Nigerian Journal of Paediatrics 2001; **28(3)**:73-7

Perinatal Outcome of Obvious Congenital Malformation as seen at the Lagos University Teaching Hospital

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Summary

Iroha EO, Egri-Okwaji MTC, Odum CU, Anorlu RI, Oye-Adeniran B, Banjo AAF. Perinatal Outcome of Obvious Congenital Malformation as seen at the Lagos University Teaching Hospital, Nigeria. *Nigerian Journal of Paediatrics* **2001; 28: 73.** A retrospective review of major congenital malformations in 353 newborns delivered at the Lagos University Teaching Hospital during a 10-year period (1981-1990), has revealed an overall incidence of 15.8 per 1000 total births, while the contribution of such malformations to perinatal mortality was 11.9 per cent. Gastrointestinal, central nervous and musculo-skeletal system malformations were the commonest seen with individual incidences of 3.9, 3.5 and 2.1 per 1000 total births, respectively. Unclassified congenital malformations had the highest case fatality while central nervous system malformations constituted the commonest cause of death among the malformed neonates. The pattern and incidence of congenital malformations at the hospital would appear to have remained substantially unchanged in the last three decades

Introduction

ALTHOUGH discussion on congenital malformations in the developed countries has shifted from consideration of clinical presentations and management, to more sophisticated research on prenatal detection, treatment and prevention, the pattern, prevalence and clinical peculiarities and the contribution of these malformations to perinatal morbidity and mortality in the developing world including Nigeria, is yet to be fully ascertained.[1] A number of studies on congenital malformations in parts of West Africa have been reported,[2-5] however, with increasing industrialization, the availability of potentially teratogenic drugs over the counter, and the continued patronage of traditional birth attendants by pregnant mothers, there is a need for a continuous update of data on such malformations. Such data should help in the early identification of any variability in the pattern, prevalence and mortality of congenital malformations in the region. It is against this background that we report our experience of cases of congenital malformations seen at the Lagos University Teaching Hospital (LUTH), Lagos, over a 10-year period, January 1, 1981 to December 31, 1990.

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Patients and Methods

The subjects of this retrospective study consisted of all inborn neonates including stillbirths, with birthweights of 500 grams and above, delivered in LUTH during the study period. The routine in the hospital was that all babies were examined at birth, by the duty obstetrician and later, but soon after delivery, by paediatricians; further examinations by the paediatrics staff were carried out before the babies were discharged, and any abnormality seen was recorded. Neonates with major malformations and others requiring further observation or treatment, were transferred to the neonatal unit for intensive care. Babies with minor congenital malformations were however, transferred to the post-natal ward. Diagnosis of congenital malformations was made macroscopically and was

defined as structural abnormalities found at birth, or during the first week of life, and included congenital defects which cause irreversible functional disturbance of organs, cells or cell constituent resulting from disorders in either genetic constitution or adverse antenatal environment.[6]

Details of deliveries during the study period were obtained from the labour ward records; from these records, neonates with congenital malformations were identified. Relevant information about these babies was extracted from records kept in the neonatal units and postnatal wards. The records of maternal obstetric index and pregnancy data were obtained from the labour ward, postnatal wards, and medical records department. Autopsy findings from the neonates, who died, were obtained from the morbid anatomy department. The data were tabulated, based on the classification codes established by the World Health Organization.[7] The types of congenital malformations were grouped according to organs and systems and by sex, and analyzed on yearly frequency occurrence, neonatal outcome, maternal age and parity and in relation to individual anatomical and systemic types of malformations. Percentage analysis data was done where appropriate, and the Wilcoxon 2-sample rank test was used in the statistical analysis of data in relation to frequency and types of malformations. The test statistics critical values (u^1) at $p \leq 0.05$ significance are quoted.

