A 65-year-old female patient presented to the Emergency Department with instability, vertigo and loss of muscle tone resulting in an episode of fall and sudden urinary incontinence. Past medical history was unremarkable.

Imaging Findings:

The patient was referred for an emergent brain CT which revealed the presence of hydrocephalus. Note was also made of a smooth rounded hyperdense mass situated in the anterior part of the third ventricle. The mass measured 1.3x1.3cm and showed no enhancement after the intravenous administration of contrast medium (Fig. 1). The patient subsequently underwent an MRI examination, where the mass appeared with high-signal intensity on T1-weighted images and low signal intensity centrally on T2-weighted and FLAIR images; findings possibly attributable to haemorrhagic material. After the intravenous administration of contrast medium, the mass showed only mild rim enhancement (Fig. 2). The mass was surgically removed and a catheter was placed for treatment of hydrocephalus. Post-operative CT confirmed successful removal of the mass (Fig. 3).

Discussion:

Colloid cysts are congenital intracranial benign lesions accounting for less than 1% of all intracranial neoplasms that originate in the primitive neuroepithelium, which forms the roof plate of the tela choroidea. They have a thick capsule, are lined by cuboidal and columnar epithelium and contain gelatinous viscous material [1]. The vast majority of them is located in the third ventricle, although in some cases they may be localised at the septum pellucidum, the lateral ventricle, the fourth ventricle or outside the ventricles [2]. When symptomatic, they present in middle age with symptoms caused by increased intracranial pressure such as paroxysmal headache associated with changing position, nausea, vomiting, visual disturbance, confusion and cognitive decline and disturbance of balance or gait [3]. What causes the occasionally found haemorrhage is still unknown. Arterial hypertension and coagulation...
Disturbances are possible risk factors [4]. Once haemorrhage happens, the cyst volume suddenly increases and obstructive hydrocephalus occurs. Their density on unenhanced CT images depends on their content. They usually appear as hyperdense masses, but in 1/3 of cases they are iso- or hypodense. On T1-weighted imaging they are displayed in 2/3 of cases as hyperintense and in the rest as isointense masses, depending on their content material (cholesterol, protein, calcium, haemosiderin and water content of the cyst). On T2-weighted images most of them appear isointense, though in 25% of cases they show mixed high-and low-signal intensity (black-hole effect). Rim enhancement after contrast administration is rare while fluid-fluid levels are not uncommon [5]. Usually the diagnosis of colloid cyst with imaging is rather straightforward, but in some cases differential diagnosis has to be done from other entities like CSF flow artifact, neurocysticercosis, neoplasms including glioblastoma, subependymoma, craniopharyngioma, meningioma, metastasis and choroid plexus masses. Basilar tip aneurysm can rarely cause obstructive hydrocephalus. The aneurysm's calcified shell, the blood clot and the organised mural thrombus within the aneurysm result in the increased density on CT [5]. Furthermore, depending on the age of the patient differential diagnosis of a colloid cyst may further include germinoma, pilocytic astrocytoma, craniopharyngioma and Langerhans cell histiocytosis in paediatric patients. When it comes to adult patients, the presence of lymphoma, pituitary macroadenoma, craniopharyngioma, metastases, granulomatous disease (sarcoidosis) and sellar meningioma should be excluded [6]. Surgical approach for colloid cysts can be done with microsurgery or endoscopic cyst excision [2].

Differential Diagnosis List: Surgically and histologically confirmed haemorrhagic colloid cyst causing non-communicating hydrocephalus, Colloid cyst, Subependymal giant cell tumour, Central neurocytoma, Choroid plexus tumour, Subependymoma, Ependymoma, Metastasis, Basilar tip aneurysm

Final Diagnosis: Surgically and histologically confirmed haemorrhagic colloid cyst causing non-communicating hydrocephalus

References:
Description: Contrast-enhanced axial CT image showing dilatation of the lateral ventricles but normal sulci; findings in keeping with non-communicating hydrocephalus. Origin: Department of Radiology, AHEPA University Hospital.
**Description:** Contrast-enhanced axial CT image showing a hyperdense smooth round mass located at the region of the foramen of Monro, at the anterior part of the third ventricle. **Origin:** Department of Radiology, AHEPA University Hospital
Description: Contrast-enhanced axial CT image showing a hyperdense smooth round mass located at the region of the foramen of Monro, at the anterior part of the third ventricle. Origin: Department of Radiology, AHEPA University Hospital
Description: Axial FLAIR image showing the mass with central low signal-intensity and peripheral hyperintensity. There is dilatation of the occipital horns of the lateral ventricles with transependymal flow of cerebrospinal fluid. Origin: Department of Radiology, AHEPA University Hospital
Description: Coronal T2-weighted image showing the hydrocephalus caused by the mass which shows low-signal intensity and is situated at the foramen of Monro. Origin: Department of Radiology, AHEPA University Hospital
Description: Axial T1-weighted image prior to the administration of contrast agent showing the mass with high signal intensity. Origin: Department of Radiology, AHEPA University Hospital
Description: Axial T1-weighted image after the administration of contrast material shows no significant enhancement of the mass. Origin: Department of Radiology, AHEPA University Hospital
Description: Coronal T1-weighted image after the administration of contrast material shows only mild peripheral enhancement of the mass. Origin: Department of Radiology, AHEPA University Hospital
Description: Axial CT image showing the presence of catheter within the ventricular system along with air at the frontal horn of the right lateral ventricle and the subdural space frontally. Origin: Department of Radiology, AHEPA University Hospital
Description: Axial CT image showing the presence of catheter along with air at the subdural space frontally. Origin: Department of Radiology, AHEPA University Hospital
Description: Axial CT image showing the removal of the mass. Origin: Department of Radiology, AHEPA University Hospital