CONGENITAL MALFORMATION IN STILLBIRTHS- A HOSPITAL BASED STUDY

Siddharth Hazarika¹, Giriraj Kusre²

¹Demonstrator, Department of Anatomy, Assam Medical College, Dibrugarh, Assam.

²Associate Professor, Department of Anatomy, Assam Medical College, Dibrugarh, Assam.

ABSTRACT

BACKGROUND

Globally 2.6 million stillbirths occur every year with three fourth of them occurring in south Asia and sub-Saharan Africa. Congenital malformations are a major cause of stillbirths. No studies have been carried out in Northeast India to assess the relative importance of congenital malformation and stillbirths. Hence, the present study was undertaken.

MATERIALS AND METHODS

The study was a descriptive study. Information from parents of stillbirths were collected in a structured proforma prepared as EUROCAT, 2005 with local modification. Detailed autopsy of the stillbirth was carried out in the Department of Anatomy. Congenital malformations were classified according to the ICD-10 classification.

RESULTS

Congenital malformation was seen in 16 (14.95%) stillbirths. 56.25% (N=9) were female and one foetus had Ambiguous genitalia. 62.5% (N=10) were preterm births and 37.5% (N=6) had low birth weight. Multiple system involvement was the most common (37.5%) malformation and total 41 types of individual malformations were observed.

DISCUSSION

Congenital malformations are a major cause of stillbirths and infant mortality. Around 20% of stillbirths are observed to have detectable congenital malformation. The probable reason for multisystem involvement and Encephalocele and Omphalocele type of congenital malformation among stillbirths was due to defects having intrinsic origin.

CONCLUSION

Congenital malformation is one of the most common cause of stillbirths. Preterm delivery and Low birth weight are commonly associated with stillbirth with congenital malformation. Multiple systems involvement and severe malformation such as Encephalocele and Omphalocele were the most common malformation observed among stillbirths.

KEYWORDS

Stillbirth, Congenital Malformation.

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BACKGROUND

ICD-10 classifies late foetal deaths as death of foetus greater than 1000 g or after 28 weeks,¹ Late foetal deaths are often termed as 'stillbirth'. The definition of stillbirth recommended by WHO for international comparison is a 'baby born with no signs of life at or after 28 weeks' gestation'.² In 2015, there were 2.6 million stillbirths globally, with more than 7178 deaths a day. The majority of these deaths occurred in developing countries. Three-fourth of the stillbirths occurred in south Asia and sub-Saharan Africa and 60% occurred in rural families from these areas.²

Congenital malformation are a major cause of stillbirths and infant mortality and the aetiology of most is not fully understood.³ In developed countries, it contributes to nearly a quarter of deaths.⁴

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Corresponding Author:

Dr. Giriraj Kusre,
Associate Professor,
Department of Anatomy,
Assam Medical College,
Dibrugarh, Assam.
E-mail: giriraj_kusre@rediffmail.com
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No studies have been carried out in northeast India to assess the relative importance of congenital malformation and stillbirths. The present study is an attempt to determine the pattern of congenital malformation in stillbirth fetuses born in the Department of Obstetrics and Gynaecology of a referral Medical College and Hospital from Northeast India.

MATERIALS AND METHODS

The study was a descriptive study, carried out in the Department of Anatomy of a referral Medical College and Hospital of Northeast India region from June 2015- May 2016. Stillbirths born in the labour room of the Department of Obstetrics and Gynaecology of the hospital with gestational age beyond 28 weeks and foetal weight more than 1000 g were defined as cases. All macerated fetuses where consents for dissection were not given were excluded from the study. Permission from institutional ethical committee (Human) was obtained before initiation of the study.

Information from parents was collected in a structured proforma prepared as EUROCAT 2005 with local modification. Detailed autopsy was carried out in the Department of Anatomy. For the study stillbirth was defined as any foetal death weighing at least 1000 g or a gestational age of 28 completed weeks. Term pregnancy was defined as pregnancy from 37 completed weeks of gestation up to 42 weeks of gestation. Low birth weight was defined as weight less than

2500 g. Congenital malformations were classified according to the ICD-10 classification. All those fetuses, where more than one system was involved, were classified as multisystem involvement. Each malformation was again classified individually.

RESULTS

After observing all the selection criteria of foetus for the study, a total 107 stillbirths were procured from the Department of O&G. After gross observation and dissection, congenital malformation was seen in 16 (14.95%) of them. 56.25% (N=9) and 37.5% (N=6) were male and female respectively, one foetus had Ambiguous genitalia. 62.5% (N=10) were preterm births and 37.5% (N=6) had low birth weight. Multiple system involvement was the most common (37.5%) system involved and total 41 types of individual malformations were observed (Table 1).

