

## An elderly case of cystic astrocytoma

Masami Fujii, Yoshio Nagatsugu, Haruhide Ito, Yasutake Jimi\* and Junnichi Imamura\*

Department of Neurosurgery Yamaguchi University School of Medicine, Ube, Yamaguchi 755, Japan \*Department of Neurosurgery Shimonoseki National Hospital, Shimonoseki 750, Japan (Received August 25, revised November 24, 1992)

**Abstract** We report the rare case of a 74-year-old female with cystic astrocytoma presented on computed tomography (CT) as a smooth ring enhanced lesion, and discuss the CT findings and difficulties in the differential diagnosis.

*Key Words* : Astrocytoma, Cyst, An elderly case

Because cystic astrocytomas are common in children but are rare in old ages, diagnosis is difficult in the elderly case of astrocytoma with a large cyst. We report an elderly case of cystic astrocytoma presented on the CT as a ring enhanced lesion.

### Case report

A 74-year-old female had complained of headache for a month and was admitted to our hospital because of gradually advancing memory disturbance. In her past history, she has been diagnosed as having cancer of the colon, and rectal excision having been performed three years previously. Histological diagnosis was differentiated adenocarcinoma.

On admission, neurological examination revealed no deficit except for mild memory disturbance. On laboratory examination, white blood cell, C-reactive protein (CRP) and tumor markers showed normal values. Further systemic examination showed no abnormality except in the brain.

The plain CT scan revealed a large low density area in the left temporal lobe (Fig.1a) and the CT scan with contrast medium revealed a large low density area with smooth ring enhancement and minimal edema surrounding the tumor (Fig.1b).

However no mural nodule was revealed on the CT. Magnetic Resonance (MR) imaging revealed hypointensity of the lesion on the T-1 weighted image (T1WI) and irregular hyperintensity to the further extent of the lesion on the T-2 weighted image (T2WI) (Fig. 2 a,b). Left carotid angiography showed an avascular lesion.

Ten days after the patient's admission, the left temporal craniotomy and biopsy of the cyst wall were performed. The cyst fluid was xanthochromic and was aspirated. The cyst wall was light yellowish, and the margin of the tumor was indistinct. There was no evidence of necrosis or hemorrhage.

Histological examination of the tumor showed low grade astrocytoma (Fig. 3).

Postoperatively, local irradiation with 50 Gy was added. With these therapies, the headache subsided. However, three months later, because right hemiparesis and sensory aphasia were gradually occurring and the CT revealed reaccumulation of the cyst fluid, partial resection of the tumor and cyst fenestration to the temporal horn and the basal cistern were performed. Postoperative CT showed reduction in cyst size, and right hemiparesis and sensory aphasia were also reduced.

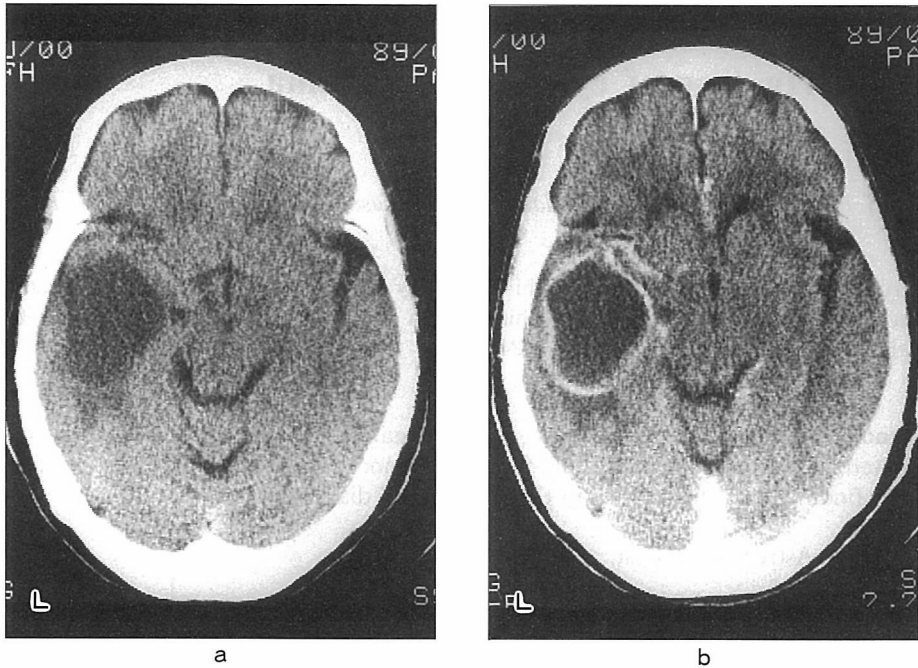


Fig. 1 a: Plain CT shows a large low density area in the left temporal lobe. b: Contrast enhanced CT shows ringed enhancement with thin enhancing rim and smooth margin.

