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Incidence and Evaluation of Congenital Malformations in Victoria Govt. Hospital Visakhapatnam, Andhra Pradesh

Authors

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Abstract

Retrospective analysis conducted in 150 bedded Government Victoria Hospital, a Maternity hospital at Visakhapatnam, Andhra Pradesh during the period between Aug. 2011 – Aug .2012. This paper was focused on incidence of structural congenital malformations detectable at birth among 6590 deliveries, evaluation of associated risk factors and the fetal outcome. In our study we found 134 fetal malformations, Incidence is 2.03%. Most commonly affected is cranio spinal system; risk factor is H/O Consanguinity, Malnutrition and previous h/o abortions.

Key words: *Congenital malformations, craniospinal system, Malnutrition.*

MATERIALS AND METHODS

Total 134 cases out of 6590 deliveries were retrospectively evaluated for structural congenital malformations and associated risk factors during one year period from Aug. 2011 – Aug .2012..Fetal outcome was assessed . Variables like Maternal age, Parity, Consanguinity, Abortions, Sibling with malformation, Nutrition, Smoking ,Alcoholism, Family H/O congenital anomalies , Conceived after infertility treatment, Maternal Diabetes, Infections, Fever, Drugs, H/O Intra uterine deaths were critically evaluated.

Aim and Objectives:

1. To determine the frequency of different structural congenital anomalies in our hospital population as per WHO classification.
2. To identity the possible risk factors responsible for these anomalies.
3. To evaluate the fetal outcome.

INTRODUCTION

Congenital anomalies (CA) can be defined as structural or functional abnormalities including metabolic disorders, present at birth. These defects are of prenatal origin result from defective embryogenesis or intrinsic abnormalities in the development process. Birth defects can be isolated abnormalities or part of a syndrome and continue to be an important cause of neonatal and infant morbidity and mortality.

In many cases, the causes of congenital anomalies are unknown; however, several factors known to be associated are genetic factors, maternal infections like rubella, cytomegalovirus, toxoplasmosis and syphilis, drugs like thalidomide, streptomycin, tetracycline, phenytoin, smoking, irradiation, maternal age, health, geographical factors and dietary factors.

Fetal anomaly scanning is the most powerful approach available for reducing the birth prevalence of infants with serious congenital abnormalities and increasing the chances of survival for those who are born, the finding of a correctable abnormality can be an indication for delivery to take place a center with facilities for pediatric Surgery, the finding of a severe uncorrectable abnormality may lead to offer termination of pregnancy.

This study was conducted to evaluate the incidence of structural congenital anomalies and to predict the variables which contribute in the incidence of congenital anomalies so that we can reduce the related perinatal morbidity and mortality.

RESULTS

Out of total 6590 deliveries from Aug 2011-Aug 2012, 134 babies with CA identified. Incidence being 2.03% (Table: 1). Commonest CA involving Craniospinal system (21.6%). Out of this most common is NTD (Table: 2) (12.7%).Most common CA involving musculoskeletal system is CTEV (Table: 3).

67% of cases are registered at our hospital (Table: 9). 77.6 % cases are in the age group of 20-29 yrs.3.7% are in the age group of 35 yrs.(Table:10). In 56% are cases H/o consanguinity was present(Table: 12), and about 40.1% cases are Primigravidae (Table: 13). In 34% of cases H/o abortions present (Table: 14) .In 31% of cases malnutrition observed (Table: 15). About 31.4% CA are detected before 28 wks. 42% of the cases are diagnosed between 28-37 wks most of them have no previous scansdue to infrequent antenatal visits (Table 15).

Most common perinatal risk factors are Preterm labor (31%), polyhydramnios and breech (25.4%)(Table: 16).

Congenital malformations contribute 46% of perinatal mortality

Table: 1 Distribution of anomalies according to W.H.O classification.

Type of Malformation	***Number of Malformations in my study***	***Percentage (%)***
Cranio spinal	29	21.6
Musculoskeletal	21	15.7
Facial	21	15.7
Cardiovascular	16	11.9
Renal	11	8.2
Respiratory	9	6.7
Gastrointestinal	7	5.2
Genital	5	3.8
Multisystem Defect	10	7.4
Others	5	3.8
Total	***134***	100%

Most commonly affected system was CRANIOSPINAL SYSTEM (21.6%). Second most common systems are MUSCULOSKELETAL ANDFACIAL (15.7% each).

