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ORIGINAL ARTICLE

Frequency of fetal anomalies on antenatal scans in pediatric surgery department of mayo hospital.

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ABSTRACT… Objective: To know the prevalence of congenital anomalies in foeti on antenatal ultrasonography and role of preconceptual folic acid intake in preventing development of neural tube defects. **Study Design:** Cross-sectional Descriptive study. **Setting:** Department of Pediatric Surgery, Mayo Hospital, Lahore. **Period:** January 2022 to September 2022. **Material & Methods:** The data of 57 patients was collected, who were referred to Pediatric Surgery Department of Mayo Hospital, Lahore from lady Wallington Hospital and Lady Aitchison Hospital, with fetal anomaly detected on antenatal scan. Women with pregnancy in second and third trimester, ranging in age from 20 to 45 years, were enrolled in the study. A questionnaire was used to collect the data. We analyzed the data of study usingSPSS 20(Statistical Package for Social Sciences version 20). **Results:** Data analysis showed higher incidence (34%) of anomalies of central nervous system including neural tube defects. 89% (51/57) women had not taken preconceptual folic acid supplements. Consanguinity was also noted to be an important factor and significant correlation was seen 70% (40/57). **Conclusion:** The incidence of central nervous system anomalies including neural tube defects was higher (34%) among all anomalies. This might be probably due to preconceptual deficiency of folic acid.

Key words: Consanguinity, Folic Acid, Fetal Anomalies, Ultrasonography.

INTRODUCTION

Fetal development from a single cell is a multistage complex process. Unlucky fetuses do not pass through this process smoothly resulting in congenital anomalies.

Eight million babies are born every year having some congenital anomaly, 3 million of them pass away before reaching five years of age and out of survivors 3 million has some physical and mental disability.[1]

A significant contributor to prenatal morbidity and mortality are foetal congenital abnormalities. Ultrasonography is used as vital part of antenatal care for detection of these congenital anomalies and for monitoring of normal fetal development and growth.[2]

Early prenatal fetal anomaly detection is crucial to know the severity, chances of fetal survival, planning of termination of pregnancy and identifying role of fetal therapy.[3,4]

The purpose of this study is to determine the prevalence of foetal malformations and the contribution of folic acid to the emergence of neural tube defects.

MATERIAL & METHODS

A cross-sectional descriptive study was carried out in pediatric surgery department of mayo hospital from January 2022 to September 2022 after approval from ethical committee (499/RC/KEMU). Patients referred from department of Obstetrics and Gynecology of Lady Aitchison Hospital, Lahore, and Lady Wallington Hospital, Lahore to Pediatric Surgery outdoor, were included in this study. Pregnant women in their second and third trimesters and age 20-45 years

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were selected.

Women belonging from all socioeconomic status were included in this study.

Total 57 women presented during this period with fetal anomaly detected on ultrasound.

Data was entered in proforma. Detailed history was taken which included age of mother, preconceptual intake of folic acid, history of cousin marriage, history of congenital anomalies in other children and family, radiation exposure, any chronic ailment and use of any drug during pregnancy.

SPSS 20 ((Statistical Package for Social Sciences version 20) was utilised for data analysis.A p value of 0.05 or lower was regarded as significant.

RESULTS

All fetal malformations were tabulated system wise. Tables and graphs have been used to display the results.

Table-I shows the distribution of fetal anomalies according to mother age group. The mean age of the mothers having anomaly detected on antenatal scan was in the range of 30-35 years (54%).

There was significant correlation between fetal anomalies and consanguinity (Table-II).

Out of 57 mothers only 6(10%) used preconceptual folic acid and 51/57(89%) mothers did not have knowledge of preconceptual folic acid intake (Table-III).

The highest incidence was noted of CNS anomalies (34/57; 59%), out of which 20/34(35%) cases were of hydrocephalus (Figure-1).

Genitourinary system anomalies had second highest incidence (9/57; 15%) and their distribution with hydronephrosisas most common anomaly detected on ultrasonography. (Table-4).

Incidence of other anomalies was gastro-intestinal (4/57;7%), cardiovascular system (6/57; 10%), Musculo-skeletal (4/57;7%).