Table I

Maternal Obstetric Profile, Total Births and Perinatal Deaths associated with Congenital Foetal Malformations

Total births	22,288
Total perinatal deaths	1,011
Overall perinatal mortality rate/1000 total births	45.4
Maternal obstetric profile in cases of congenital foetal malformations	
Primigravidae	67(19.0)
Multigravidae	239(67.7)
Parity (not stated)	47(13.3)
Mean maternal age(yrs) ± SEM	29.0±6.9
Range(yrs)	18-39
Age not stated	34(9.6)
Perinatal outcome in congenital malformations	
Total no. of babies	353
Perinatal deaths	120
Overall incidence of congenital malformations/1000 total births	15.8
Contribution of congenital malformations to overall perinatal mortality rate	11.9

Figures in parentheses represent percentages

Results

In the 10-year period under review, 22,288 babies were born at the hospital. Of these, 353 babies fulfilled the criteria for the diagnosis of congenital malformations, thus giving a prevalence rate of 15.8/1000 total births. Table I shows the maternal obstetric profile, total births and perinatal deaths among the malformed babies. Two hundred of the malformed babies were males and 153 females (M/F = 1.3). Fifty three (15.1 per cent) of the 353 babies had multiple systems involvement while the remaining 300 (84.9 per cent) had involvement of single systems. Ten of the babies with multiple malformations had recognizable syndromes consisting of Down syndrome 5, Pierre Robin syndrome 4, and Edward syndrome 1. Among the single system malformations group, gastrointestinal malformations were the commonest (87), followed by central nervous system (84), musculo-skeletal (49), cardio-pulmonary (40), genitourinary (34), and cutaneous malformations (10).

Table II details the overall and yearly incidence of the various types of congenital malformations. The incidences of gastrointestinal and central nervous system malformations were 3.9 and 3.5 per 1000 total births respectively, while musculo-skeletal, cardio-pulmonary and genito-urinary malformations had overall incidences of 2.1, 1.7, and 1.5 per 1000 total births, respectively. Cutaneous and chromosomal malformations each had a relatively low incidence of 0.4 per 1000 total births while unclassified malformations had an incidence of 1.9 per 1000 total births. The within and between yearly variations of congenital malformations were not significantly different (U^1 = between 80 and 100, $p \geq 0.1$ in all groups).

During the period under review, 1,011 perinatal deaths were recorded in the labour ward and neonatal unit of the hospital giving an overall perinatal mortality rate of 45.36 per 1000 total births. Eight hundred and ninety (88.0 per cent) of these 1,011 were stillbirths. One hundred and forty four post mortem examinations were carried out, giving a post-mortem rate of 14.2 per cent. One hundred and twenty (34 per cent) of the 353 malformed babies died, thus consti-

Table II

Overall and Yearly Incidences of Systemic Congenital Foetal Malformations in LUTH (1981-1990; n=353)

	1981	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*
Total births (live & still births)	2805	2430	2294	2265	1861	1912	1885	2096	2333	2407
Total congenital malformations	46(16.4)	32(13.2)	43(18.7)	35(15.5)	32(17.2)	35(18.3)	42(22.3)	25(11.9)	30(12.9)	33(13.7)
Overall Incidence	Yearly Incidence									
GIT(n=87)3.9	10(3.6)	8(3.6)	11(4.8)	10(4.4)	7(3.8)	10(5.2)	10(5.2)	7(3.3)	8(3.4)	6(2.5)
CNS (n=81)3.5	8(2.9)	8(3.3)	10(4.4)	8(3.5)	10(5.5)	10(5.4)	9(4.8)	5(2.4)	7(3.0)	6(2.5)
MSS (n=49)2.1	5(1.8)	4(1,6)	6(2.6)	7(3.1)	6(3.2)	5(2.6)	5(2.7)	4(1.9)	3(1.3)	4(1.7)
CPS (n=40)1.7	4(1.4)	3(1.2)	5(2.2)	5(2.2)	1(0.5)	4(2.1)	6(3.2)	5(2.4)	3(1.3)	4(1.7)
GUS (n=34)1.5	5(1.8)	1(0.4)	5(2.2)	2(0.8)	3(1.6)	2(1.0)	5(2.7)	4(1.9)	5(5.1)	2(0.8)
CUT (n=10)0.4	2(0.7)	2(0.8)	-	-	-	2(1.0)	2(1.1)	-	-	2(0.8)
CRO (n=10)0.4	2(0.7)	2(0.8)	-	-	2(1.1)	1(0.5)	2(1.1)	-	1(0.4)	-
Unclassified (n=43)1.9	11(3.9)	4(1.6)	5(2.2)	3(1.3)	3(1.6)	1(0.5)	3(1.6)	-	3(1.3)	10(4.2)