Table:2 Distribution of anomalies affecting CRANIOSPINAL SYSTEM.

Type of Malformation	***NO. Of cases***	***Incidence per 1000 births***
CRANIOSPINAL	29	
NTD	17	2.5
Anencephaly	9	
Meningomyelocele	3	
Meningocele	2	
HC+ Meningomyelocele	1	
HC+ Meningocele	1	
Occult Spina bifida	1	

Hydrocephalus	11	1.5
Posterior cerebellar cyst	1	

Neural Tube Defects are most common anomaly involving craniospinal system.

Table: 3 Distribution of type of anomalies affecting **MUSCULOSKELETAL SYSTEM**

Type of Malformation	***Number of Malformations in my study***	***Incidence per 1000 Births***
MUSCULOSKELETAL	21	
CTLV	5	0.86
Limb Abnormalities	5	0.86
Polydactyl	4	0.6
Chest wall Deformities	4	0.6
Diaphragmatic Hernia	2	0.3
Osteogenesis Imperfecta	1	0.17

CTLV and Limb abnormalities are most common anomalies affecting musculoskeletal system.

Table 4 : Distribution of type of anomalies affecting Cardiovascular System

Malformation	***Frequency***	***Incidence/1000 births***	***Normal***
Cardiovascular	12		
VSD	5	0.8	1-2
ASD	2	0.3	
Hypo plastic Ventricle	1	0.16	
Pericardial effusion Contracted heart	1	0.16	

Table 5: Distribution of type of anomalies affecting Renal System

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Malformation	***Frequency***	***Incidence/1000 births***	***Normal***
Renal	11		
Multicystic Dysplastic Kidney	2	0.3	1/10000
Polycystic Kidney	7	1.16	1/1000
Hydronephrosis	2	0.3	1/3000-1/6000

Most common renal anomaly is Polycystic Kidney

Table 6: Distribution of type of anomalies affecting Respiratory System

Malformation	***Frequency***	***Incidence/1000 births***	***Normal***
Respiratory	9		
Pleural Effusion	6	0.30	1/10000
Pleural Effusion + Hypo plastic Lung	3	0.16	1/10000

Table 7: Distribution of type of anomalies affecting GenitalSystem

Malformation	***Frequency***	***Incidence/1000 births***	***Normal***
Genital	5		
Ambiguous Genitalia	3	0.46	1-2
Congenital Hydrocele	2	1.16	

Table 8: Distribution of other type of anomalies

MALFORMATION	FREQUENCY	INCIDENCE/1000 Births	NORMAL
Multipledefects	10		
OTHERS	5	3.7	
Abdominal wall defects EXOMPOLOS	2	1.5	1/4000-1/5000
Non immune hydros	1	0.7	1/1500-1/3500
Ellis van creveled syndrome	1	0.7	
Congenital Syphilis	1	0.7	

Malformation	***Frequency***	***Incidence/1000 births***	***Normal***
FACIAL	21		
Cleft Lip	3	0.46	1/10000
Cleft Palate	2	0.3	1/10000
Cleft Lip + Cleft Palate	5	0.83	1/1000
Cystic Hygroma	2	0.3	5-15/1000
Low set ears	2	0.3	
Microopthlmos	1	0.16	

Table 9: Distribution of 134 cases according to antenatal visits.

BOOKED	89	67%
UNBOOKED	45	33%

67% cases are BOOKED with minimum twoantenatal visits at our hospital

Table10: Distribution Of 134 Cases According To Age Group

Risk Factors	***Number***	***%***
Age less than 19 yrs.	12	9
20-24 yrs.	56	41.8
25-29 yrs.	48	35.8
30-34 yrs.	13	9.7
35 yrs. and older	5	3.7

MOST COMMONLY AFFECTED AGE GROUP BEING 20-24 YRS (56%) FOLLOWED BY 25-29 YRS (48%)

Table 11: GESTATIONAL AGE AT THE TIME OF DIAGNOSIS OF CONGENITAL ANOMALY

Age	***Number***	***%***
< 28 Weeks	42	31.4
28 Weeks – 37 Weeks	57	42.5
>37 Weeks	22	16.4
After Birth	13	9.7

MOST ANOMALIES WERE DIAGNOSED AT THE GESTATIONAL AGE OF 28-37 Wks.

