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FIRST TIME SEIZURE IN PREGNANCY: IS GLIOMA THE CAUSE?

Gynaecology

Nithin M, MBBS, (M.S Junior Resident, Dept of OBGY, JIPMER Puducherry, India

Papa Dasari* MD, FICOG, PDCR, FRM Professor, Dept. of OBGY, JIPMER, Puducherry, India *Corresponding Author

Chitra .T DGO, DNB, FRM, Additional Professor, Dept. of OBGY, JIPMER Puducherry, India.

ABSTRACT

Background: Convulsions during pregnancy is a medical emergency as they can worsen prognosis for the mother and fetus. The causes vary and space occupying lesion of brain presenting for the first time is very rare. **Case:** A 22 year old lady married for one year experience focal convulsions at 5th month of pregnancy and did not undergo evaluation as per the advice of neurologist but taken tablet Levitiracetam as per the prescription. She experienced another episode at 36 wks of pregnancy despite medication. The symptoms were headache, vomiting and focal seizures involving right side of face and right upperlimb. MRI revealed a 17 x 16 x 12 mm heterogenous lesion suggestive of glioma in the left parietal region. She was induced for oligohydramnions at 38 wks and delivered an alive baby which weighed 2.9 kg. Postnatally she did not worsen and was counselled for definitive treatment. **Conclusion:** Pregnant women presenting with convulsions for the first time during pregnancy need neurological evaluation and neuroimaging. Glioma of less than 2 cms can be conservatively managed during pregnancy.

KEYWORDS

INTRODUCTION:

The commonest cause of seizure disorder during pregnancy is Epilepsy. Brain tumours are rarely encountered and the exact incidence is not known though it is cited as 2.6 per 100,000 women. (1) Pregnant women are most often reluctant to undergo any imaging procedures and correct diagnosis may not be arrived at till the end of pregnancy and delivery. The most common brain tumour encountered is glioma and pregnancy may increase the volume of tumour by promoting its growth and result in increased frequency of seizures thus increase the risk of maternal morbidity and mortality.(2) There are no guidelines on optimum management of gliomas during pregnancy and multidisciplinary and multimodality of therapy is described in literature. This case is reported for its rarity and to add to the existing literature regarding pregnancy management and outcome.

CASE:

A 22 year old Mrs P married since one year referred to us at 37+4 weeks of gestation as seizure disorder with space occupying lesion of left brain. She gave history of 2 episodes of focal seizure involving abnormal movement of right angle of mouth and right upper limb associated with numbness of same limb . She gave no history of headache, vomiting, impaired cognitive function, blurred vision preceding the episode. There was no history of loss of consciousness during or after the episode and the seizure appeared to be having both motor and non – motor components. There was no such history in the non-pregnant state. She is not a known epileptic and was not on any drugs for any other chronic diseases. There was no family history of epilepsy or similar history among family members She attained menarche at 13 years of age and her cycles were regular since then and LMP was10.10.2019. She had non-consanguineous marriage and there was no history suggestive of sexually transmitted diseases. She confirmed her pregnancy at 45 days of amenorrhea by urine pregnancy test and was taking folic acid. There was no history of fever, drug intake or excessive vomiting in the first trimester. Her anomaly scan at 18 weeks was normal and gestational age was corresponding to the period of amenorrhea and placenta was anterior and not low lying. She was immunised and was screened for HIV, HbS Ag VDRL which were negative. Screening for GDM was normal. Her blood group was ORh negative and husband group was ORh positive. Her Thyroid function tests were with in normal limits . Her haemoglobin was 12 gm% during the third trimester. She was consuming nutritious diet and there was no history of excessive vomiting.

She had first episode of seizure was at 5 th month of pregnancy during sleep noticed by mother first and later during day time noticed by her and had a consultation at near by medical college. She was seen by Neurologist who adviced to take tablet Levitiracetam 500mg twice daily and undergo neuroimaging. But she did not undergo. She had regular antenatal check ups and was taking haematanics and fetal growth was normal clinically and on USG . She was taking regularly taking Levitiractam.