Figures in parentheses are incidence per 1000 births (live & stillbirth)
GIT = Gastrointestinal tract
CN = Central Nervous System
MSS = Musculo-skeletal System
CPS = Cardiopulmonary System
GUS = Genito-urinary System
CUT = Cutaneous
CRO = Chromosomal

Table III

Mortality by Specific System

System	*No of Cases*	*No of Deaths*	*Case Fatality %*	*Contribution to Perinatal Mortality per 1000 Total Births*
Gastrointestinal	87	27	31.0	2.67
Central nervous	80	40	50.0	3.95
Musculo-skeletal	49	2	4.1	0.19
Cardio-pulmonary	40	19	47.5	1.8
Genito-urinary	34	4	11.8	0.39
Cutaneous	10	2	20.0	0.9
Chromosomal	10	3	30.0	0.29
Unclassified	43	23	53.5	2.27

tuting 11.9 per cent of the total perinatal deaths. Further analysis showed that unclassified multi-system malformations had the highest case fatality rate of 53.5 per cent followed closely by central nervous system malformations (50 per cent) and cardio-pulmonary system malformations (47.5 per cent). Musculo-skeletal system malformations were associated with the lowest case fatality of 4 per cent (Table III). Hydrocephalus with or without spina bifida, and anencephaly were the two commonest types of central nervous system malformation seen; mortality was 100 per cent in cases of anencephaly. Individual system contribution to perinatal mortality is shown in Table III, with central nervous system malformations being the most common and musculo-skeletal and cutaneous system malformations, the least common contributors to death.

Discussion

The limitations of a hospital-based study such as the present one, in correctly assessing magnitude of problems in the community is well recognized. Unfortunately however, in many developing countries, community-based studies are rendered virtually impossible, in this case, by the paucity of records of births and diseases. Therefore, much reliance has been placed on hospital data to provide a useful insight into the problem. The overall prevalence rate of congenital malformations in this study was 15.8 per 1000 total births; it would thus appear that there has been no significant change in the prevalence rate of congenital malformations when compared with earlier studies from the same centre but higher than those reported from other centres in Nigeria.[2-4, 8] The reason for the wide variation in the prevalence rates in the centres is not obvious; it may however, be related to the multiethnic and industrial nature of Lagos, since environment and race are factors known to influence congenital malformations.[9,10] Congenital malformations accounted for 11.9 per cent of all perinatal deaths in the present series. This figure, which is less than the 26.2 per cent reported in a Scottish perinatal survey,[11] seems to indicate that congenital malformations do not constitute a major cause of perinatal deaths in our centre. The explanation for this difference may be linked to the different autopsy rates which was 14.2 per cent in our series compared to 64 per cent in the Scottish study. It has been reported that the prevalence of congenital malformations among stillbirths is high;[2] in the present series, 88 per cent of perinatal deaths were still-births and so, if our autopsy rate had been higher than it was, the contribution by congenital malformations to perinatal mortality would most probably have been higher. In the developing world, the paucity of pathologists and the reluctance of relatives to give consent for post mortem examinations make routine autopsy on stillbirths a rare event. Moreover, a recent report[9] from this country has highlighted the contribution of obstetric and perinatal complications to perinatal mortality and the situation is not different in our centre. With improved obstetric and neonatal services, the elimination of harmful traditional practices that presently contribute to the high perinatal mortality in the developing world and increased autopsy rate, congenital malformations may rank higher as a cause of perinatal mortality in centres such as ours.

In highly industrialized countries, attention is being focused on the elimination of congenital malformations by the routine use of biochemical and ultrasonic tests in the at risk pregnancies and the rational management of congenital abnormalities thus diagnosed.[13,14] These techniques are expensive, invasive and unaffordable in less developed countries. However, it has recently been shown that primary prevention of neural tube defects may be possible by periconceptional vitamin supplementation, particularly that of folic acid.[15-17] This, if proved conclusively, will be one of the great medical advances of the century which can easily be adopted by devising means of improving the vitamin/folic acid intake of women of child bearing age in the community. Moreover, such therapy may make a significant impact on our perinatal mortality as it may decrease the number of central nervous system malformations, which from this study, constituted the most commonly seen congenital malformations, and an important cause of perinatal death.

Acknowledgements

The cooperation and assistance of those who assisted with data collection is highly appreciated. The secretarial assistance of Mr FS Akpan is gratefully acknowledged.

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