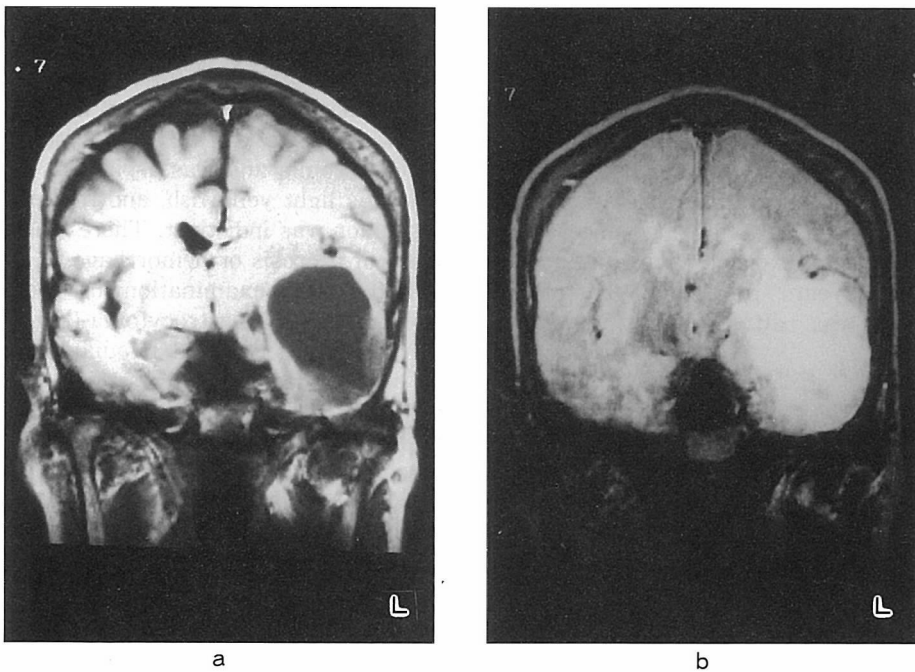


Fig. 2 a: T1-weighted image of MRI shows left temporal large cyst and slightly hypointensity area in the lower temporal lobe. b: T2-weighted image of MRI shows hyperintensity area in the further extent to the cystic lesion.

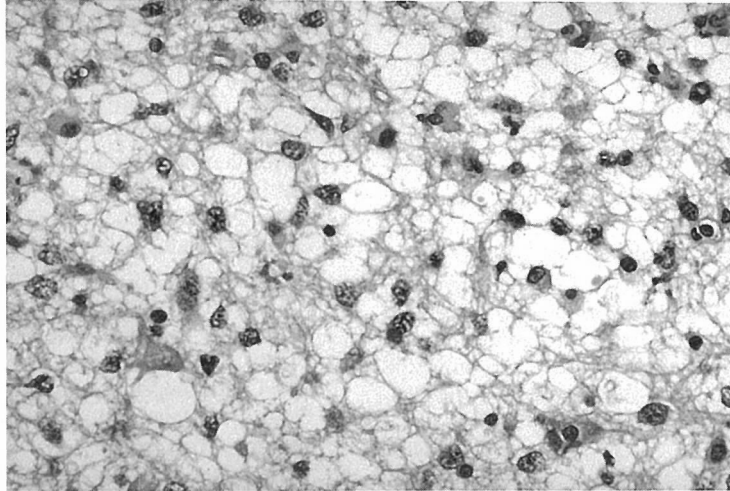


Fig. 3 Photomicrograph shows a well-differentiated astrocytoma with microcysts and a nuclear uniformity (HE stain, x400).

## Discussion

Astrocytoma is likely to occur in middle age, and cystic astrocytoma is most often seen in children. So an elderly case of astrocytoma with a large cyst is difficult to diagnose. Afra et al. reported that the incidence of intratumoral cyst is 8 % to 10 % in malignant glioma<sup>(1)</sup>. However, the incidence of cystic astrocytoma in the elderly may be even lower.

On the enhanced CT scan, ring enhancement is not specific for glioma, because it also indicates malignant astrocytoma, metastatic carcinoma, abscess or subacute cerebral infarction. However, the shape of the ring enhancement on the CT and clinical manifestations are important in differential diagnosis. In our case, there was no evidence of infarction or abscess in the clinical or laboratory data. Though the patient had a past history of rectal cancer, metastasis was ruled out because tumor markers were normal and no other metastatic extracranial lesions could be detected. Malignant gliomas usually have an irregular inner margin and relatively thick enhancement on the CT<sup>(1,2)</sup>. Therefore, it was difficult to make a clear preoperative diagnosis. On the basis of retrospective analysis, we suppose that a thin enhancing rim and a smooth inner margin are characteristic of

the cyst of low grade astrocytoma in elderly cases.

Concerning MR imaging, the tumor showed slightly hypointensity and cyst wall seemed normal on T1WI. The extent of the tumor was overestimated on T2WI because of the presence of peritumoral edema and radiation necrosis. MR imaging was useful in detecting the tumor extent to some degree but had a limitation in differentiating the tumor from the spreading edema.

The CT appearance of the cyst wall is important from the surgical point of view. Cystic tumors with mural nodules are not characterized by enhancement of the wall, which consists of fibrous and gliotic tissue and does not contain neoplastic cells<sup>(3)</sup>. However, contrast enhancement of the wall usually indicates the presence of neoplastic tissue<sup>(4)</sup>. Tchang et al. reported a correlation between intensity of enhancement with contrast medium and anaplasia in supratentorial astrocytoma<sup>(5)</sup>. Furthermore, it is thought that astrocytoma has a tendency to undergo malignant change into anaplastic astrocytoma. Therefore, total removal of tumor was indicated in our case, but as the tumor was large and its margin was indistinct, it was difficult to remove totally. In the case of cyst recurrence without major solid tumor, cyst aspiration, placement of a reservoir, permanent shunt or ventricular fenestration

tration is recommended<sup>(1,6)</sup>.

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