Type of malformation	ICD Code	Number
CNS Q 00.0-07 (N=4)		
Encephalocoele	Q01.8	4
Eye, Ear Face and Neck Q10-18 (N=8)		
Right cleft nasolacrimal duct	Q10.6 (unspecified)	2
Agenesis of left eye	Q11.1	1
Cryptophthalmos	Q11.2	1
Exophthalmos	Q15.8	1
Pterygium colli	Q18.3	1
Microstomia	Q18.5	2
Circulatory system Q20-Q28 (N=1)		
Ectopia cordis	Q24.8	1
Respiratory system Q30-34 (N=4)		
Congenital stenosis of anterior nares	Q 30.0	2
Congenital absence of nose	Q30.1	1
Hypoplasia of lungs on both side	Q33.6	1
Cleft lip and cleft palate Q35-Q37 (N=4)		
Cleft lip median	Q36.1	1
Cleft lip, unilateral	Q36.9	2
Cleft palate with cleft lip	Q37.9	1
Digestive system Q38-Q45 (N=2)		
Macroglossia	Q38.2	1
Imperforate anus	Q42.3	1
Genitourinary system Q50-Q64 (N=6)		
Undescended teste, unilateral	Q53.1	1
Phimosis	Q55.8	1
Ambiguous genitalia	Q56.4	1
Hydronephrosis left kidney	Q62.0	1
congenital dilatation of ureter	Q62.2	1
Urinary bladder outlet obstruction	Q64.3	1
Musculoskeletal system Q65-Q7 (N=11)		
CTEV	Q66.0	2
Right-sided thumb missing	Q71.3	1
Amelia	Q73.0	1
Congenital malformation of limbs	Q74.9 (unspecified)	2
Hypertelorism	Q75.2	1
Sternum bifidum	Q76.7	1
Omphalocele	Q79.2	3
Other congenital malformations Q80-89 (N=1)		
Hydrops fetalis	Q89.8	1
Grand total		41

Table 1. Classification According to the Individual Malformation

DISCUSSION

Congenital malformations are a major cause of stillbirths and infant mortality.³ Around 20% of stillbirths are observed to have detectable congenital malformation.⁵ In three different studies from India,^{6,7,8} the rate of congenital malformation among the stillbirths was observed to be as 20.4%, 12% and 9.8% respectively. ICD-10 defines stillbirth as "death prior to complete expulsion or extraction from its mother of a product of conception, irrespective of the duration or pregnancy, the death is indicated by the fact that, in such separation the foetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles". WHO recommends inclusion of all fetuses born dead weighing more than 1000 g or after completion of 28 weeks of gestation.¹ In the present study, the percentage of malformation was observed to be in 14.95% of stillbirths. The difference in rate of congenital malformation in different studies was probably due to differences in study population, sample size or due to difference in definition. Inability to differentiate the dead foetus from foetus dying immediately after birth may be some of the causes for difference in rate of congenital malformation in stillbirth.

In the present study, 62.5% (N=10) of stillbirths with congenital malformation were preterm births. An adverse pregnancy outcome, that is closely linked to preterm birth, is stillbirth.¹ In a study carried out by the author in the same hospital, about 54.38% of stillbirth were premature.⁹ In studies from Sweden, most stillbirths could be attributed to an aetiology. In those studies, more than 50% of stillbirths had identified aetiology including congenital malformation.¹⁰ In a retrospective study, stillbirth rate among ultrasound detected anomalous stillbirth was 55 per 1,000 compared with 4 per 1,000 in non-anomalous fetuses. Stillbirth risk among anomalous preterm fetuses before 32 weeks of gestation was 26/1,000 and 32 weeks of gestation or after was 31/1,000. Even among growth-restricted fetuses, the stillbirth rate increased among anomalous fetuses (127/1,000). Congenital anomalies remained associated with higher rates of stillbirth.¹¹

In the present study, 37.5% (N=6) of stillbirths with congenital malformations had low birth weight. In a study from rural India, stillbirths and LBW were significantly associated with congenital malformations.¹² Stillbirth occurs due to low survival potential of a LBW foetus and congenital malformation by its effect on growth restriction may contribute stillbirth through LBW.

Individual malformations and stillbirth- Martínez-Frías ML¹³ observed that there were three different types of deformation sequences, the first sequence is with polyhydramnios, thin skin without dermal ridges, hypotonia, and multiple deformations (hypokinesia sequence), which is most often due to intrinsic problems; and other sequences are with oligohydramnios and normal amniotic fluid volume, producing deformities of extrinsic origin. Deformations of extrinsic cause are more frequently isolated defects and have a better prognosis, while deformations of intrinsic origin are more frequently associated with other multiple anomalies and generally have a poor prognosis. In the present study, multiple system involvement (37.5%) was most commonly seen among stillbirths and musculoskeletal malformation (68.75%, N=11) was the most common individual system to be involved. Encephalocoele (N=4) and Omphalocele (N=3) were the most

common individual malformation seen among stillbirths. The Probable reason for multisystem involvement and Encephalocele and Omphalocele type of congenital malformation among stillbirths was due to defects having intrinsic origin.

CONCLUSION

Congenital malformation is one of the most common cause of stillbirths. Preterm delivery and low birth weight are commonly associated with stillbirth with congenital malformation. Multiple systems involvement and severe malformation such as Encephalocele and Omphalocele were the most common malformation observed among stillbirths.

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