Original Article

Frequency of Congenital Anomalies in New Born & Associated Maternal Risk Factors in the Rural Setup of Nawabshah

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ABSTRACT

Objective: To determine the frequency of congenital anomalies alongwith the assessment of maternal risk factors.
Study Design: Cross sectional observational study.
Place and Duration of Study: This study was conducted at the Department of Obstetrics & Gynaecology at PUMHS Hospital Nawabshah from 01.01.2010 to 31.12.2011.
Materials and Methods: This cross sectional observational study was conducted in the Department of Obs & Gynae, PUMHS Hospital Nawabshah. All the newborn delivered with CA during the specified time comprised the study group. The study population was evaluated according to maternal demographic features like age, gestational age, BMI, birth order and consanguinity. Significant maternal illness, BOH, diabetes mellitus, drug ingestion, smoking and exposure to radiation were recorded. All the newborns were examined by Paediatricians and anomalies were recorded. Mean ± SD were used for age & parity and frequency, pattern of CA alongwith associated maternal risk factor described in number and percentage.
Result: During the study period, 11608 babies were born in which 178 showed evidence of CA giving a frequency of 15.33 / 1000 births. The mean maternal age was 32.24 years while the mean parity was 3.6. Consanguinity was the most significant factor (48.31 %) followed by BOH (14.60 %). Diabetes mellitus was found in 10.67 % while past history of CA was found in 7.30 %. Multiple risk factors were responsible in 9.55 % of cases. Regarding the systemic involvement, CNS anomalies contribute 35.39 %, GIT 18.53 %, muscular skeleton 14.04 % and urogenital 13.43 %. 57.30 % babies were stillborn while 43 % died in early neonatal period and 33 % were referred to Paediatrics ward for further management.
Conclusion: Congenital anomaly is an important cause of perinatal mortality. Its elimination need health education programmes, folic acid supplementation, early recognition by 3D ultrasound and termination in those cases which are not compatible with life.
Key Words: Congenital anomalies, Risk Factors, Folic acid supplementation, Role of ultrasound.

INTRODUCTION

Congenital anomalies (CA) are structural defects of prenatal origin that results from defective embryogenesis or deviation from normal development[1, 2]. It is the 3rd leading cause of perinatal mortality after birth asphyxia & prematurity in developing countries[3]. In Pakistan it accounts for 6-9% of perinatal deaths[4]. Its management involves complex medical issues, behavioral concerns & parental distress with psychological trauma.

65-75% of congenital malformations are multifactorial in origin. The recognizable risk factors are chromosomal aberration, hereditary predisposition, viral infections[5], maternal obesity[6], diabetes mellitus[7], consanguinity[8,9], IVF[10] and drugs[11, 12]. Diabetes mellitus is associated with a 3-4 fold increase risk of CA[7] while consanguinity could be responsible up till 60%[8, 9].

The advancement of ultrasonography is very much appreciated for the diagnosis of CA which offers a 70-80% detection rate in hands of expert sonologist[13]. The beneficial role of folic acid must not be forgotten in the prevention of CA and needs a continuous folic acid supplementation throughout reproductive life[14].

The frequency of congenital anomaly is variable and depend upon the availability of sophisticated investigations like karyotyping and autopsy.

We conducted this study to determine the frequency of CA alongwith the assessment of associated risk factors in the deliveries occurring in the rural setup of Nawabshah.

MATERIAL AND METHODS

This cross sectional study was conducted in the Department of Obs & Gynae at Nawabshah from 1st Jan 2010 to 31st Dec. 2011. All the newborns delivered with CA during the specified time comprised the study group. The study population was evaluated according to a preformed Performa. Maternal demographic features like age, gestational age, BMI, birth order, consanguinity were documented. Significant maternal illness, BOH, diabetes mellitus, drug ingestion, smoking and exposure to radiation were recorded. All the newborns with CA were thoroughly examined by Paediarician at birth and anomalies were recorded. Antenatal anomaly scan were sought for the detection of cardio vascular and GIT anomalies.

Mean ± SD of maternal age and parity were calculated. Frequency, pattern of CA and associated maternal risk

factors describe in numbers and percentage were determined. SPSS version 16 was used for statistical analysis.

RESULTS

During the study period, 11608 babies were born in which 178 showed evidence of CA giving a frequency of 15.33/1000 births. > 85% of mothers were non-booked (< 3 antenatal visits). Maternal age ranged from 15–42 years, the mean age was 32.24 years. Considering the age group, the women who were 26–35 years and > 35 years had highest number 30.84 % and 42.05 % of malformed babies. The parity ranged from 1–8 and the mean parity was 3.6.

Table No.1: Maternal Demographic Features

Age (Years)	n	%age
15 – 25	34	19.10%
26 – 35	58	32.58%
36 – 42	86	48.31%
PARA		
0 – 1	58	32.58%
2 – 4	54	30.33%
4 – 8	66	37.07%
BMI		
18 – 25	31	17.41%
25 – 30	68	38.20%
> 30	79	44.38%

The most significant maternal risk factor associated with CA was Consanguinity (48.31 %), followed by B.O.H (Recurrent abortion, Previous H/o IUDs) (14.60 %) and Diabetes Mellitus (10.67 %). Past History of congenital anomalies contribute 7.30 % and multiple factors operated in 9.55 % of cases.

During the study period, 178 babies were delivered with CA, males were dominated (n = 113, 68.48 %), while females were 36.51 % (n = 65).

