

Case Report

Migration of intraventricular sol within the lateral ventricles – the unusual mouse within the ventricle

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ABSTRACT

Intraventricular tumor is very rare presentation in brain. In our article we present very rarely seen intraventricular tumor in child which migrate during the changing the position of head. So we call it “mouse in the brain”. This case is challenging for the neurosurgeon to operate without any advance infrastructure like intra-operative ultra sound machine or portable computed tomography (CT) scan.

Keywords: Intraventricular tumor, Lateral ventricles, Portable computed tomography

INTRODUCTION

Intraventricular tumors less than 1% of intracranial tumors.^{1,2} Migration is a rare phenomenon seen among these tumours.³⁻⁶ They are broadly classified as benign and malignant located within the ventricle or arising from the neural structures forming the ventricular system.⁷ They can also be classified as intra- and extraaxial lesions. Another classification is based on the origin i.e. primary that arises within the ventricle and secondary arising from the periventricular structure with major portion within the ventricle.⁸ Most of the ventricular tumours are completely benign.⁷ Intraventricular migration of tumour is a rare entity.³⁻⁶ There are factors that can precipitate it. In our case we want to show a peculiar behaviour of an intraventricular lesion. We would like to coin the term mouse within the ventricle.

CASE REPORT

History as given by mother is given below.

An 8-month-old child presented to our department with c/o increased head size since 2 weeks associated with excessive crying. There was also history of loss of head

holding which was present till the 7th month of age and delayed milestones for age. On examination active cry present, recognizes mother, takes oral feeds well. Anterior fontanel was tensed. Sunset sign was absent. No dilated veins seen on scalp. Fundoscopy showed no papilloedema. The child had undergone magnetic resonance imaging (MRI) outside which showed a lobulated mass measuring 4.1×2.7×3.7 cm involving choroid plexus of the left lateral ventricle in the occipital horn isointense to cortex with gross communicating hydrocephalus suggestive of choroid plexus papilloma.

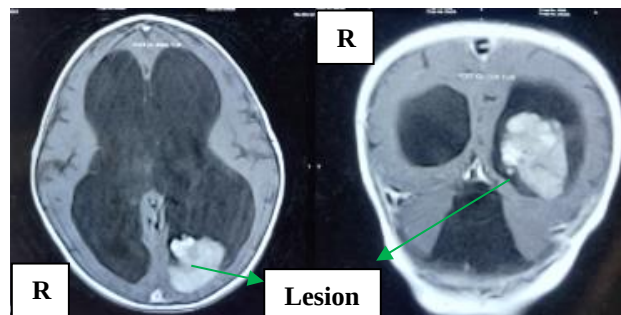


Figure 1: In normal CT brain plain showing tumor in the occipital horn of lateral ventricle.

The child was worked up preoperatively and anaesthetic fitness was taken. With parents being explained the plan of surgery, associated risks and complications and prognosis the child was taken up for surgery.

A left parieto-occipital craniotomy was carried out with child placed in right 3/4th lateral position. Through a transsulcal approach the ventricle was approached. Ventricles entered at the atrium of the left lateral ventricle. Tumour could not be visualized. Grossly abnormal area of subependymal visualised and sent for HPE. Abnormal tumour like tissue was excised. Postoperatively child was neurologically preserved with no new deficit. Histopathological analysis suggested glioma of intermediate grade. Postoperatively scan was done as a part of our routine protocol was done showed tumour size same as preoperative but now seen in the right lateral ventricle (occipital horn) with no tumour in the left lateral ventricle as seen on preoperative MRI.

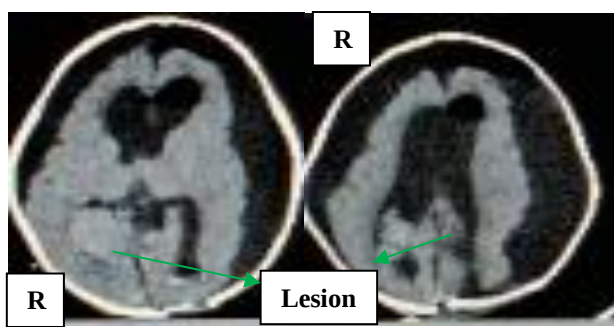


Figure 2: Intra operative CT showing migration of the tumor during changing the position.

The relatives were counselled on POD 1 regarding possible behaviour of the tumour and the change in findings between the preoperative MRI and post op CT after discussion and confirmation with the radiology team. It was suspected of being a migrating intraventricular tumour.

A plan to get a repeat dynamic CT brain in prone and supine position was planned and carried out to get a better understanding of the tumour behaviour.

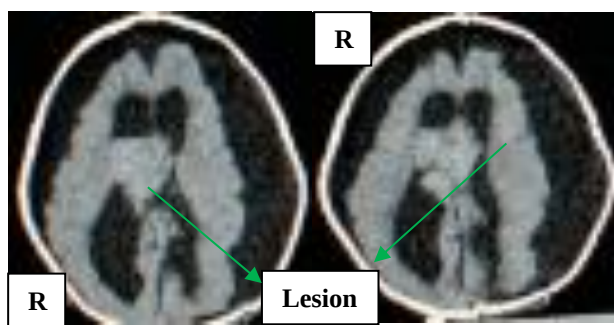


Figure 3: In (supine) position of the tumor migrate from occipital horn to frontal horn.

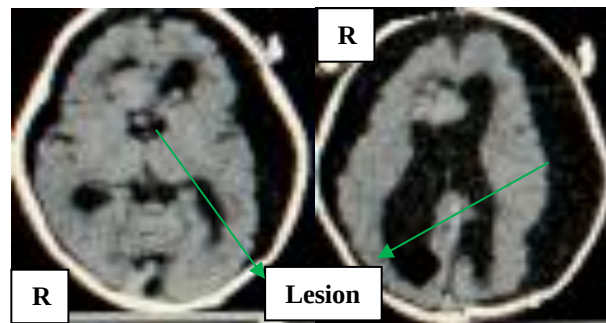


Figure 4: In prone position tumor localize in the frontal horn.

