Section: Obstetrics and Gynaecology

Original Research Article

STUDY OF FETAL CONGENITAL ANOMALIES AND INFLUENCE OF MATERNAL EPIDEMIOLOGICAL FACTORS IN A TERTIARY CARE CENTRE

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Abstract

Background: WHO defines congenital anomalies as structural or functional anomalies, including metabolic disorders present at the time of birth. Congenital anomalies account for 8 – 15% of perinatal deaths and 13-16% of neonatal deaths in India. The objective of this study was to identify the spectrum of congenital anomalies in fetuses delivered or aborted and the influence of various epidemiological factors on anomalous fetuses. **Materials and Methods:** This was a retrospective, analytical hospital based study conducted in the Department of Obstetrics and Gynaecology, COIMBATORE MEDICAL COLLEGE HOSPITAL, from January 2022 to December 2023. Details like maternal age, parity, gestational age, birth weight, sex, consanguinity, antenatal ultrasound were documented. **Result:** In this study period, 2.6 % of congenital anomalies were seen in delivered or aborted fetuses. 96 % of antenatal women were between 20 – 29 years, 60% were from rural areas, 19 % were unbooked. Incidence of congenital anomalies was increased in abortions and preterm deliveries. Incidence of congenital anomalies was also increased in stillborn. Central nervous system was the most common system involved, followed by musculoskeletal system. Anencephaly was the common malformation seen in the patients. **Conclusion:** Our study concluded that congenital malformations were more in rural patients and higher in stillborn. Central nervous system was commonly involved. Early diagnosis, antenatal ultrasound, proper counselling for this pregnancy and subsequent pregnancy is needed for proper management of the problem.

INTRODUCTION

Congenital anomalies are a major health problem causing remarkable proportion of morbidity and mortality in newborns. In India, the incidence of congenital anomalies is 2.5% of live births. Congenital anomalies account for 8 – 15% of perinatal deaths and 13- 16% of neonatal deaths in India. WHO defines congenital anomalies as structural or functional anomalies, including metabolic disorders present at the time of birth.

Around 40 – 60 % of the congenital anomalies are of unknown etiology. Cause in 20 – 25% of anomalies is multifactorial. 12- 25% are due to genetic causes. The risk factors include advanced maternal and paternal age, consanguinity, teratogenic agents and nutritional deficiencies.

Identifying high risk mothers based on epidemiological factors like age, parity, consanguinity, comorbid illness, previous anomalous babies in the family and performing an early 1st and 2nd trimester ultrasound to study the pattern of various congenital anomalies and framing strategies for management of present pregnancy and prevention of anomalies in subsequent pregnancies.

MATERIALS AND METHODS

Study population:

This study was a retrospective, analytical, hospital based study done in Coimbatore medical college and hospital in department of Obstetrics and Gynaecology. Study subjects included patients who delivered or aborted anomalous baby from January 2022 to December 2023. Total of 14850 deliveries were noted in this period. Relevant information regarding maternal age, parity, gestational age, birth weight, sex, consanguinity was documented. Significant antenatal history like maternal illness, ingestion of drugs, exposure to radiation and complications of labour were recorded. Antenatal scan findings were noted. All the abortal fetuses and newborns were examined for any congenital malformations soon after delivery.

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Anomalies were classified as central nervous system, cardiovascular system, genitourinary system, musculoskeletal system, orofacial defects, ear defects, digestive system, abdominal wall defects, chromosomal abnormalities.

Statistical Analysis: Birth over the period of 2 years (2022 & 2023) were taken. Incidence of congenital anomalies were calculated according to organ system. P<0.05 was considered significant.

RESULTS

Table 1: Demographic Profile.

1.AGE		
<20 years	25	1%
20 to 30 years	320	96%
>30 years	42	3%
2.RESIDENCE		
Rural	256	60%
Urban	131	40%
3.Booking Status		
Booked	312	81%
Unbooked	75	19%

Table 2: Obstetric Factors

1.GRAVIDA		
Primigravida	201	77%
Mulitigravida	186	33%
2.TRIMESTER OF PREGNANCY		
1ST trimester	10	38%
2nd trimester	377	62%
3.PREVIOUS HISTORY OF ANOMALIES	13	30%
4.FOLIC ACID INTAKE	42	11%
5.CONSANGUINOUS MARRIAGE	15	4%
6.MATERNAL HISTORY OF DIABETES	38	10%

Table 3: Spectrum of Anomaly

CENTRAL NERVOUS SYSTEM	113	60%
CARDIOVASCULAR SYSTEM	96	19%
GENITOURINARY SYSTEM	39	8%
MUSCULOSKELETAL SYSTEM	26	3%
EAR DEFECTS	27	3%
OROFACIAL DEFECT	25	3%
DIGESTIVE SYSTEM	15	2%
ABDOMINAL WALL DEFECT	10	1%
CHROMOSOMAL DEFECT	8	1%

Over the period of 2 years, total live births were 14,850 and Anomalies were detected in 387.