Table No. 2: Associated Maternal Risk Factors For Ca

Risk Factor	n	%
Consanguineous Marriage	86	48.31%
B.O.H	26	14.60%
Diabetes Mellitus	19	10.67%
Past H/o of CA	13	7.30%
H/o of Fever/Infection	07	3.9%
Family H/O Diabetes Mellitus	06	3.37%
H/O of drug intake	04	2.24%
Combination factors	17	9.55%
Total	**178**	**100 %**

Table-3 showed the system wise distribution of anomalies. Anomalies affecting central nervous system were found in 63 (35.39 %) in which anencephaly contributes 11.79 % and 8.42 % had hydrocephalus. GIT anomalies were 18.53 %, Urogenital 13.43 %, musculoskeletal system 14.04 % and involvement of CVS was found in 10.67 % of cases. Small contribution was found from skin (3.93 %) and Eyes (2.24 %). Multisystemic involvement (Syndrome) was found in 1.12 % of cases.

Table No. 3: System wise distribution of ca (n=178)

System Involved	Types of Defect	N	%
CNS		63	35.39%
	Anencephaly	21	
	Hydrocephalus	15	
	Hydrocephalus with Meningocele	4	
	Meningocele	12	
	Encephalocele	5	
	Teratoma-Sacral, Fronto Orbital	2,1	
	Holoprosencephaly	1	
	Microcephaly	2	
Urogenital		24	13.48%
	Polycystic Kidney	6	
	Renal Agenesis	4	
	Hydroureter	2	
	Hypospadias	4	
	Ambigious Genitilia	3	
	Undescended Testis	5	
GIT		33	18.53%
	Combine Cleft lip & cleft palate	9	
	Cleft lip	6	
	Cleft palate	5	
	Imperforated Anus	5	
	Duodenal atresia	3	
	Omphalocele	2	
	Extrophy of Bladder	2	
	Diaphragmatic Hernia	1	
Musculo Skeletal		25	14.04%
	Talipes	12	
	Polydactily	10	
	Craniosyntosis	3	
Skin		7	3.93%
	Large hairy neavus	2	
	Haemingioma	5	
Eye		4	2.24%
	Congenital Ptosis	2	
	Anophthalmia	1	
	Single Eye	1	
Syndrome		2	1.12%
	Prune Belly Synd	1	
	Down Syndrome	1	

Majority of newborns in study population were stillborn (n = 102, 57.30 %), while 24.15 % (n = 43) died in early neonatal period, while 33 (18.54 %) were referred to Paediatric ward.

None of the mother had received folic acid supplementation in the preconceptional period and very

few had taken folic acid irregularly in the first trimester of pregnancy. 04 (2.24 %) number of patients were using antiepileptic medicines.

The methods used to diagnose congenital anomaly were USG and clinical examination. Chromosomal analysis and genetic studies were not performed due to poor socioeconomic background of patients and lack of facility in the hospital.

DISCUSSION

Congenital anomalies are important causes of perinatal mortality and now diagnose more frequently due to advancement in ultrasonography. It is the third commonest cause of perinatal death in the developing world and accounts for 6 – 9 % of perinatal mortality in Pakistan[3,4].

The scenario could be change by offering selective termination in early pregnancy complicated by life threatening congenital anomalies and by the provision of adequate care to babies with CA compatible with life.

The frequency of CA in the study population was 15.33/1000 births which is comparable with other local studies[5,15]. The reported incidence could be rises once the more sophisticated investigations and autopsy involved in the protocol.

Most of CA were found with maternal ages 26 – 35 years (48.31 %) while 32.58 % were in > 35 year. Increasing age of mother is a recognizable risk factor of CA in many studies[5,16,17].

Increasing birth order increases the risk of CA[16] but we could not found such association in our study.

Maternal obesity is a recognized risk factor[6] was also found in 82.58 % of cases in the present study. Regarding maternal risk factors, consanguinity was most significant (48.31 %) comparable with other local studies[8,15]. Consanguinity was also found as a major risk factor in India[3,16] an avoidable factor eliminated by health awareness programmes.

10.67 % women were diabetic which causes a 3 – 4 folds increase risk of malformations as compared to general population[7]. This proportion of congenital anomalies could be avoided by planned pregnancies and a better periconceptional diabetic control.

Neural tube defect (35.39%), mainly Anencephaly & hydrocephalus were the commonest congenital malformations comparable with a local study[15]. NTD was also seen in 1 in 1000 US population and 4 to 15/1000 births in India[18]. NTD are more common among Hispanic, Ireland, China and UK population. Use of anti-epileptic drugs, maternal diabetes mellitus, obesity and previous NTD affected pregnancies are the risk factors. Maternal folic acid supplementation during periconceptional period and life style modification play a major role in the reduction of major congenital malformations. The others systems involved are GIT (18.53%), Musculo Skeletal (14.04%) and Urogenital(13.48%). The rate of detection of cardiac anomalies were only 10.67% most probably it is because of lack of sophisticated USG in the institute.

Considering the frequency of congenital anomalies and its share in the perinatal mortality we need to create health care programmes addressing towards genetic counseling, avoidance of consanguineous marriages, periconceptional folic acid supplementation along with screening and offering early termination in pregnancy with lethal CA.

CONCLUSION

Congenital anomaly is an important cause of perinatal mortality. Its elimination need health education programmes, folic acid supplementation, early recognition by 3D ultrasound and termination in those cases which are not compatible with life.

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