RESEARCH

A study on prevalence of Congenital anomalies in fetuses among pregnant women in a tertiary care hospital and its association with socio-demographic factors

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ABSTRACT

Objectives: The aim of the study is to determine the prevalence of congenital anomaly, types of anomaly and associated risk factor if any. **Methodology**: This was a cross sectional study over a period of one year in the Department of Obstetrics & Gynaecology, Gauhati Medical College. All congenital anomaly cases detected antenatally or at delivery were included in the study. Cases were analyzed to find out the prevalence, types of anomalies and its relation with risk factors including maternal age. **Results**: Prevalence of fetal congenital anomaly was 0.7%. Out of 96 cases only 15 cases (15.6%) were detected at 2nd trimester. Central Nervous System (CNS) deformity was the commonest defect observed with 41cases (42.7 %) out of which maximum cases (38) had neural tube defect. Anomalies were found more in younger age group, in primi gravida and in women with anemia and in low socio economic group. Various risk factors were associated in 7 numbers of cases out of 96.**Conclusion**: Prevalence of congenital anomaly was 0.7% and Nueral Tube Defect (NTD) was the most common anomaly observed in our study. Majority cases were not associated with any risk factor. Routine anomaly scan is an important measure for early detection of malformation, primary prevention of disability and reducing perinatal mortality and morbidity.

Keywords: Congenital anomaly, neural tube defect
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Any deviation from the normal during morphogenesis constitutes an anomaly [1]. Congenital anomaly or malformation is an abnormality of structure, function or body metabolism which is present at birth and results in physical or mental disability. It is an important cause of perinatal mortality and morbidity. Each year eight million children are born worldwide with congenital anomalies of which 3.3 million die before the age of five; 3.2 million of the survivors may be mentally or physically disabled [2]. It is supposed to have multi-factorial etiology and approximately 40% to 60% are unexplained

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[3].The prevalence of congenital anomaly is comparable all over the world. In India it is responsible for 8-15% of perinatal mortality [4]. Knowing prevalence and type of anomaly in a particular population can be of help in primary prevention of disability and perinatal mortality and morbidity. Hence this study was carried out with the following aims and objectives:

1. To find out the prevalence of congenital anomalies among antenatal women attending Gauhati Medical College and hospital
2. To know the type of anomaly
3. To determine relation of anomaly with any risk factor

Materials and Methods

Present study is a cross sectional study carried out in the Department of Obstetrics & Gynaecology, Gauhati medical college and hospital, Guwahati from 1st June 2011 to 31st May 2012. All congenital anomaly cases detected antenatally and at delivery were included in the study. Cases detected as congenital anomaly by antenatal ultrasound but found to be normal at delivery were excluded from the study.

Ethical approval was taken from the Clinical Research Ethics Committee of Gauhati Medical College and Hospital.

Patient data were obtained regarding age, area of residence, antenatal check up, gravida, parity, socio-economic status, history of exposure to drug, radiation or history of fever in present pregnancy, past history of delivering anomalous baby, history of diabetes, family history of diabetes, congenital anomaly, history of consanguineous marriage and personal history of alcohol consumption, smoking. Gestational age at the time of detection of anomaly was also noted. Antenatally detected cases were confirmed at delivery. Counseling and termination was done in case of lethal anomaly. In some cases ultrasonography (USG) or X-ray of baby was done for confirmation. Hb % and blood sugar was checked to find its relation with fetal malformation. Glucose tolerance Test (GTT) was done in all cases.

Table 1: Showing age distribution

Age(years)	No. of cases	Percentage
Less than 20	5	5.2%
20-25	57	59.4%
25-30	24	25%
More than 30	10	10.4%

Results and Observations

During the study period prevalence of anomaly was found to be 0.7% as 96 cases were detected out of 13,893 deliveries. Cases were divided into four age groups: below 20, 20-25, 25-30, more than 30 years with 5(5.2 %), 57 (59.4 %), 24(25%), 10(10.4%) cases respectively and having maximum number in 20-25 years age group (Table 1).

Regarding parity anomaly were found to be more in primipara having 56 cases (58.30%) compared to higher parity as shown in fig 1.

