

Prenatal Diagnosis Of Neural Tube Defects Using Antenatal Ultrasound

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INTRODUCTION:

Neural tube defects are the 2nd most common congenital malformations in humans affecting the development of central nervous system. Multifactorial causes have been described of which most common association is maternal deprivation of folic acid. It is divided broadly into 2 types : open and closed. Most of them are life threatening and of them the most compatible with life is closed spina bifida. Early imaging and detection helps in reduced postnatal morbidity and mortality. The objective of this study is to evaluate various neural tube defects using antenatal ultrasound, so that pregnancy can be terminated as soon as possible without any delay.

MATERIALS AND METHODS :

A hospital-based cross-sectional study conducted in department of radio-diagnosis, Government general hospital, Guntur for a period of 2 months I e., from 1st November to 31st December 2022 who came for routine antenatal ultrasounds. All the scans were performed using ESAOTE MylabX6 and X8 Ultrasound machines equipped with a 3.5 to 5 MHz transducer.

Study design:

It is a cross sectional study conducted in department of radiology, government general hospital, Guntur for a period of 2 months i.e., 1st

November to 31st December 2022 who came for routine antenatal ultrasounds. All the scans are performed using ESAOTE my lab X6 ultrasound and X8 Ultrasound machines equipped with a 3.5 to 5 MHz transducer. Results were entered in Microsoft excel 2010 and statistical analysis was done

Objectives: To determine the prevalence and causes of neural tube defects using clinical history and antenatal ultrasound

Inclusion criteria: all the antenatal mothers who visited radiology department for routine antenatal scans

Exclusion criteria: previously diagnosed patients.

RESULTS:

Nearly 2730 scans have been done in the above mentioned period of time and 25 patients have been diagnosed with neural tube defects like anencephaly, exencephaly, encephalocele, myelomeningocele, open Spina bifida

Out of the 25 cases, 16 of them were diagnosed as anencephaly, one was exencephaly, 3 were encephaloceles, 2 were myelomeningocele, 3 were open spina bifida

Out of the 25 cases 13 of them had not used folic acid in their 1st trimester unaware of the pregnancy, 5 had history of consanguineous marriage, one of them had family history; rest of them had no specific history



FIGURE 1 FROG EYE SIGN - ANENCEPHALY



FIGURE 2 ABSENT CALVARIUM WITH LARGE AMOUNTS OF BRAIN TISSUE PROTRUDING - EXENCEPHALY



FIGURE 3 A defect of size 2 cms is noted in the posterior cranial vault with herniation of brain parenchyma – **OCCIPITAL ENCEPHALOCELE**

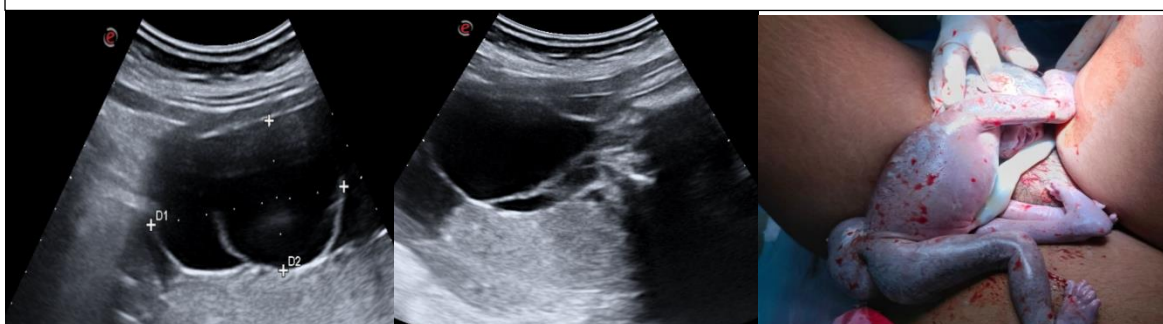


FIGURE 4,5. 9MM DEFECT IS NOTED IN THE LOWER LUMBAR WITH HERNIATION OF MENINGES AND NEURAL ELEMENTS- **LUMBAR MYELOMENINGOCELE**

FIGURE 6: GROSS IMAGE OF THE SAME FETUS SHOWING LUMBAR MYELOMENINGOCELE

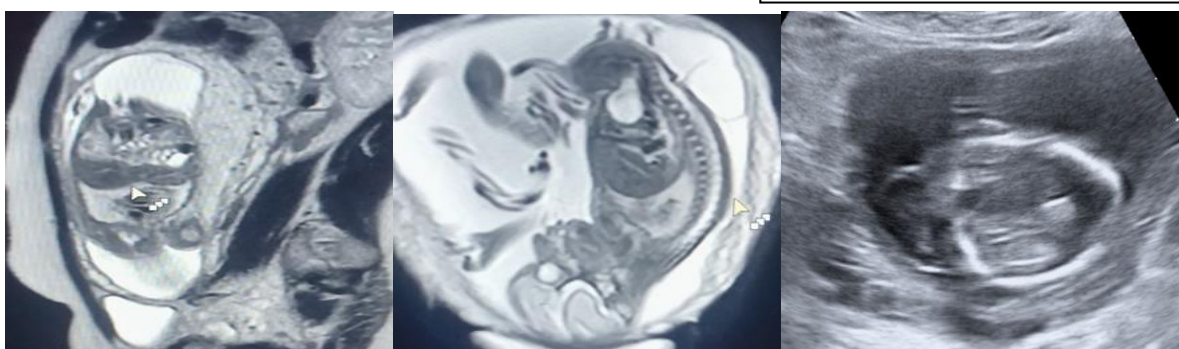


FIGURE 7: T2WMRI IMAGES HERNIATION OF MENINGES FIGURE 8: OCCIPITAL ENCEPHALOCELE – **LUMBAR MYELOMENINGOCELE**



FIGURE: 9 DEFECT NOTED IN UPPER CERVICAL REGION WITH HERNIATION OF MENINGES AND NEURAL ELEMENTS – **CERVICAL MYELOMENINGOCELE**

