INTRACRANIAL CYSTIC MENINGIOMA: A CASE REPORT AND REVIEW OF LITERATURE

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SUMMARY

Cystic or necrotic hypodense areas are occasionally seen within meningiomas on CT scan. The computerized tomography appearance of a cystic meningioma may simulate a glial or metastatic tumor with cystic or necrotic changes, and lead to an incorrect presumptive diagnosis. Radiological evaluation and recognition is important for the surgical removal of these potentially curable neoplasms. Such a case is presented and related literature reviewed.

Key Words : Cystic meningioma, hypodense area, meningioma, computerized tomography.

INTRODUCTION

Cysts are frequently associated with glial or metastatic tumours but cysts associated with meningiomas are considered to be uncommon (1). Penfield, in his pioneering work in 1932, stated that only in very rare cases there were cyst formation (2). Cushing and Eisenhardt reported eight cases of cyst formation in their series of 313 meningiomas (3). Russel and Rubinstein state that such cysts are rare and illustrate a case of a large cerebellar cyst forming at the periphery of a tentorial meningioma (4). Several recent reports have described the detection by computerized tomography of meningiomas surrounded by or associated with areas of low attenuation. These low-density areas may represent edema (5,6), widened subarachnoid spaces (7,8), loculated cerebrospinal fluid (6), demyelination, or adjacent second tumour (9). The introduction of computerized tomography scannig in neurosurgical diagnosis even though has facilitated the localisation and identification of the cerebral tumours has not completely eliminated possible diagnostic errors between cystic meningiomas and other cystic intracranial lesions (10,11,12,13,14,9,1,15,4,16,8). Although more recent literature contains little references to cysts associated with meningiomas, Parisi, et al., stated that of 152 meningiomas they had treated seven were cystic (17).

In our clinic, treated of 108 meningiomas in last five years only one was cystic. This is the first case reported about cystic meningiomas up to date in Turkey. Methods of diagnosis and related literature has reviewed.

CASE REPORT

The patient was a right handed 42 year old man, who had one year history of progressive headache and epileptic seizures beginning one month before admission to our hospital. We had to take patient's history from his family because he was deaf and dumb from birth and he was unable responding to commands of the examiner. His general physical examination was unremarkable. He was alert and conscious. There was bilateral papilloedema. In neurological examination slight left hemiparesis and slight flattening of the left nasolabial fold werefound. Routine skull radiographs were normal. Computerized tomography showed a large hypodense area and a solid tumour in right frontoparietal region close to the convexity of the brain (Fig.1). After enhancement, absorption value of the low-density area did not change (20HU), but the mass was enhanced (69 HU) (Fig.2). This hypodence area evaluated to be a cystic lesion. The mass had eroded the inner table of the parietal bone.

The patient underwent right frontoparietal craniotomy. The dura was adherent to the cyst wall. When the cyst wall was opened, as expected, about 200 ml. of yellow-greenish fluid drained. There was a mural nodule on the cyst wall. The cyst wall and the tumour had very good cleavage from adjacent normal tissues. Both of them were removed totally. Intraoperative quick section report was inconclusive. Histological examination of the paraffin embedded sections has shown that the tumour was meningioma (Fig.3). One week after the operation the patient was discharged without any neurological deficit.

DISCUSSION

Several authors proposed different opinions about the cyst formation in meningiomas. Penfield explaines the cyst development by degeneration and removal of the tumour center from the peripheral blood supply (2). Cushing and Eisenhardt comment on cyst formation in their series of 313 meningiomas which they state that : Xantochromic cysts appear to form at the periphery of many tumours where they sometimes coalesce into fairly large cavities with no evidence of adjacent tumour degeneration (3).

Nauta, et al., proposed four hypotetical relationship between a tumour, associated cysts, and surrounding brain (1). In the type 1, the cyst is contained wholly within the tumour and being located centrally, or nearly so, is surrounded by macroscopic tumour throughout. In the type 2, the cyst is at the pe-

riphery of, but still wholly within the margins of the tumour, there being a microscopically visible attenuated rim of tumour cells along the peripheral margins of the cyst. In the type 3, the cyst again appears to be peripheral; but actually lies within the adjacent brain rather than within the tumour itself. In the type 4, the cyst appears at the interface between the tumour and brain as a loculation of CSF in the subarachnoid space, and does not appear within either the tumour or brain itself. When the cyst is large, neoplastic components are confined to mural nodules. Our case appears to conform type 2.