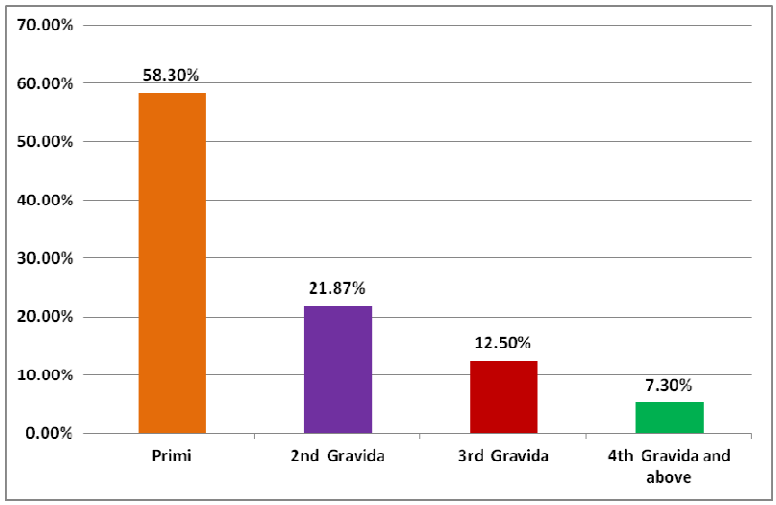

Fig 1: showing parity distribution

Only 15 cases (15.6%) were detected at 2nd trimester anomaly scan and majority either at 3rd trimester ie..42cases (43.75%) or at delivery ie.39 cases (40.62%). In 24 unbooked cases malformation was detected at delivery. Among 72 booked cases only 15 picked up during 2nd trimester anomaly scan and 57 detected at delivery or at 3rd trimester as they failed to follow the advice regarding 2nd trimester USG.

More cases were found in lower socio-economic group with 83 (86.46%) cases as against 13(13.54%) cases in middle and higher socio economic group. Amongst 96 cases of

Table 2: showing socio-economic status with prevalence of anemia				
	Low socio-economic class	**Middle and upper socio-economic classes**	**Total**	**P value**
Anaemia present	62(65%)	6(6%)	68(71%)	0.0495
Anaemia absent	21(22%)	7(7%)	28(29%)	

Table 3: showing the number of cases with risk factors		
Risk Factors	**No. of cases**	**Percentage**
Antenatal exposure to radiation,drug intake	0	0%
History of febrile illness	0	0%
History of bleeding per vagina	0	0%
Family history of Diabetes	3	3.15%
Family history of congenital anomaly	2	2.08%
Previous history of anomalous baby delivered	1	1.04%
History of consanguineous marriage	1	1.04%

Table 4: showing the prevalence of NTD with anaemia				
	With NTD	**Without NTD**	**Total**	P value
Anaemia present	36(38%)	30(31%)	66(69%)	<0.0001
Anaemia absent	2(2%)	28(29%)	30(31%)	
Total	38(40%)	58(60%)	96(100%)	

anomaly 68 cases (71%) were anemic with 65% in low socioeconomic group and 6% were in higher socioeconomic group. (Table2).

Only 7 out of 96 (7.29%) cases had associated risk factors like family history of diabetes mellitus, congenital anomaly, previous history of delivering anomalous baby and consanguineous marriage as shown in table 3. GTT was normal in all cases.

Regarding type of anomaly CNS defect was the commonest anomaly observed with 41cases (42.7%), of which maximum number had neural tube defect ie.38 (39.58%) cases. This is followed by cleft lip with or without cleft palate, ventral wall defect, limb deformity and genito-urinary tract deformity. Multiple congenital anomalies were seen only in 4 (4.16%) cases.

Anemia was found to be significantly associated with neural tube defect as out of 38 cases of NTD 36 cases were anemic.

Discussion

In our study prevalence of congenital anomaly was 0.7% which is similar to the figure (0.69%) observed by Taboo ZAA [5] but Chinara P K and Singh S [6], Chaturvedi P and Banerjee K S [7] reported 2.08%, 2.27% respectively. This variation may be due to different geographical area, social factor and racial difference. Though elderly age group and higher parity are considered as risk factors for congenital anomaly, in our study higher incidence was observed in primipara and younger age group [8]. Similar findings were reported by Perveen F and Tyyab S in 2007 [9].

Out of 96 only 15 cases were detected in 2nd trimester and 81 cases were detected at 3rd trimester or at delivery either due to lack of antenatal check up or not doing obstetric USG on time. Socio-economically highest number of pregnant women with anomaly belonged to lower class ie. 86.5%. In a similar study conducted by Vrijheid M et al in 2001 reported that the risk of structural anomalies were more in population with increased socio-economic deprivation. 65% cases (62) belonging to low socio-economic status were anemic. Out of 38 NTD cases 36 were anaemic ($P < 0.0001$) showing a significant correlation between lower socio-economic statuses with anaemia and neural tube defect (NTD).

There were 3 cases of congenital anomaly having family history of diabetes though GTT was normal which was similar to the observation reported by Sheffield S J et al [10].

Central nervous system defect was the commonest anomaly seen constituting 42.7% and maximum number had neural tube defect (39.58%). In a similar study conducted by Agarwal S S [11], in 1999 neural tube defect was found to be the commonest malformation. Similarly, Perveen F and Tyyab S [9], in 2007 also found NTD as the commonest type of anomaly ie. 65.8%. Amongst NTDs majority had hydrocephalus and anencephaly in our study.

