



## Collision Tumours, Meningioma and Colloid Cyst: A Rare Entity

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### Abstract

Presence of collision tumours without any evidence of phacomatoses, genetic syndromes or any history of previous radiation to the brain is extremely rare. We report a case with two diverse primaries, a tentorial meningioma and a colloid cyst found in the same patient occurring in absence of these conditions. To the best of our knowledge, a single case of a colloid cyst and meningioma found together in the same patient has been reported till date. In such cases the surgical dilemma as to which tumor to operate first has been addressed in our case report.

### Case Presentation

A 48yr old female an operated case of abdominal hysterectomy in view of fibroid uterus with haemorrhagic ovarian cyst two weeks ago was admitted with chief complaints of 2 episodes of GTCS 2 weeks ago followed by loss of consciousness and sudden onset diminution of vision in both the eyes. The neurological examination was normal and the patient was able to count fingers close to the face. Radiological investigations revealed a colloid cyst in the region of foramen of Monroe and a meningioma measuring 3 cm x 2.7 cm x 3.1 cms involving the tentorium cerebella on the right side, with its superior lobe in the right occipital region and inferior lobe in the right cerebellar region with mild surrounding oedema. In lieu of the mass effect caused by the meningioma, patient first underwent a midline sub occipital craniotomy with grade 1 excision of the meningioma in a sitting position, and a month later the colloid cyst was operated by minimal access small craniotomy inter hemispheric transcallosal transchoroidal approach. Histopathology was consistent with a meningioma and a colloid cyst. Her vision improved and the post op recovery was uneventful.

### Discussion

Meningioma's are the most common extra-axial neoplasms and the second most common primary tumours of the central nervous system, accounting for 24% to 30% of all brain tumours [1,2].

Tentorial meningiomas are relatively uncommon tumours, representing about 5% of intracranial meningiomas. Approximately 70% to 80% of cases occur in women. Tentorial meningiomas are notorious in their location and are considered a neurosurgical challenge because of their critical location adjacent to vital neurovascular structures and the brain stem.

Colloid cysts qualify as non-neoplastic true epithelium lined cysts of the central neuraxis. They generally present in the 3<sup>rd</sup> to 5<sup>th</sup> decade but they can present at both extremes of ages. Cyst size can range from 3 mm to 40 mm but size may not be a reliable predictor of outcome as even small cysts may cause sudden death due to acute obstructing hydrocephalus or hypothalamic arrhythmias. They generally present with manifestations of ventricular outflow obstruction. The primary presenting complaint is headache. Associated symptoms include vertigo, memory deficit, diplopia and behavioural disturbances.

The incidence of multiple primary brain tumours with different histological types in the same patient is only 0.3% of all brain tumours [3] or 10-15 cases per 100,000 who develop primary brain tumour [4]. The simultaneous occurrence of multiple intracranial tumours is observed in phacomatoses, genetic syndromes or after radiation exposure to the brain. Occurrence of multiple different intracranial tumours in the absence of these conditions is rather rare. The most frequent reported combination of histologically different brain tumours is meningioma and glioma.

We report a case with two diverse primaries, a tentorial meningioma and a colloid cyst found far away from each other in the same patient without any evidence of phacomatoses, genetic syndromes

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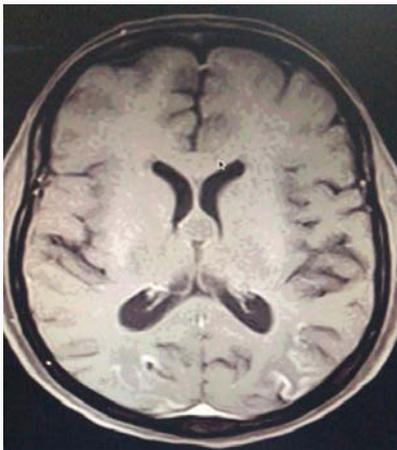
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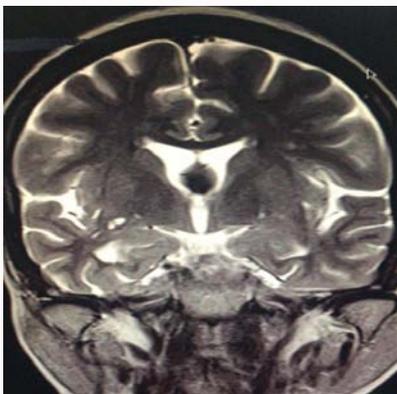
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**Figure 1:** Pre-op axial CT showing meningioma.