The cyst wall can be composed of either reactive astroglial fibers collagen, or neoplastic cells (11,12,13,1,5). Cyst formation is more frequent in children than in adults (18,19,20,21,22,23,24). Loculation of the subarachnoid space, reactive gliosis, fibroblastic proliferation, demyelination adjacent to the tumour are the other etiologies have which been suggested for cyst formation in meningiomas (17).

In several instances, the expansion of the cyst rather than the tumour itself is responsible for increased mass effect and clinical deterioration. In our case, also the cyst was very large comparing the tumour mass itself which we believe the reason for rapid deterioration of consciousness is related to this finding.

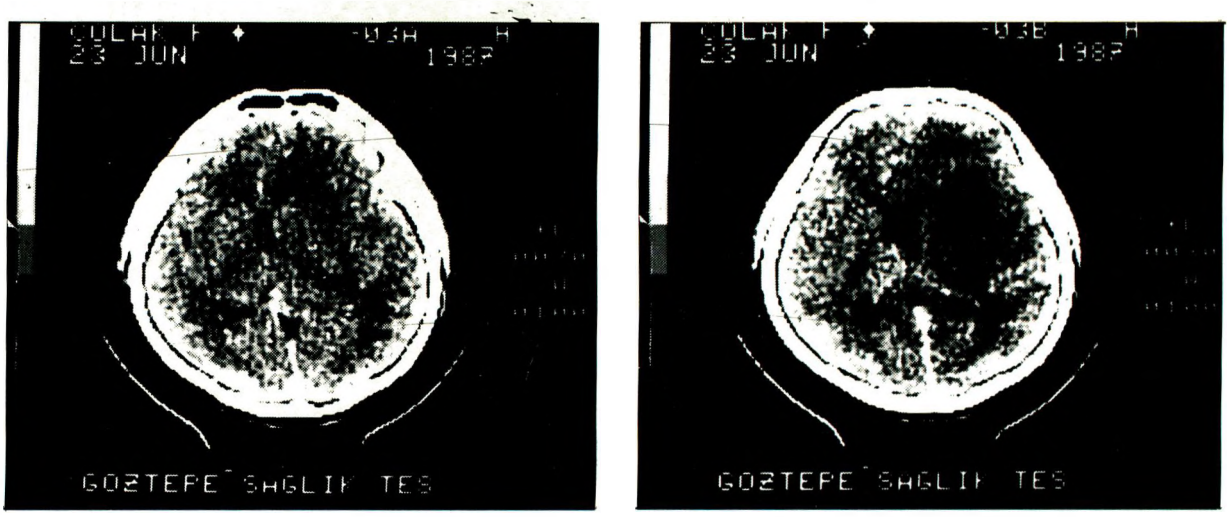

Fig.1: CT scan. An inconspicuous, right frontoparietal mass, before enhancement.

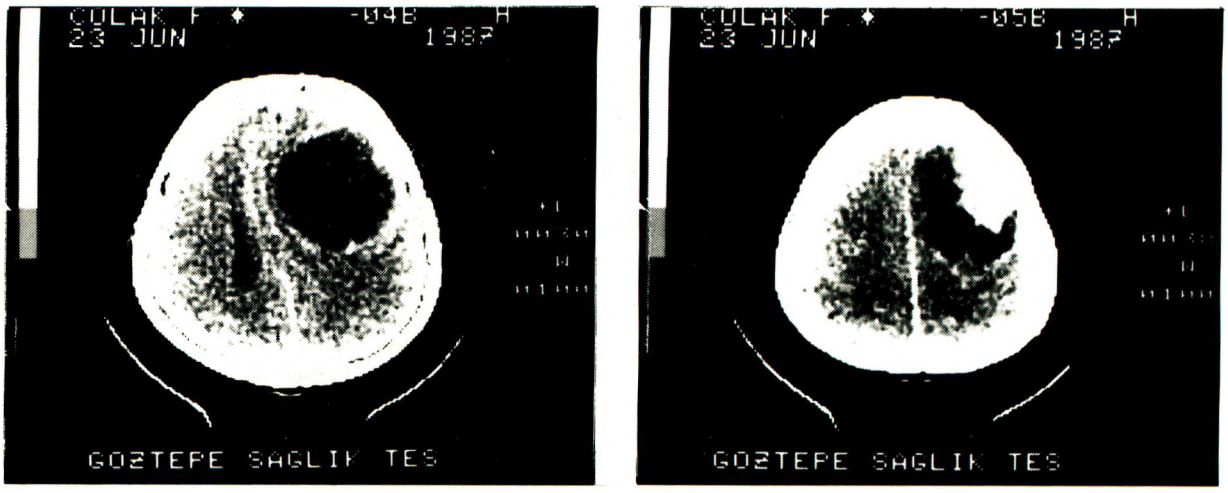

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Fig.2: Contrast enhance CT A: Appearance of a large cystic cavity in right frontoparietal lobe.
B: Appearance of the cyst demanstrating the enhanced mural nodule in it.