Table 5: showing number of cases according to the types of anomaly		
Type of anomaly	**No. of cases**	**Percentage**
1.Central nervous system defects	41 cases	42.7%
i. Neural tube defects	38	39.58%
a. Anencephaly	18	
b. Hydrocephalus	16	
c. Meningocele	3	
d..Encephalocele	1	
ii. Arnold chiari malformation	1	1.04%
iii. Hydrancephaly	1	1.04%
iv. Sacro-coccygeal teratomas	1	1.04%
2. Cleft lip with/or palate	11	11.6%
a. Cleft palate	2	2.08%
b. Cleft lip	3	3.15%
c. Cleft lip with cleft palate	6	6.25%
3.Ventral wall defect	8	8.33%
a.Omphalocele	5	5.2%
b.Gastrochisis	3	3.15%
4. Limb deformity	7	7.29%
a.Hypoplastic little finger	2	
b.Achondroplasia	1	
c.Polydactyly	1	
d.Equinovarus	2	
e.Thanatophoric dysplasia of limbs	1	
5. Genitourinary tract abnormality	6	6.25%
a.B/L Hydrocele	1	
b.B/L Hydronephrosis	2	
c.B/l polycystic kidney	1	
d.Ambiguous genitalia	2	
6. Duodenal atresia	4	4.16%
7. Multiple congenital anomaly	4	4.16%
8. Fetal Ascites	3	3.15%
9. Congenital heart defect	3	3.15%
10. Diaphragmatic hernia	2	2.08%
11. Meckel Gruber syndrome	1	1.04%
12. Conjoint twin	1	1.04%
13. Anotia of ear	1	1.04%
14. Fetal hepatic cyst	1	1.04%

However Sigmund H E et al [12], Krikunova N I et al [13], Aziza et al [14] found cardiovascular, musculoskeletal and facial cleft respectively to be more common. This may be related to food habit and geographical variation.

Conclusion

In this study prevalence of fetal congenital anomaly was found to be 0.7%. Incidence was more in younger age group, primipara, lower socio-ecoomic status and among anemic patients. In majority there was no associated risk factor which indicates all pregnancies are at potential risk of fetal malformation. Neural tube defect was found to be the commonest form of anomaly in our population and is significantly related to anemia. Creating awareness regarding regular ANC and importance of anomaly scan on time can help in primary prevention of disability and reducing perinatal mortality and morbidity.

References

1. Gliozheni O, Sylejmani S, Kati K. Donald school journal of ultrasound in obstetrics and gynaecology. 2011; 5: 193.

2. March of Dimes Resource Center. Birth Defects 1998. Geneva; WHO: 2006.

3. Nelson K, Holmes LB. Malformations due to presumed spontaneous mutations in newborn infants. N Eng J Med. 1989; 320(1):19-23.

4. Bhat BV, Ravikumara M. Perinatal mortality in India-Need for introspection. Indian J Matern Child Health. 1996; 7: 31–3.

5. Taboo ZAA. Prevalence and risk factors for congenital anomalies in Mosul city. The Iraqi Postgraduate Medical Journal. 2012; 11(40): 458-70.

6. Chinara PK, Singh S. East-West differential in congenital malformations in India. The Indian Journal of pediatrics.1982; 49(3):325-329.

7. Chaturvedi P, Banerjee K S. An epidemiological study of congenital malformations in new born.The Indian Journal of pediatrics. 1993; 60(5):645-653.

8. Singh A. Ravinder K, Jammu S. Pattern of Congenital Anomalies in Newborn: A Hospital Based Prospective, Jammu (J&K)-India. 2009; 11:34-36.

9. Perveen F, Tyyab S. Frequency and pattern of distribution of congenital anomalies in newborn and associated maternal risk factors. J Coll Physician Surg Pak. 2007; 17(6): 340-3.

10. Sheffield S J, Butler-Koster L E, Casey M B, Mclntire D D, Leveno J K. Maternal Diabetes

Mellitus and Infant Malformation. Obstet Gynecol. 2002; 100: 925-30.

11. Agarwal S S. Neural tube defect: a preventable congenital malformation. Indian Pediatr. 1999; 36: 643-648.

12. Sigmund H, Ein, Izukawa T, Su W, Cook D, Stephen A C, Rowe D R. The influence of cardiovascular malformations on the prognosis of esophageal atresia and distal trachea-esophageal fistula. Pediatric surgery international. 1989; 4(5): 318-321.

13. Krikunova NI, Minaicheva LI, Nazarenko LP, Tadinova VN, Nesterova VV, Fadyushina SV, Shapran N. Epidemiology of congenital malformation in Golno Altaisk, Altai Republic, Russia. Russian Journal of Genetics. 2004; 40(8): 932-937.

14. Aziza A, Kandasamy R, Shazia S. Pattern of craniofacial anomalies seen in a tertiary care hospital in Saidi Arabia. Ann Saudi Med. 2011; 31(5): 88-93.