Case Report

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Pathology Section

Choroid Plexus Papilloma: A Case Report with Special Emphasis on Diagnosis and Pathology

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ABSTRACT

Choroid plexus papilloma is a rare, benign neuroepithelial tumour arising from the choroid plexus of the brain. It is reported to be more common in the lateral ventricles among paediatric populations and in the fourth ventricle in adults. These tumours are known to cause hydrocephalus, resulting in increased intracranial pressure, which in turn leads to symptoms such as headaches, nausea, and vomiting. Pathologically, choroid plexus papilloma is noted as well-circumscribed, cauliflower-like masses macroscopically. The tissues of the choroid plexus papilloma exhibit a papillary, finger-like architecture comprised of singular cuboidal-columnar epithelial cells with very low mitotic activity and mild nuclear pleomorphism. This is case of a 50-year-old male, presented with headache and was diagnosed with choroid plexus papilloma. The patient was successfully managed by surgical excision. The novelty of imaging in choroid plexus papilloma lies in the multimodal approach, where Magnetic Resonance Imaging (MRI) offers superior soft-tissue detail, Computed Tomography (CT) detects calcifications, and ultrasound enables early diagnosis in neonates.

Keywords: Brain tumours, Choroid plexus tumour, Geriatric, Headache, Papilloma

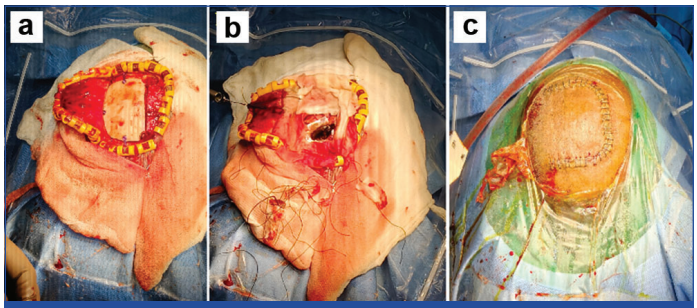
CASE REPORT

A 50-year-old male patient presented to the outpatient department of Acharya Vinoba Bhave Rural Hospital (AVBRH) with major complaints of headaches persisting for the last month and a history of giddiness. There was no significant medical or family history. Upon admission, the patient was conscious, oriented, and had a Glasgow Coma Scale (GCS) score of E4V5M6. Bilateral pupils were 3 mm and reactive to light. Blood pressure was recorded at 130/90 mmHg, and the pulse rate was 80 bpm. After a thorough clinical assessment, the patient was admitted to the Neurosurgery Intensive Care Unit (ICU). All routine blood investigations were within normal limits. Radiological assessments, including chest X-ray and ECG, were also normal, with no abnormalities detected.

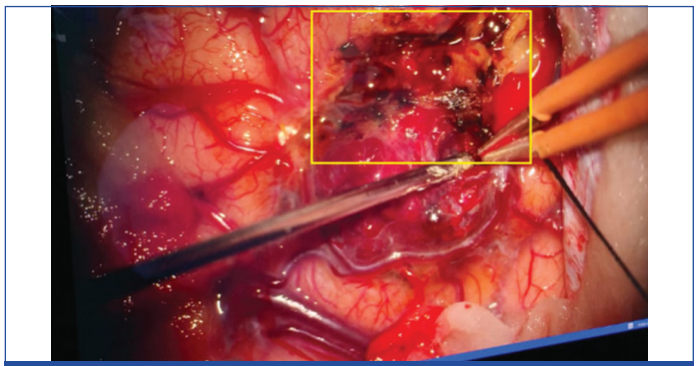
A brain angiogram/Digital Subtraction Angiography (DSA) suggested a single abnormal vessel in the right parafalcine region. A provisional diagnosis of cavernoma versus choroid plexus papilloma was established, and the patient was advised to undergo surgical excision. During surgery, the patient was placed in a prone position under standard protocols. A U-shaped incision was made over the occipital region, and the incision was deepened to facilitate craniotomy and cortex exposure. A cortical dissection was performed, leading to the excision of the choroid plexus papilloma from the fourth ventricle [Table/Fig-1,2]. The mass appeared as a reddish, lobulated, cauliflower-like vascular structure within the ventricle. The surface was irregular yet well-circumscribed, with prominent vascularity giving it a bright red appearance.

Haemostasis was achieved, and the layers were closed as per the standard guidelines. The procedure was completed successfully. The excised sample was sent for histopathological assessment, which revealed a papillary (finger-like) architecture resembling normal choroid plexus, with a single layer of cuboidal to columnar monomorphic cells. There was a loss of cobblestone surface, and mild nuclear pleomorphism was observed, lacking necrosis. These histopathological features confirmed the diagnosis of choroid plexus papilloma [Table/Fig-3-5].

The complaints were resolved with no postprocedural complications, and the patient was discharged after 10 postoperative days. The Glasgow Coma Scale (GCS) on discharge was noted as E4V5M6, with bilateral pupils measuring 3 mm, reactive to light. The blood pressure was 120/80 mmHg, and the pulse rate was 76 beats per minute.