The commonest anomalies were central nervous system defect followed by cardiovascular system defect.

Among 387 anomalous baby ,190 babies were diagnosed at earliest with the help of ultrasound and medical method of abortion done for 183 anomalous baby, surgical method of abortion for only 7 babies.

120 delivered vaginally and 77 delivered by caesarean section.

By age wise distribution 96 % anomalies noted in age group between 20 to 30 yrs and more prevalent in rural area with p value of 0.0001 which is statistically significant.

Based on parity, in primigravida has 77%% anomalies detected with p value of 0.0001 which is statistically significant. 13% of mother had previous history of anomalous baby has anomaly in current pregnancy with p value of 0.0027 which is statistically significant.

DISCUSSION

Congenital malformation one of the important cause of infant mortality and morbidity. Prevalence of congenital anomaly in our study is 2%.

The Pattern and prevalence of congenital anomaly may vary over time and location reflecting a complex interaction of known and unknown genetic and environmental factors including sociocultural, racial, ethnic variations.

In present study, the prevalence of central nervous system malformation accounts for 9 per 1000 live birth compared to 18/ 1000 live birth reported earlier in India. A study by Sallout et al,[4] showed that Genitourinary and cranial anomalies were the commonest.

Previous studies have reported significant higher incidence of malformation among multiparous women and our result is consistent with the findings which indicates positive correlation between birth order and incidence of congenital anomaly.

Another similar study by Sachdeva et al,[1] showed higher risk of malformed births amongst un-booked (2.07%) in-comparison to booked (1.01%) mothers, gravida status of at least 3 (2.69%) followed by 1

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(1.43%) and 2 (1.0%) respectively; pre-term (5.13%) vs. term (0.66%).

In contrast to our study, Sachdeva et al study showed higher incidence of anomalous babies delivered by cesarean section (4.36%) versus vaginal delivery (0.62%).

In our study, only 3% anomalies were associate with maternal age > 30 years while other studies show that increasing age of mother has role in development of congenital malformation. A study by Bhat et al,[2] showed incidence of anomalous baby was higher in parity >2 and a maternal age >30 years. Increasing the awareness about maternal care during pregnancy, educational programmes are needed to be highlighted to decrease the incidence of congenital anomalies and their comorbidities.[3]

4% of the anomalous babies were out of consanguinous marriage in our study. A study by Naimeh Tayebi et al showed the prevalence of congenital anomalies was mostly observed in consanguinous marriages compared to non consanguinous marriages.[5-7]

10% of anomalous babies were born to mothers with history of Diabetes. According to the study by Maria Amelia A Campos et al, 13.8% of congenital anomalies were born to mothers with Diabetes.[8-10]

Studies have shown that mothers who had low consumption of vegetables, fruits along with environmental risk factors like anemia, nutritional deficiency, folic acid deficiency[3-8] and history of intake of certain medications causing neural tube defects are more prone for congenital anomalous babies. Thus comprehensive health programmes have been developed in India to supply micronutrients and to screen high risk mothers during periconceptional period. Screening using ultrasound in early gestation has to be done to detect anomalies at the earliest.

The limitation of our study was that it is a hospital based study and did not include the women who delivered at home. Maternal risk factors like exposure to teratogens, fever were not taken into account as it is a retrospective study.

CONCLUSION

Congenital anomalies are more in women from rural areas. Incidence is increased in stillborn than live births. Central nervous system is the most common system involved, anencephaly being the most common anomaly. Increased awareness among mothers, use of folic acid, early diagnosis, antenatal ultrasound, proper counseling, early detection and termination will reduce birth of babies with congenital anomalies. It will also ease the economic burden, psychological trauma to parents and family. Collaboration between Obstetrician, Pediatrician, Geneticist and Radiologist is required for the management of non lethal congenital anomalies.

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