prematurity defined as birth weight of 5½lb. (2,500 g.) or less is the commonest cause of first-week deaths. Multiple pregnancy is the commonest known cause of prematurity, followed by pre-eclampsia (Browne and Browne, 1960). In the present series 31 infants (10.6%) weighed less than 2½lb. and 208 babies weighed less than 5½lb., that is, 68.8% of twins were premature. The incidence of prematurity reported by others are: 71% (Ross, 1952), 54% (Seski and Miller, 1963), 48.6% (Brown and Dixon, 1963), 53.9% (Farrell, 1964). The distribution by weight is given in Table III. The largest triplet weighed 3lb. 8½ oz.

TABLE III. DISTRIBUTION BY WEIGHT AND FOETAL LOSS

	TWIN I			TWIN II		
	Alive	NND	S.B.	Alive	NND	S.B.
1 1/2lb. to 2 1/2lb.	2	10	3	1	12	3
2lb.9oz. to 3 1/2lb.	11	8	1	5	10	2
3lb.9oz. to 4 1/2lb.	22	5	1	22	5	3
4lb.9oz. to 5 1/2lb.	37	1	2	33	3	6
5lb.9oz. and over	45	1	2	40	3	3
Totals	117	25	9	101	33	17

Other factors which contribute to the high prematurity rate in this country may be: (a) Poor diet in pregnancy. Baird (1945) and others have shown that an inadequate diet common in the poor social classes is associated with prematurity. (b) Work during pregnancy. In the latter half of pregnancy manual work has been found to be associated with prematurity in greater frequency. The incidence of prematurity appears to be seasonal in this hospital, occurring more commonly during the digging and planting times on the farms. (c) Anaemia. This may be a manifestation of malnutrition and as discussed elsewhere occurs more frequently in multiple pregnancy.

A combination of these factors in addition to the lack of antenatal care probably result in the considerable prematurity rate.

Complications in labour

Spontaneous breech delivery occurred on 8 occasions, assisted breech delivery 54 times, and breech extraction alone was carried out 4 times. Internal version followed by breech extraction was performed to deliver 6 babies all of which were transverse lies.

In 55 cases at least one of the infants was delivered as a breech via naturales. The methods of delivery in the other cases were as follows:

Vacuum extraction	3 infants
Caesarean Section: Prolapsed cord	2 cases
Brow	1 case
Disproportion	1 case
Compound presentation.	1 case
Placenta praevia	1 case
Forceps extraction	1 infant
Locked twins	1 case

All the other infants were delivered by the vertex. The case of locked twins was unusual. The patient was a multipara and had not had any ante-natal care. Locking was caused by the aftercoming head of the first breech with the neck of the second twin. Disengagement followed by breech extraction resulted in the birth of premature live infants weighing 3.4lb. and 3.6lb. respectively. Both, however, died in the neonatal period.

Maternal Mortality

No mortality occurred in this series.

Perinatal Mortality

There were 9 stillbirths and 25 neonatal deaths in first twins and 17 stillbirths and 33 neonatal deaths in second twins (Table III). The perinatal mortality, that is, stillbirths plus liveborn infant deaths within the first week of life per 1000 related live births, was 19.2% for Twin I and 27.9% for Twin II with an overall rate of 23.5%. This is high compared to 16% (Farrell, 1964), 11% (Jonas, 1963), but Dabb (1960) has reported a rate of 38.7%. It is obvious from Table III that the foetal loss is higher for the second twin. This is in agreement with Seski and Miller (1963), Camilleri (1963) and Farrell (1964) but is by no means universally accepted.

Only 4 of the 12 triplets were salvaged. Twins in one case of triplets and 2 other singletons respectively were the only survivors.

Prematurity, pre-eclampsia, malpresentations and hydramnios play the major role in perinatal mortality. Foetal wastage is also related to clinic attendance. Farrell (1964) has shown that among 254 patients who did not attend an ante-natal clinic the perinatal loss was 41.4% compared with 7.3% for those who did attend.

DISCUSSION

Origin of Multiple Pregnancy

Twins may result from the fertilization of one ovum by a single sperm (monozygotic) or of 2 ova by 2 sperms (dizygotic). Monozygotic twins may arise from duplication of (a) blastomeres into 2 embryos, (b) the inner cell mass, or, (c) the embryonic rudiment and primitive streak after formation of the amniotic cavity. If division is incomplete conjoined twins and all manner of double monsters may result. Triplets may result from either mono or dizygotic twinning. Monozygotic twins form 25% of all twins. In the present

series the incidence is of the order of 15%.

Etiology.

1. Hereditary factors.

Simultaneous multiple ovulation (as in dizygotic twinning) is influenced by heredity, while division of the ovum as in monozygotic twins is not under hereditary influence. Gedda (1961) is of the opinion that both types may be genetically transferred, and by either parent. Interesting is the incidence of twinning in the American Negro quoted by Cox (1963) as 1 in 70. The American White has an incidence of 1 in 87. As he states, this would suggest an hereditary factor if one considers the ancestry of the former group.

2. Environmental factors.

Climate: Das (1934) believes that climate has no influence on the frequency of twins. Hammond (1952) reports a higher incidence of multiple pregnancy in cold climates. Gedda (1961) states that climate plays a secondary role. In his analysis of Das and Gedda's findings in 48 countries, Cox (1963) concludes that only Costa Rica, Brazil and Madagascar are similar to West Africa and together with Southern Nigeria have a hot, moist climate. The multiple birth rates in these countries are much higher than that of Europe: Costa Rica 1 in 16, Brazil 1 in 40, Madagascar 1 in 66. There appears to be little doubt that climate plays an important role in twinning.

Nutrition: Malnutrition, particularly protein and riboflavine deficiency, is considered by Cox (1963) to be the most important factor in the causation of twinning. This hypothesis is based on experimental embryology and there is little evidence that the findings would be applicable to Man. Besides Bulmer (1959) reported that during the last war when malnutrition was common in Europe the incidence of twin pregnancy in fact dropped.

3. Age and Parity have been discussed previously.

SUMMARY

An analysis of 151 twin pregnancies and 4 triplets delivered during 1966 is presented. The incidence of twin pregnancy is 1 in 37 and triplets 1 in 1,414.

The maternal mortality in this series was nil. The perinatal mortality is 23.5%. Prematurity is the most important single cause of foetal wastage.

The etiological factors associated with multiple

pregnancy are briefly discussed. The evidence at present indicates that heredity, climatic conditions, age and parity are important factors.

The importance of antenatal care and its relation to foetal wastage is emphasized.

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