Maternal Age	Frequency (%)
20-25	1 (1.8%)
25-30	16 (28.1%)
30-35	31 (54.4%)
35-40	9 (15.8%)
Total	57 (100.0%)

Table-I. Maternal age distribution in years

Consanguinity	Frequency (%)
Yes	40 (70.2%)
No	17 (29.8%)
Total	57 (100.0%)

Table-II. Distribution of foetal abnormalities according to consanguinity

Folic Acid Intake	Frequency (%)
Yes	6 (10.5%)
No	51 (89.5%)
Total	57 (100.0%)

Table-III. Distribution of fetal anomalies according to folic acid intake

System Involved	Anomaly	Frequency (%)
Distribution of Central Nervous System anomalies 34(59.6%)	Anencephaly	2(3.5)
	Myelomeningocele / Meningocele	2(3.5)
	Hydrocephalus	20(35.1)
	Craniosynostosis	2(3.5)
	Meningocele and Hydrocephalus	6(10.5)
	Holoprosencephaly	2(3.5)
Distribution of Genitourinary anomalies 7(12.3%)	Hydronephrosis	4(7)
	Cystic kidneys	2(3.5)
	Suspected PUV	1(1.8)
Distribution of Gastrointestinal Tract anomalies 4(7%)	Duodenal atresia	3(5.3)
	Omphalocele	1(1.8)
Distribution of Cardiovascular anomalies 8(14%)	Hydrops fetalis	5(8.8)
	Septal hypertrophy	3(5.3)
Distribution of Musculoskeletal anomalies 4(7%)	Skeletal dysplasia	4(7)

Table-IV. Distribution of all fetal anomalies system wise

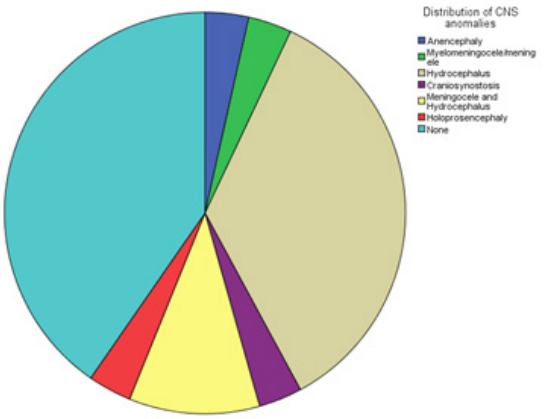

Figure-1. Distribution of Central Nervous System (CNS) Anomalies

DISCUSSION

Congenital Fetal anomalies are a major contributor of antenatal mortality and morbidity worldwide affecting 2-3% live birth yearly.[1]

The prevalence of foetal aanomalies varies across the globe, with developing countries reporting the highest rate.[2]

Multiple causative factors have been identified which include genetic, nutritional, infectious, use of drugs and environmental causes.[3]

During antenatal period, monitoring of fetal well-being is essential and antenatal ultrasonography is widely used for this purpose.[4] It's a reliable, non-invasive, accurate and cost-effective modality but requires expertise of the radiologist. It is helpful in detecting fetal growth, placental abnormalities, and fetal anomalies.[5]

Anomalies of CNS like anencephaly can be detected in early gestation (12 weeks).[6]

Recent advancements like high-resolution and 3-D, 4-D machines allow early detection of minor anomalies.[7]

Ultrasonographic screening should be conducted in antenatal follow-up. First ultrasonography should be between 14-16 gestational week and second one after 26th week of gestation.

Early detection of fetal anomalies is crucial as it helps in early in utero intervention in some cases.

It also helps the family to accept the fetal anomaly and decide for abortion if detected anomaly is not compatible with life. Additionally, it aids the family in preparing for enduring care or the requirement of an immediate surgical intervention.

The neonatology team of the hospital may also be better prepared to care for the newborn if a deformity is detected in antenatal period.[5,6,7]

Folic acid supplementation provision before conception and during early pregnancy is helpful in preventing Neural Tube Defects.[8]

In primigravida, 62% risk reduction of neural tube defect can be done by taking a supplement containing 0.4 milligrammes of folic acid during the periconception period.[9-12] Use of folic acid in periconception period is crucial in preventing cardiac, renal and limb defects.[14] It also decreases the risk of complications which include low birth weight, small for gestational age babies and mortality in perinatal period.[14-18]

A study show that knowledge of health care workers is also not sufficient regarding dose and use of preconceptual folic acid intake.[13]

Statistically significant association was noted between use of folic acid consumption and the presence of neural tube abnormalities. There was increased incidence of neural tube defects in study participants who didn't take preconceptual folic acid. So, we advise premarital counseling of reproductive age women regarding consumption of folic acid during the preconception and early pregnancy periods.

Health care givers should be given knowledge regarding proper dose and time of folic acid use.

The result of our study also shows that the existence of foetal abnormalities is strongly statistically associated with consanguinity.

we recommend that pregnancies of

consanguineous marriages, should be thoroughly examined in detail and should be investigated carefully for presence of congenital anomalies.

CONCLUSION

Monitoring of fetal well-being is essential and antenatal ultrasonography is a reliable, non-invasive, accurate and cost-effective modality but requires expertise of the radiologist.