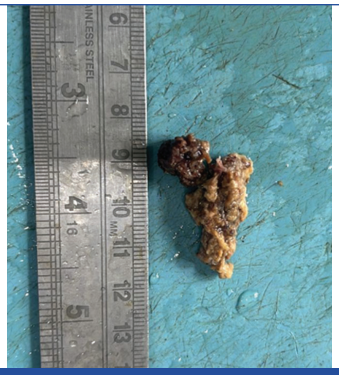
[Table/Fig-1]: a) Intraoperative image; b) Showing the burr hole done to operate and remove the papilloma; c) Closure post successful removal of the papilloma.



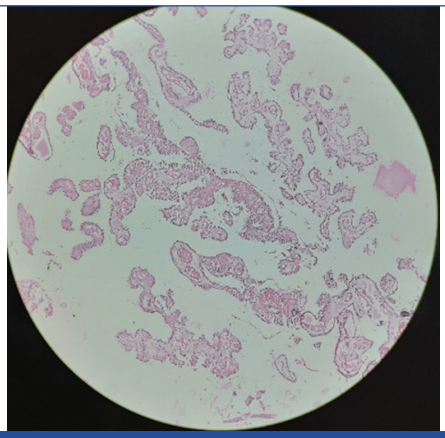
[Table/Fig-2]: Intraoperative picture of the tumour. The red in the centre is the papilloma.

DISCUSSION

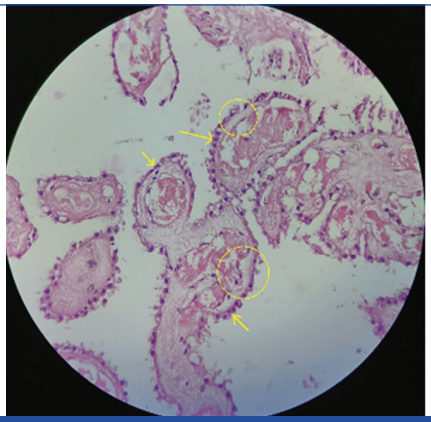
Choroid plexus tumours are rare intracranial tumours originating from choroid plexus epithelium. These tumours comprise less than 1% of overall intracranial neoplasms, with a reported incidence of 2 to 6% in the paediatric population, most commonly diagnosed in children under 2 years of age [1-3]. These are slow-growing tumours, primarily noted in the lateral, third, and fourth ventricles, presenting with varied clinical features. The majority arise from the lateral ventricle (43%), followed by the fourth (39%) and third ventricles (10%). Only 9% of these neoplasms originate from the



[Table/Fig-3]: Excised sample.
(The sample was lobulated, friable, cauliflower-like tissue mass measuring approximately 4.0×2.0×1.0 cm. The external surface appeared irregular, with areas showing a reddish-brown vascular component and yellowish-tan soft tissue. The cut surface was heterogeneous, displaying tan-pink, soft, and friable areas with focal haemorrhagic zones, which was consistent with a vascular intraventricular neoplasm, suggestive of Choroid Plexus Papilloma)



[Table/Fig-4]: Showing papillary (finger-like) architecture, resembling normal choroidplexus with single layer of cuboidal to columnar monomorphic cells (H&E, 10x).



[Table/Fig-5]: Yellow arrows showing papillary structures having fibrovascular core and circles showing single cuboidal layer (H&E, 40x).

cerebellopontine angle [2,4]. Headaches are the most commonly reported symptom, accompanied by clinical presentations such as nausea, vomiting, visual complications, and seizures [3,5].

Differential diagnoses under consideration included metastatic adenocarcinoma with papillary structures, ependymoma, central neurocytoma, germ cell tumour, medulloblastoma, embryonal tumour with multilayered rosettes, atypical teratoid/rhabdoid tumour, poorly differentiated embryonal tumour, and cribriform neuroepithelial tumour. These were ruled out after histopathological analysis, which showed the classic features of choroid plexus papilloma. The tumour was excised from the fourth ventricle, which accounts for approximately 39% of cases arising from this location [4]. Low-grade choroid plexus tumours can be treated by surgical excision; however, these tumours are associated with a high rate of recurrence, and adjuvant therapy may be advised post-excision [3,6].

Histopathological analysis and immunohistochemical staining can assist in differentiating choroid plexus papillomas from other intracranial tumours based on various marker indices and cytological features, such as mitotic indices [5,7]. Immunohistochemistry markers, including cytokeratin, vimentin, and S-100, are positively observed in choroid plexus papilloma, whereas p53 expression is absent in this tumour, contrasting with positive p53 expression in choroid plexus carcinoma [1,7]. Mitotic activity has also been linked to recurrences, necessitating close follow-up in cases of choroid plexus papilloma [7]. Misdiagnosis can present a diagnostic challenge and may lead to unnecessary interventions.

CONCLUSION(S)

Choroid plexus papilloma is a rare tumour arising from the choroid plexus region of the brain's ventricular system. Accurate and timely diagnosis can prevent non essential interventions. Radiological assessments can facilitate early diagnosis, which can be confirmed by histopathology. This case report underscores the importance of considering choroid plexus papilloma as a differential diagnosis in the elderly population.

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