**Figure 2:** Pre-op axial CT showing colloid cyst.



**Figure 3:** Coronal T2 MRI showing colloid cyst.

or any history of previous radiation to the brain. To the best of our knowledge, this is the second case reported.

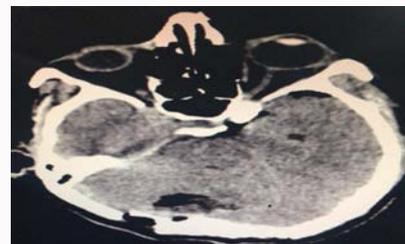
Several hypothesis have been proposed to link the occurrence of two or more intracranial tumours of diverse germinal origin in the same individual but none have gained conclusive support [5-7]. By chance or by other aetiologies meningiomas have the potential to be associated with numerous other lesions in the brain and are the tumour type most often found in multiple intracranial tumours of different histology. This is both, due to their frequent incidental occurrence even as isolated intracranial tumours and their long clinical evolution before diagnosis. Thus they have an increased probability of simultaneously harbouring another primary or



**Figure 4:** Coronal T2 MRI showing tentorial meningioma with supratentorial and infratentorial meningioma.



**Figure 5:** Sagittal CT showing colloid cyst and meningioma.



**Figure 6:** Post-op CT following excision of meningioma.

secondary intracranial tumour [8-10].

The hypothesis that one tumor acts as an irritating factor for the other does not hold true in our case, as the tumors are non-adjacent. This pattern of tumoral association most likely represents a coincidental event rather than the result of a common pathway abnormality. Some remote inciting molecular or genetic agent causing a synchronous meningioma and a colloid cyst is still a possibility as immunohistochemistry and molecular study were not done due to rule the same out at our institute due to financial constraints. Advanced molecular genetic techniques will be required in the future with emphasis over the importance of cell biology to understand this phenomenon of coexistence we observe in the given clinical scenario.

Thus by exclusion the possible explanations pertaining to our case are [11-14]:

1. Entirely coincidental development of the tumours.
2. The initial tumour acts as a stimulus on the surrounding cerebral parenchyma or meningeal tissue to induce a new tumour at a different site.



**Figure 7:** Post-op MRI following excision of colloid cyst.

3. A common carcinogenic agent developing tumours at different sites simultaneously.

4. A residual embryonic structure leading to subsequent multiple tumours.

Management priority for two tumours located far apart needs a case-by case evaluation. An important aspect while dealing with such cases is to decide which tumour needs to be operated first or whether both the lesions can be operated in the same sitting. A simultaneous benign asymptomatic/deep seated/a complex brain lesion which may require a more radical procedure for resection and place vital structures at risk during treatment is not worthwhile a surgical resection and can be observed. Conservative management of a benign brain lesion is thus an option.

In our case, we used a two staged approach where the meningioma was operated first due to its larger size and the mass effect and, the colloid cyst was operated a month later by minimal access small craniotomy inter hemispheric transcallosal transchoroidal approach as it was symptomatic, easily accessible by surgery and large enough in size to warrant surgical decompression. The standpoint being that the lesion causing the main neurological symptom should be operated first be it the meningioma or the colloid cyst. Both the tumours couldn't be operated in the same sitting as the surgical approaches to them were different (Figure 1-7).

## Conclusion

In case of multiple brain tumors, the management priority needs case by case evaluation. The standpoint being that the lesion causing the main neurological symptom should be operated first. Clinicians should be aware of the possibility of finding a colloid cyst with a meningioma as otherwise, missing it would be catastrophic.

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