The second episode was at gestational age of 36+6 weeks (24.6.2020) and was hospitalised in another Medical centre and investigated. Her MRI brain showed 17 x 16 x 12 mm heterogenous lesion on T2, (Fig -1) Isointense on T1, (Fig-2)in left parietal region with surrounding oedema .There was no evidence of diffusion restriction on DWI or ADC map and no blooming on SWI images. Post contrast it appeared as isointense with irregular and tortuous. Magnetic Resonance Spectroscopy (MRS) showed elevated Choline peak with in the lesion. There was no midline shift and the venticles, basal cistern, basal ganglion, thalami cerebellar hemispheres, brain stem were normal. MR angiography and venography was normal . It was diagnosed as glioma based on MRS and Contrast enhancement findings.

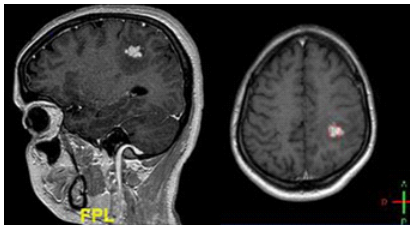

Fig1. T2 weighted image of MRI Brain Heterogenous lesion in left parietal region

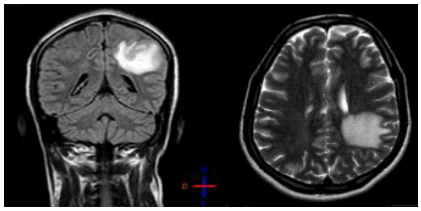

Fig 2. T1 weighted images of MRI Brain Iso-intense lesion in left parietal region

Her EEG revealed mild epileptogenic activity in the left parietal lobe. Her fundus examination was normal. She was treated with inj.Dexamethasone 8mg Q 8th hrly i.v for 48 hours and Tab Levicetrazam 500mg twice daily and was referred here (37+4 wks).

On examination, she was conscious and well oriented. Her weight was 50 kg and Pulse was 82 /min, Blood pressure 110/70 mmHg ,Thyroid and breasts were normal. Cardiovascular and Respiratory systems were normal. Abdominal examination showed relaxed uterus of 36 weeks weeks with cephalic presentation . Liquor felt average and FHR

was 142 /min . USG showed biometry corresponding to 37 wks and EFW of 2.7 kg. Placenta was anterior Grade III and AFI was 6.3. PI of Umbilical artery was 0.8. She was admitted initially in ICU for observation and later shifted to HDU. Neurology consultation opined to continue tab. Livatricetam and Neurosugical consultation opined to review after delivery.

She was given hydration and a repeat USG evaluation showed AFI to be 3.6 cm after one week (38+4 wks). Her X Ray chest P/A was normal. WBC count, ESR were with in normal limits and mantoux test was negtaive .She was induced for oligo hydramnios and delivered an alive male baby of 2.9kg by vaccum extraction for fetal distress. As baby blood group was positive she was administered anti-D immunoglobulin. During labour she was managed with hydration, and inj. Levetiracetam 500 mg Q 8th hourly.

She was observed for 5 days after delivery and there was no neurological symptoms but head ache was present. Neurosurgical consultation again opined that the tumour was small and does not warrant surgery at present. She and her family were counselled regarding the nature of tumour, necessity of follow up evaluation by Neurosurgeons and recurrence of seizures and the need to adhere to medication and was discharged home.

DISCUSSION:

The clinical features of gliomas include seizures, headache and vomiting especially hyperemesis but the most common symptom at the time of diagnosis during pregnancy was reported to be a seizure. The median gestational age was 13 weeks and pathological diagnosis was possible at 17 weeks in a retrospective study undertaken among 34 women with gliomas (3). A multicentre study reported majority (54%) diagnosed during third trimester and 18% in first trimester. Seizures were present in 68% and neurological deficit in 14% (4). This lady had headache and seizures and there was no neurological deficit.

The radiological evaluation is of paramount importance in the diagnosis and management of gliomas . MRI is a better modality than CT scan and is the choice of investigation so as to avoid radiation exposure to the fetus. Glioma appears as hyperintense on T2 W images and hypo or isointense on T1 W images . More than 98 % appeared hyperintense on MRI T2-weighted FLAIR, and the pattern of restricted water diffusion was present on MRI -DWI . The location varied, 42 % in frontal lobe , 31% in temporal and the rest were located in parietal, occipital lobes , posterior fossa and thalamic region.(5). This lady had the lesion in parietal region. Thirteen percent of gliomas were reported to occur in parietal region (6).