It is important to note that the CT scan appearance of such cystic meningiomas may mimic that of a glial tumour and lead to an incorrect diagnosis. This false impression may be perpetuated by the gross appearance at operation, which can also mimic a malignant glioma. With rare exceptions the diagnosis of a cystic meningioma can be made from an angiographic study. Selective external carotid angiography can lead to the diagnosis of a cystic meningioma, as gliomas very rarely are fed via the external carotid artery.

In our case, the erosion at the inner table of the parietal bone led us to presumptive diagnosis before the operation. We did not perform angiographic investigation because the patient's level of conscious was gradually decreasing.

In the absence of classical angiographic changes, biopsy of all suspected cerebral neoplasms is important, because an incorrect diagnosis of glioma frequently results in palliative treatment rather than surgical removal of a potentially curable neoplasm.

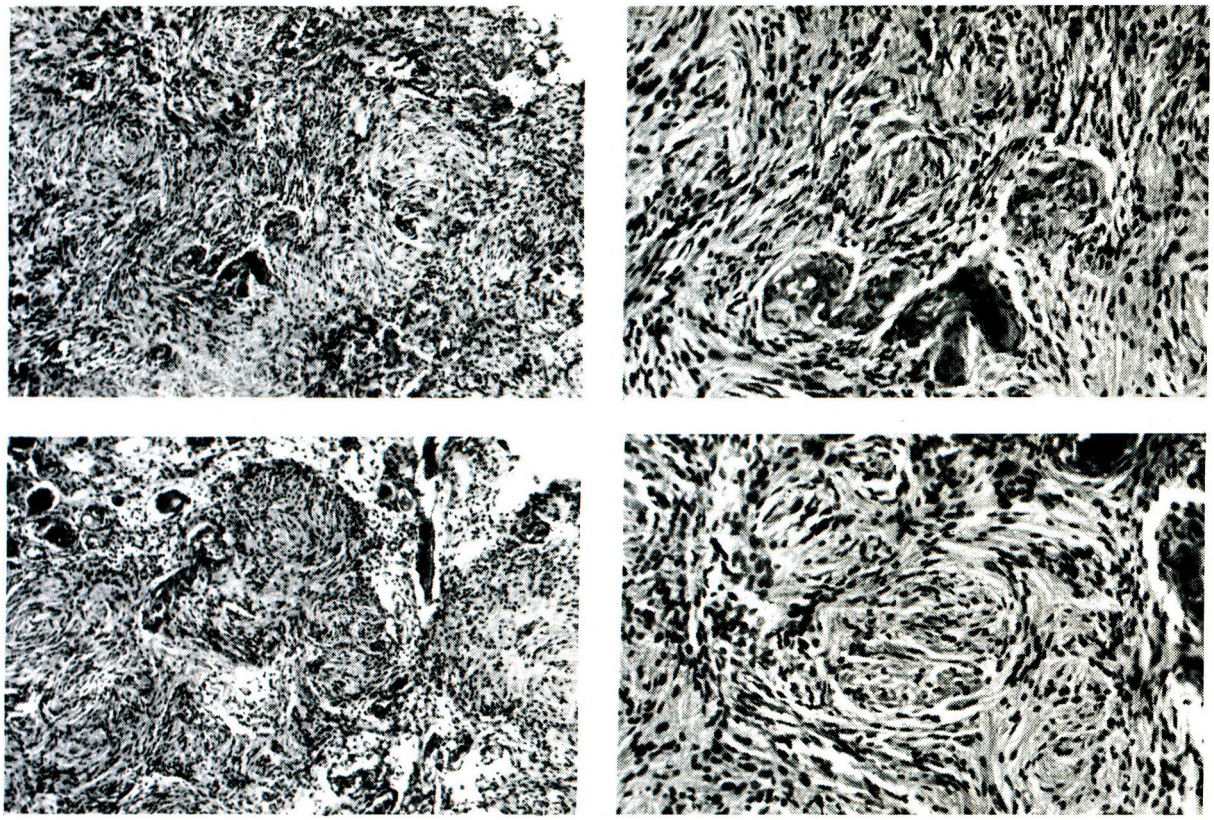

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Fig.3: Histological appearance of the meningioma. H. and E. stain
A: Original magnification X 80 of two different regions.
B: Original magnification X 200 of the same regions.

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