Table 12: Distribution Of 134 Cases According To History Of Consanguinity

H/O CONSANGUINITY	***Number***	***%***
NIL	59	44.0
I degree	17	12.7
II degree	20	14.9
III degree	38	28.4

56% CASES ARE CONSANGUINOUS MARRIAGES.

Table 13: Disribution of cases according to Parity

PARITY	***Number***	***%***
PrimiGravida	54	40.1
2nd Gravida	28	20.9
3rd Gravida	12	9.0
4th Gravida	14	10.5
5 and above	26	19.5

Table 14: History Of Abortions

H/O ABORTIONS	***Number***	***%***
NIL	89	66.4
ONE	31	23.1
TWO	11	8.2
THREE AND ABOVE	3	2.3

IN 33.4% OF CASES THERE IS H/O ABORTIONS.

Table 15: Pattern of distribution of different risk factors

Risk Factor	***Number***	***%***
Consanguinity	75	56
Abortions	45	33.4
Low Nutritional Diet	42	31.3
H/O IUDS	18	13.4
Maternal Diabetes	11	8.2
Age > 35 years	5	3.7
Infections,Fever	5	3.7
Conceived after infertility treatment	2	1.4
Drugs(Anti-epileptic drugs, Misoprostol)	2	1.4
Sibling with malformation	2	1.4
Family H/O Malformations	1	0.7
Smoking, Alcoholism	-	

Table 16: distribution of perinatal risk factors

Risk Factors	***Number***	***%***
Preterm Labor	42	30.3
Polyhydramnios	34	25.4
Breech	34	25.4
IUGR	14	10.0
Oligohydramnios	12	8.9

Table 17: Fetal Outcome In Pregnancies With Ca

Abortions	42	32%
Vaginal delivery preterm	56	41%
vaginal delivery term	31	23%
CAESARIAN SECTION FOR OSTETRIC INDICATIONS	5	4%

Out of 152 Perinatal Deaths Congenital Anomalies Contributing about 46% OF DEATHS. Even though CA of minor degree, prematurity along with associated maternal contributing factors are responsible for the perinatal mortality.

DISCUSSION

We found the incidence of CA in our hospital is 2.03% in our study which is equal to the general incidence in developing countries [2,3,4,5] With improvement in the standards of living prenatal and antenatal health awareness, the overall incidence of NTDs has come down markedly in developed countries ,in our study 22% of cases involved Craniospinal system (Fig 1,2,3). Anencephaly amounting to 13%cases of NTDs and most common factor contributing to perinatal mortality. Second most common CA involved Facial and neck structures but most of them are non fatal but contributing to perinatal morbidity. (Fig 5,6). [6-20].Though most of the anomalies are compatible with life the increase in perinatal mortality was mainly due to associated preterm labor, prematurity, polyhydramnios, maternal diabetes, IUGR, Consanguinity is single most important factor which was found to increase the risk of CA in our study.[22]. Half of the cases H/O 3rd degree consanguinity was noted. Even though considered as low risk factor compared to 1st degree. Appropriate health education about consanguinity and genetic counseling for consanguineous couples should also be established before marriage. In addition to this, there is a need for more extensive screening studies to determine the birth prevalence, types and distribution of congenital anomalies. In 1/3rd of cases there is H/O one or more abortions.

Maternal age is an important parameter in the birth of a congenitally malformed fetus. In our study 3.7% of the mothers are older mothers (35 years of age or older).

Mothers who have given birth to children with NTDs should take 4 mg of folic acid per day for subsequent pregnancies. This positive effect can

only be achieved when supplement is taken prior to conception.

