Concomitant Low Grade Glioma And Colloid Cyst: Two Separate Entities Within The 3rd Ventricle

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Citation

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Abstract

Concomitant central nervous system tumours are a rare but important diagnosis to consider in the workup of multiple lesions. We present the case of a 31-year-old male who presented to the emergency department (ED) with headaches and emesis. Imaging demonstrated what appeared to be a bi-lobed lesion in the suprasellar cistern, with extension into the Foramen of Monro causing subacute hydrocephalus. He underwent surgical resection by the Neurosurgical team with intraoperative findings suggestive of two separate lesions in close proximity to each other. Histopathological studies confirmed the presence of a colloid cyst and a low grade glioma. The small residual low grade glioma is being monitored with regular surveillance imaging and clinical review.

CASE REPORT

A 31 year old marine engineer presented to our local tertiary Emergency Department with a severe atraumatic headache that woke him up from sleep in the setting of a subacute history of headache. This episode was associated with new vomiting and features consistent with raised intracranial pressure. There were no other focal neurological symptoms such as visual change, limb weakness or paraesthesiae. The patient had no history of prior radiation, neurofibromatosis or family history of diseases associated with germline mutations. He did not take regular medications.

The patient's past medical history was, however, significant for an incidental finding of an optic chiasmal lesion diagnosed at 14 years of age and monitored by a private neurosurgeon with regular magnetic resonance imaging (MRI) scans. After a few years of stability, the patient became less engaged in surveillance due to the perceived benign nature of this lesion.

Examination did not reveal any focal neurology or cardiorespiratory changes, specifically with the absence of papilloedema on fundoscopy and no cranial nerve abnormalities. Based on the above findings, especially with the history of positive findings on MRI previously, CT and MR imaging was done as his presentation was clinically concerning for newly obstructed hydrocephalus.

MRI revealed a 29x14x15mm (AP x TS x craniocaudal) bilobular lesion in the suprasellar cistern, compressing the pituitary gland inferiorly and extending to the level of the foramina of Monro, with punctate calcific foci and a nodular T2 hypointense non-enhancing 7mm component in the posterior lobule (see images attached).

Figure 1

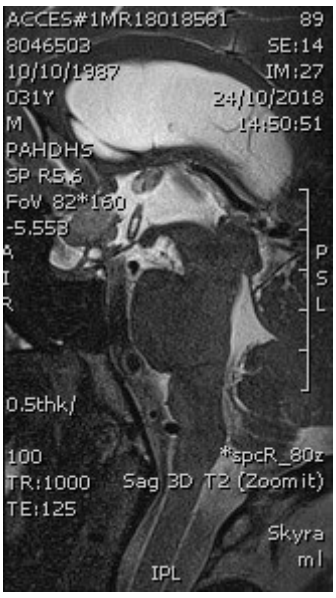
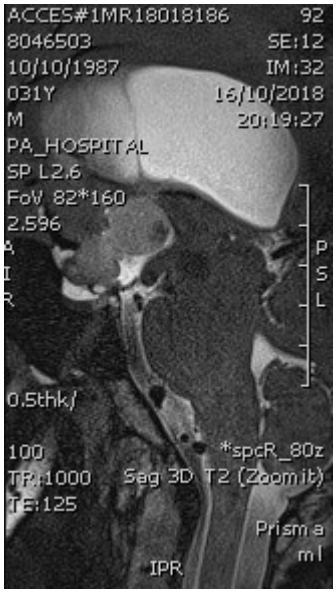


Figure 2



Supratentorial ventriculomegaly was depicted with early transependymal cerebrospinal fluid spread and sulcal effacement, consistent with acute hydrocephalus. No CSF flow was seen along the foramina of Monro. Compression of the brainstem was noted, in the absence of uncal or tonsillar herniation.

The patient underwent a stealth guided right neuroendoscopy (see images and video). This revealed a large translucent cyst obstructing the foramen of Monro. The cyst wall was coagulated releasing colloid-like material and the cyst wall was removed with gentle retraction. This enabled the floor of the third ventricle to be visualised and an abnormal bulge in the suprachiasmatic recess was noted. A biopsy was taken and sent to the laboratory. An external ventricular drain was placed prophylactically and remained clamped for 48 hours before removal.

DISCUSSION

A PRISMA literature search was conducted using the following MESH terms: “Colloid cyst AND (astrocytoma OR glioma)” which revealed very few cases that discuss simultaneous occurrence of two primary intraventricular lesions, in the absence of predisposing factors such as neurofibromatosis or prior radiation. Colloid cysts are rare in the context of intracranial tumours (0.5-2%) and account for 15-20% of intraventricular lesions1. Further, the synchronous occurrence of a colloid cyst and other intracranial tumours, including hemispheric gliomas2, and glioblastoma3 is described in only a few case reports. One report demonstrated a concomitant colloid cyst and low grade astrocytoma, described in a 16 year old boy4. Our paper is the first to describe this co-occurrence in a young adult male.

The concomitance of CNS tumours is well described, but more often in the context of inherited conditions due to germline mutations affecting genes such as tumour protein 53 (TP53)8, adenomatous polyposis coli (APC) gene9 and neurofibromin 1 (NF1)10 or acquired risk factors such as radiation therapy. Further, the occurrence of more than one tumour within the ventricular system is exceedingly rare. Several hypotheses have been proffered to account for the occurrence of two or more central nervous system lesions with different histopathological findings. These include the ‘local cross-talk theory’ with tumour cells influencing the local microenvironment with a role for stromal cells influencing tumour cell proliferation and migration in vitro and local cytokines such as tissue growth factor beta-1 (TGF1) 3,11. Suzuki et al., described the concomitance of glioblastoma and meningioma in 201012. They proposed that the glioma may develop following transformation of reactive glial cells surrounding a meningioma with local autocrine factors such as platelet-derived growth factor (PDGF) at play. Thirdly, tumour concomitance could be a spontaneous somatic event. The molecular basis for development of either the low grade glioma or colloid cyst in our case is unclear, but given their proximity to each other, the local microenvironment and autocrine factors may be at play.

There is no defined treatment strategy for more than one intraventricular lesion and the role of the interdisciplinary team is key to comprehensive management. Surgical exploration was critical to identifying the dual pathology found, although MRI was suggestive with the finding of a nodular T2 hypodensity in the ‘posterior lobe’ of the lesion; in keeping with frequently found radiographic features of a colloid cyst. It is likely that growth of the colloid cyst was the culprit in causing the acute on chronic obstructive hydrocephalus and this presentation. Definitive management of the colloid cyst was achieved with resection of the cyst wall and its contents. Given the benign nature of the secondary lesion (low grade glioma – WHO I-II), it was the opinion of the Multidisciplinary Team that further local or systemic disease control was not required and that surveillance was the most appropriate approach for a patient of this demographic. Overall, histopathology in the context of radiological and clinical features is key in the workup and management of multiple intracranial lesions.

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