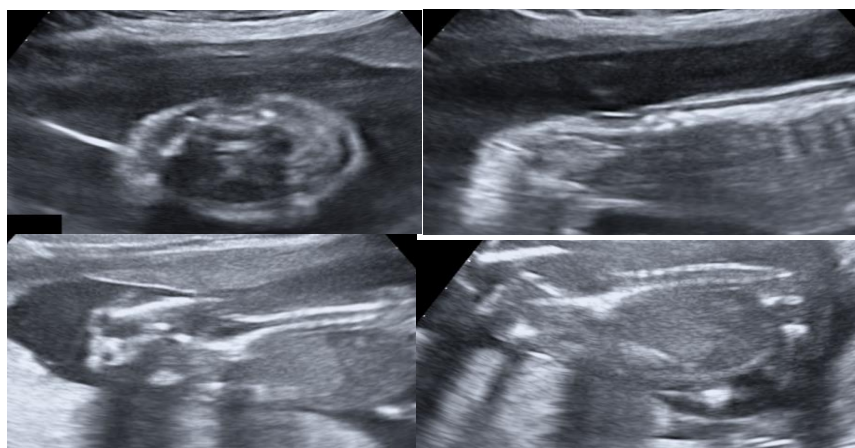


FIGURE 10: BOTH FETUSES SHOW SKIN DEFECT WITH INCOMPLETE FORMATION OF POSTERIOR NEURAL ARCH - OPEN SPINA BIFIDA

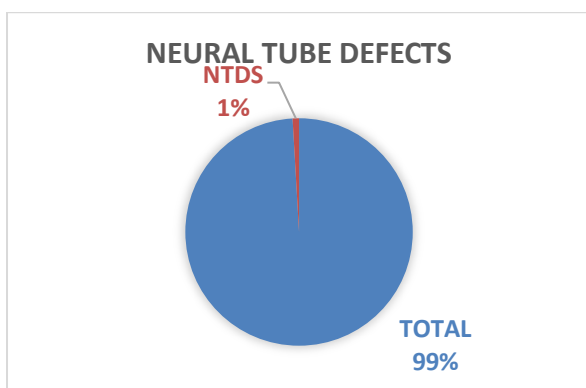


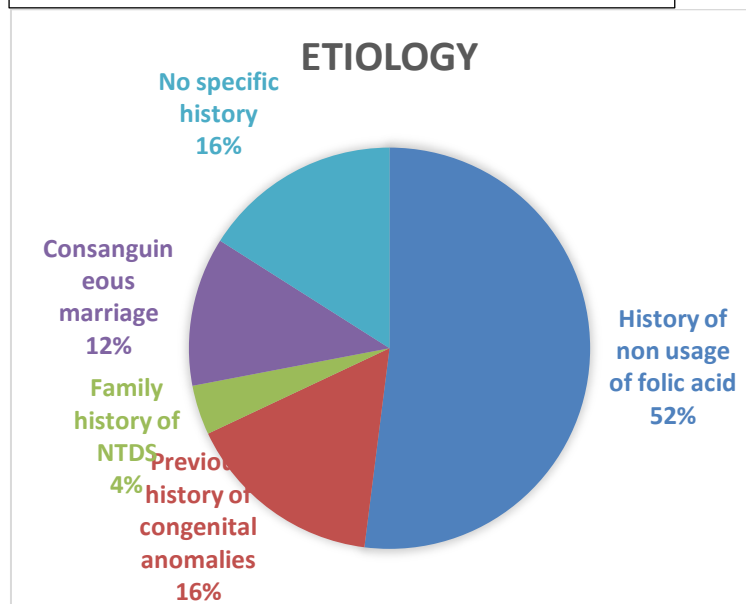
FIGURE 11: SHOWING PREVALENCE OF NEURAL TUBE DEFECTS

CONCLUSION:

Antenatal ultrasound is the 1st investigation is used to evaluate various neural tube defects. Findings which are not conclusive on ultrasound are sent for fetal mri. Prevalence according to my study for the given population is approximately 0.92% Of them **Anencephaly** has been reported to be the most common approximately 64 % next being **encephalocels** and **open Spina bifida** which include 12% next being **myelomeningocele** consisting of upto 8% of cases Rest of them such as **exencephaly** represent remaining 4%. Most of the patients had history of non usage of folic acid **52%**.

Type	No of cases	%
ANENCEPHALY	16	64
EXENCEPHALY	1	4
ENCEPHALOCELE	3	12
MYELOMENINGOCELE	2	8
OPEN SPINA BIFIDA	3	12

TABLE 1: SHOWING PREVALENCE OF DIFFERENT TYPES OF NEURAL TUBE DEFECTS, BELOW: FIGURE 12 SHOWING ETIOLOGICAL FACTORS



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