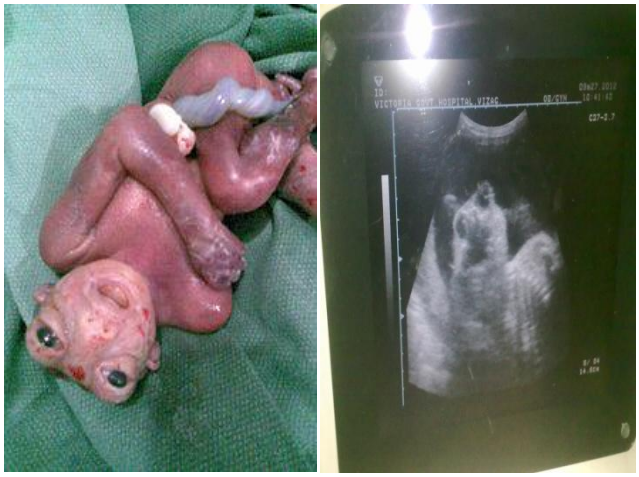


Fig: 1 Anencephaly.

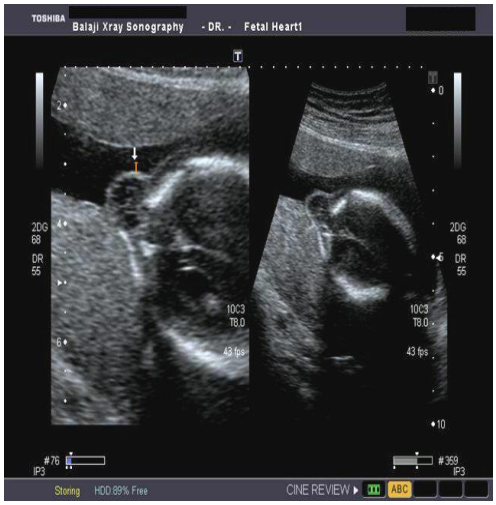
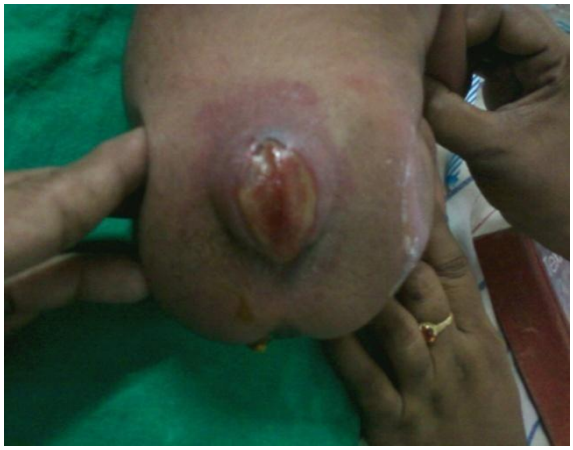


Fig: 2 Meningomyelocele



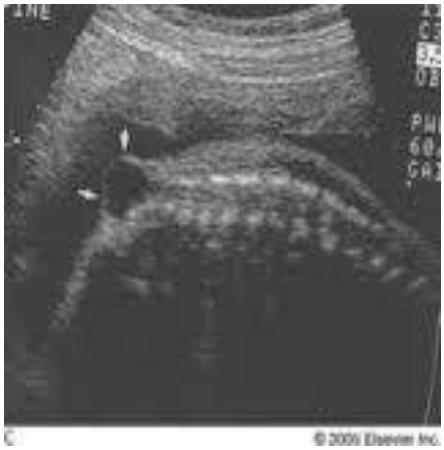
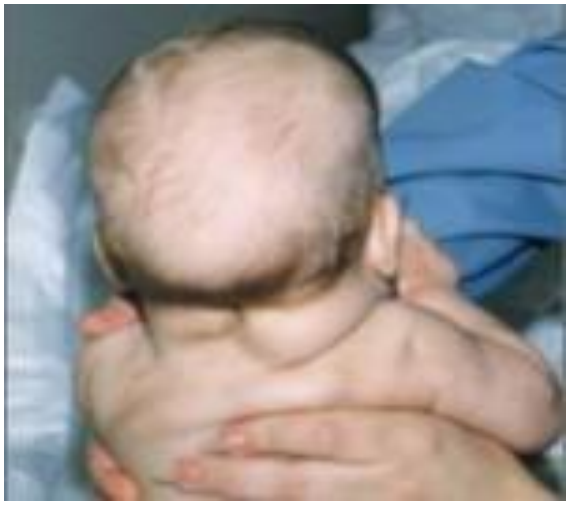