Awareness among reproductive age women and healthcare providers is needed regarding Folic acid intake in periconceptual period and early pregnancy.
It will be helpful in reducing perinatal morbidity and mortality.
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REFERENCES

1. Alia N, Ahmed I. **Congenital anomalies: prevalence of congenital abnormalities in 2nd trimester of pregnancy in madina teaching hospital, Faisalabad on gray scale ultrasound.** Journal of University Medical & Dental College. 2010; 1(1):23-8.

2. Richmond S, Atkins J. **A population‐based study of the prenatal diagnosis of congenital malformation over 16 years.** BJOG: An International Journal of Obstetrics & Gynaecology. 2005 Oct; 112(10):1349-57.

3. Tayebi N, Yazdani K, Naghshin N. **The prevalence of congenital malformations and its correlation with consanguineous marriages.** Oman medical journal. 2010 Jan; 25(1):37.

4. Whitworth M, Bricker L, Mullan C. **Ultrasound for fetal assessment in early pregnancy.** Cochrane Database Syst Rev. 2015 Jul 14; 2015(7):CD007058.

5. Saldarriaga W. Artuz M. Ayudas diagnósticas en obstetricia. Saldarriaga W, Artuz M. **Fundamentos de ginecología y obstetricia.** Cali: Programa editorial Universidad del Valle. 2010; 265-77.

6. Hurt L, Wright M, Dunstan F, Thomas S, Brook F, Morris S, Tucker D, Wills MA, Davies C, John G, Fone D. **Prevalence of defined ultrasound findings of unknown significance at the second trimester fetal anomaly scan and their association with adverse pregnancy outcomes: The Welsh study of mothers and babies population-based cohort.** Prenatal diagnosis. 2016 Jan; 36(1):40-8.

7. Campaña H, Ermini M, Aiello HA, Krupitzki H, Castilla EE, López-Camelo JS. **Prenatal sonographic detection of birth defects in 18 hospitals from South America.** Journal of Ultrasound in Medicine. 2010 Feb; 29(2):203-12.

8. Wald NJ. **Folic acid and the prevention of neural-tube defects.** New England Journal of Medicine. 2004 Jan 8; 350(2):101-2.

9. Blencowe H, Cousens S, Modell B, Lawn J. **Folic acid to reduce neonatal mortality from neural tube disorders.** International journal of epidemiology. 2010 Apr 1; 39(suppl_1):i110-21.

10. Talaulikar VS, Arulkumaran S. **Folic acid in obstetric practice: A review.** Obstetrical & gynecological survey. 2011 Apr 1; 66(4):240-7.

11. Pitkin RM. **Folate and neural tube defects.** The American journal of clinical nutrition. 2007 Jan 1; 85(1):285S-8S.

12. Nilsen RM, Vollset SE, Gjessing HK, Magnus P, Meltzer HM, Haugen M, Ueland PM. **Patterns and predictors of folic acid supplement use among pregnant women: The Norwegian Mother and Child Cohort Study.** The American journal of clinical nutrition. 2006 Nov 1; 84(5):1134-41.

13. Abedi G, Abdollahi F, Etemadinejad S. **Health behaviors of health practitioners about folic acid in Mazandaran province, Sari, Iran.** World Applied Sciences Journal. 2011; 12(7):944-50.

14. Lassi ZS, Mansoor T, Salam RA, Das JK, Bhutta ZA. **Essential pre-pregnancy and pregnancy interventions for improved maternal, newborn and child health.** Reproductive health. 2014 Aug; 11(1):1-9.

15. Hodgetts VA, Morris RK, Francis A, Gardosi J, Ismail KM. **Effectiveness of folic acid supplementation in pregnancy on reducing the risk of small‐for‐gestational age neonates: A population study, systematic review and meta‐analysis.** BJOG: An International Journal of Obstetrics & Gynaecology. 2015 Mar; 122(4):478-90.

16. Hall JG, Solehdin F. **Folate and its various ramifications.** Advances in pediatrics. 1998; 45:1-35.

17. McDonald SD, Ferguson S, Tam L, Lougheed J, Walker MC. **The prevention of congenital anomalies with periconceptional folic acid supplementation.** Journal of Obstetrics and Gynaecology Canada. 2003 Feb 1; 25(2):115-21.

18. Williams JL, Abelman SM, Fassett EM, Stone CE, Petrini JR, Damus K, Mulinare J. **Health care provider knowledge and practices regarding folic acid, United States, 2002–2003.** Maternal and Child Health Journal. 2006 Sep; 10:67-72.

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No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
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2	Muhammad Sharif	Idea, Data collection, Critical review, Final approval.	
3	Malik Asad Munir	Data collection.	
4	Muhammad Azam	Data collection.	
5	Azwa Janjua	Data collection.	
6	Hafiz Muhammad Arif	Data collection.	