Whenever a pregnant woman presents with seizures a complete neurological evaluation is to be undertaken and cardiac, metabolic , intracranial and neuropsychiatric disorders to be considered if they can not be attributed to Epilepsy and Eclampsia (7) . New onset seizure during pregnancy occured in 2.3 % and the mean age was 22.7 ±3 years 18.2 % occuring in first trimester, 45.2% occurring in 2nd trimester and 36.4% in third trimester. In this study, the neuroimaging revealed focal cortical dysplasia in two women and hippocampal sclerosis in one woman (8) In the present lady first seizure occurred during second trimester and recurred in 3 rd trimester and on MRI the features were suggestive of Glioma.

The affects of pregnancy on the progression of gliomas is relatively sparse and decision making is difficult regarding management. A study of 9 pregnant women with gliomas by Hanneke Zwinkles reported uncomplicated course in 5, two women needed therapeutic abortion in first trimester due to tumour progression and necessity of surgical resection (9). The prognosis of patients with gliomas depend on age, tumour grade pre-operative KPS (Karnofsky Performane Status) and Chemotherapy and Radiotherapy (10). The prognosis of 6 women with glioma who became pregnant during therapy was reported by Deborah T Blumenthal. Five of them underwent tumour resection prior to pregnancy and were on chemotherapy when became pregnant and the mean age was 28 years. There were no affects on fetus.. But tumour recurrence occurred at a median time of 13 months after delivery in 5 women and all 5 died within 30 months after delivery due to tumour progression .(11) A large series report that gliomas of grade II and III progress during pregnancy and within 8 weeks of delivery (3) .

Hormonal factors and increased vascular endothelial growth factor (VEGF) and Placental growth factor are angiogenic and promote tumour growth.(12). Neurological deterioration is to be thought of when there is persistent severe headache with hyperemesis and this requires tumour resection during pregnancy. Two cases were described byJie Wu and colleges in whom Caesarean section followed by Craniotomy and tumour resection was undertaken at 34 wks of pregnancy and postnatal Radiotherapy and chemotherapy(13). If there are no signs of increased intracranial pressure vaginal delivery is safe and induction after fetal lung maturation and before neurosurgical intervention is advisable (14,15), Signs of neurological deficit and deterioration and increase in intracranial pressure are indications for Caesarean delivery. A case of neurological deterioration due to intratumoral bleed successfully managed by emergency Caesarean delivery and craniotomy is reported by Andrea Bianco and collegues (16)

A report of multicentre series found women diagnosed first time with pregnancy were in second and third trimester and 68% present with seizures and clinical deterioration resolved after delivery in 21.4%. In women with known gliomas an increase in growth quantified by imaging occurred in 87% and clinical deterioration occurred in 38%. They concluded that high grade gliomas and those negative for immunoexpression of alpha-internexin and positive for p53 progress during pregnancy. Definitve treatment was undertaken in 70% during the postnatal period (4). This lady was counselled at the time of discharge regarding the necessity of repeat imaging and to follow up with neurosurgeons and undergo definitive therapy.

The standard therapy for glioma includes of maximal safe tumour resection followed by concurrent chemoradiation with tolazolamide. Functional MRI and intraoperative MRI and tumour navigation with latest techniques may achieve complete tumour resection sparing normal neuronal tissue.(17) A systematic review which included 27 studies concluded that pregnancy can provoke clinical deterioration tumour growth as evident on MRI and there is no benefit of Caesarean section over vaginal delivery and in lowgrade gliomas pregnancy has no known effect on survival(18).

CONCLUSION:

New onset seizure disorder during pregnancy warrants neuroimaging and gliomas can be diagnosed based on MRI features. Management during pregnancy includes anticonvulsant therapy and timing and mode of delivery depends on gestational age and clinical deterioration. In stable women vaginal delivery is the mode.

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