Fig: 3 Meningocele

Fig: 4 Osteogenesis Imperfecta

Fig: 5 Cleft lip and Cleft palate



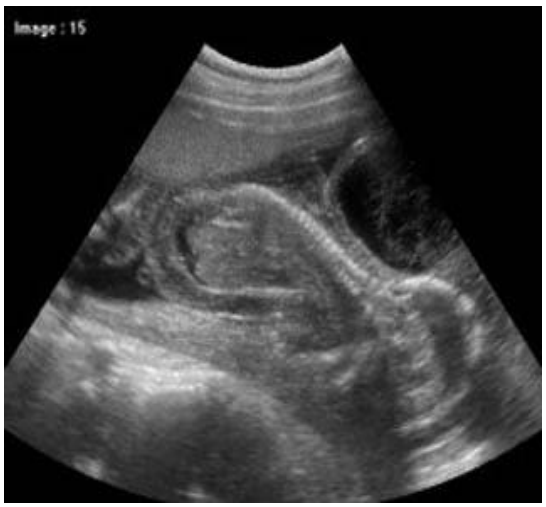


Fig: 6 Cystic Hygroma

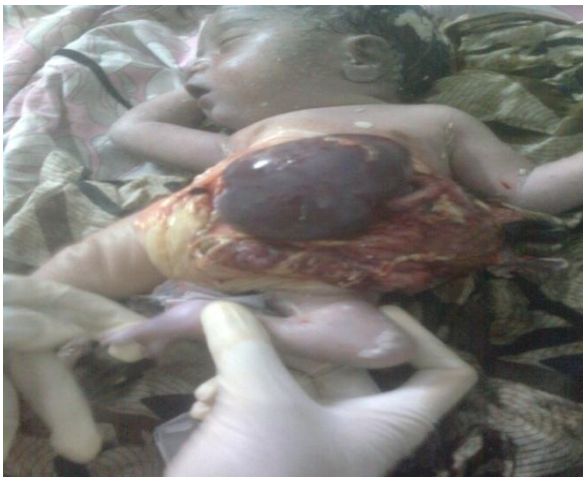


Fig: 7 Exompholos

Fig: 8 Ellis van creveled syndrome

CONCLUSION

In the present study most of the mothers who had anomalous fetuses had risk fetuses like Consanguinity and previous H/O abortions. Hence the need for focused screening in this high risk category. Pre scan council ling with karyotyping triple screen and relevant serology has to be done. A level II targeted scan is done at 18-20 weeks and again at 24 weeks to exclude anomalies. Though the cost of routine screening even in low risk women is more the burden of a severely morbid and disabled child on the family and society is even more.

Hence, if a single ultrasound examination isallowed per pregnancy, the mid trimester scan at 18- 20 weeks clearly represents the best time to accomplish the most. Once an anomaly is detected , various management options are to be discussed with the patients in consultation with neonatologist, pediatric surgeon and neurosurgeon when necessary.

Lethal anomalies are terminated immediately after diagnosis irrespective of gestational age. Autopsy can be done in needed cases.

Careful monitoring and surveillance of fetuses with minor anomalies or those compatible with life is done and delivery is contemplated at term or after lung maturity is accomplished depending on type of anomaly in a tertiary center with an intensive neonatal care.

Adequate prenatal care to improvethe preconception& prenatal nutrition along with periconceptional folic acid. Thanks to our JANANI SURAKSHA YOJANA to encourage all the pregnant mothers to attend health care center from the first month of pregnancy for checkup and discover any abnormalities. Specialist services (genetic services) should be offered to women with high risk factors like diabetic Mellitus, Epileptic women, previous history with congenital anomalies and elderly gravid.

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