The child's parents were counselled again on the findings of the dynamic brain CT findings and need to carry out a second look surgery to remove the tumour. The second look surgery was carried out with aid of intraoperative CT neuronavigation and intraoperative ultrasound and microendoscope. Patient underwent a right parietooccipital craniotomy. Intraoperatively, no tumour was seen. Subependymal tissue sent for biopsy showed neoplastic tissue. A subdural shunt was placed.



Figure 5: Intraoperative USG showing tumor with peduncle arising from the left lateral ventricle occipital horn.

Post op CT showed tumour now seen in the left lateral ventricle and no tumour in the right lateral ventricle. They were not willing for any further intervention and went LAMA.

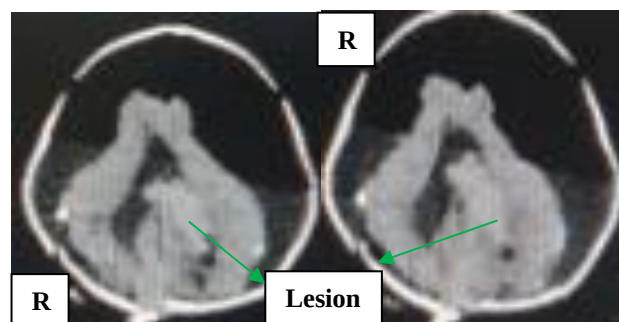


Figure 6: Post op CT showed tumour now seen in the left lateral ventricle and no tumour in the right lateral ventricle.

DISCUSSION

Intraventricular tumours account for less than 1% of all intracranial tumours.^{1,2} Most of them are benign. Lapras et al and Zuccaro et al showed that the incidence of lateral ventricle tumors in paediatric population is higher than adult population and it is presented as 5% in Zuccaro's series or 9.1% in Lapras's series.^{7,9-11}

Malignant variety is again a rarity. SEGA within the lateral ventricle especially of the fibrillary variety is a frequent pathological type seen within the lateral ventricle in close vicinity to the foramen of monro. They are categorised under WHO grade 1. The malignant glioma variety is comparatively rare. It correlates with the patient's age.^{7,12} They frequently arise from corpus callosum, septum pellucidum or thalamus and show predilection to the anterior horn. Grade 3 tumours show increased incidence in males with 1.1-1.6: 1. They are diagnosed around 45-51 yrs of age. GBM which is a grade 4 tumour also shows similar epidemiopathological behaviour and is more aggressive.¹²

The tumours within the ventricles commonly present with myriad of symptoms owing to their deep location and its proximity to important neural and vascular structures. It can be grossly classified into two viz., those caused due to alteration in CSF physiology (obstruction and overproduction) and those caused by compressive or destructive effects of the tumour on adjacent neuronal structures.^{13,14} Examination and imaging show features that explain the symptoms.

CT and MRI are common sought after modalities that provide a clue regarding the behaviour of the tumour before a final histopathological diagnosis can be achieved after surgery. Dynamic imaging, though commonly done in spine; to look for instability is not a common practice in intracranial tumours.

Migration of intracranial tumours is a rarity as seen in literature.³ Migration of intracranial neurocysticercosis though rare is seen and is responsible for causation of what is called Brun's syndrome which is presentation of headache which is accentuated with the movement of the head due to transient rise in ICP due to occlusion of CSF outflow by the cysticerci associated with vomiting and vertigo.¹⁵⁻¹⁸

Migration of choroid plexus papilloma has been reported twice so far in literature.¹⁹ They are seen to move by virtue of its peduncle. This has though categorised under migration was thought not to be a true migration. But the migration of the neurocysticerci was considered a true form of migration. 5 such cases of neurocysticercosis migration were also seen by Dr. Atul Goel. Mr. Thomas and Krishnamurthy have recorded the migration of intraventricular neurocysticerci during MRI.^{3,19}

The choroid plexus papillomas which are relatively common intraventricular tumours mostly being pedunculated are seen floating in the sea of CSF within the ventricle. Thus it has been labelled not to be a surprising occurrence of such tumours. One of the cases showed presence of VP shunt which was rendered as the cause the alteration in CSF dynamics.

It has been thought that introduction of any factor causing disequilibrium in cerebrospinal fluid circulation and pressure can potentially precipitate transventricular migration of pedunculated intraventricular lesions. The identification of such factors, prior to excision of intraventricular pedunculated tumors, is imperative to avoid intraoperative mismanagement.

The peculiarity in our case compared to that of those that have been reported to far are, the lesion was a glioma of intermediate grade with a pedunculated appearance which showed migration of lesion within the ventricles. The incidence with respect to age and the pathology was another peculiarity. We also did not have any aforementioned factors.

CONCLUSION

The rarity of such presentation of intraventricular tumour with migration with epidemiopathological disparity and lack of any known identifiable precipitating factors as proposed by previously cited literature prompted us to give a mention to such an occurrence. We would also like to point out that it is the first mention of an intermediate grade glioma or for that matter any glioma showing such behaviour in literature. We would like to coin the term 'unusual mouse within the ventricle'. Though such occurrences are rare it would be wise to consider performing a dynamic CT brain with change in decubitus in intraventricular lesions and a thorough preoperative work up with utilization of intraoperative navigation and other supportive adjuncts like intraoperative USG and neuromicroendoscope which aids in better management and avoiding catastrophic errors while performing surgeries for intraventricular tumours.

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Ethical approval: Not required

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