Craniopharyngioma in the Temporal Lobe: A Case Report

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Herein, we report on an unusual case of craniopharyngioma arising in the temporal lobe with no prior history of surgery and with no connection to the craniopharyngeal duct. MR images showed a cystic tumor with a small solid portion. To the best of our knowledge, this is the first case of a craniopharyngioma occurring in the temporal lobe.

Craniopharyngiomas are generally believed to arise from the nests of squamous epithelial cells located on the pituitary stalk and superior aspect of the pituitary gland. Since first reported by Bock (1) in 1924, several craniopharyngiomas arising from unusual locations other than the sellar and parasellar regions have been described in the literature (2–6). Herein, we report on a case of craniopharyngioma in a extremely unusual location, arising from the left temporal lobe. We could find no other case of craniopharyngioma in this location reported in the literature.

Index terms:
Brain, Tumor
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CASE REPORT

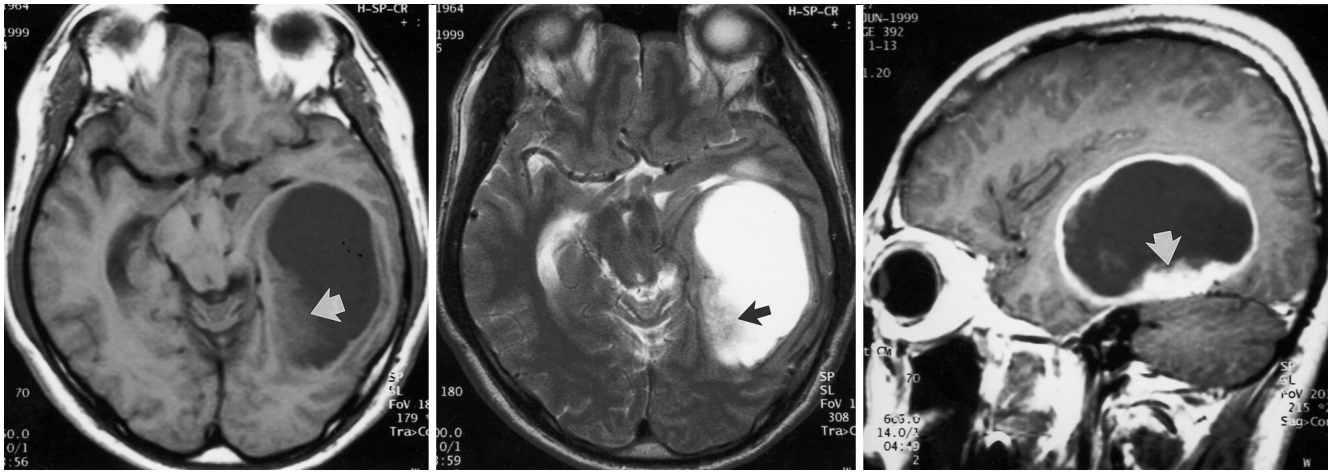
A 36-year-old man presented with sudden severe occipital headache, and neck stiffness in May 1999. After several weeks, the headache subsided, however, blurred vision subsequently developed. Physical examination revealed a right homonymous hemianopsia. Laboratory blood findings were normal. There was no previous history of surgical operation.

In June 1999, the patient underwent MR imaging of the brain with a 1.5T MR unit. T1-weighted (665/14/2 [repetition time/ echo time/ excitation]) and T2-weighted (4200/99/2) MR images showed a large cystic mass with a small solid portion in the left temporal lobe (Figs. 1A, B). Gd-DTPA enhanced T1-weighted images showed marked enhancement of a thick peripheral wall and solid portion (Fig. 1C). On diffusion-weighted MR images (b value=1000 sec/mm^2, isotropic image), the cystic portion of the mass had low signal intensity. There was no connection between the mass and the suprasellar or intrasellar regions.

The mass was surgically excised, and histopathologic examination revealed a typical adamantinous craniopharyngioma with anastomosing epithelial islands and a palisaded layer of cells, as well as an area of keratinization and numerous calcifications (Fig. 1D).

DISCUSSION

Craniopharyngiomas are generally considered to be epithelial tumors arising from



A B C

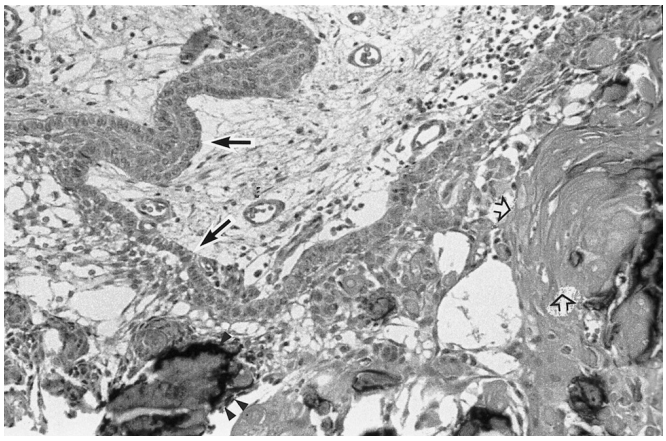


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Fig. 1. Craniopharyngioma of the temporal lobe.
Axial T1-weighted (**A**) and T2-weighted (**B**) MR images show a large cystic mass in the left temporal lobe, which contains small solid portions on its medial aspect (arrow). Sagittal contrast-enhanced T1-weighted (**C**) MR image shows thick peripheral rim enhancement, and well enhancing solid portion in the inferior part of the mass (arrow). Photomicrograph (**D**) shows classic adamantinomatous craniopharyngioma with peripheral palisades of epithelial cells (arrows), containing loose squamous cells separated by intercellular fluid. Delicate squamous epithelial cells contain wet keratin (open arrows) and calcification (arrowheads) (original magnification, ×100; hematoxylin-eosin staining).

remnants of the craniopharyngeal duct, which connects the stomodeal ectoderm with the evaginated Rathke's pouch, which in turn forms the adenohypophysis (7, 8). This theory suggests that craniopharyngiomas can arise anywhere along the migration of Rathke's pouch, which extends from the vomer and the roof of the nasopharynx, through the midline sphenoid bone to the floor of the sella turcica. Thus, craniopharyngiomas can potentially arise in unusual locations such as the nasopharynx (2, 8), sphenoid bone (9), third ventricle (3), and posterior fossa (10). However, the above hypothesis does not explain the development of craniopharyngiomas either in the pineal gland (5) or the temporal lobe as in our case. There is no clear embryological reason for craniopharyngiomas to originate from the pineal gland or temporal lobe. Solarski et al. (6) suggested that they might originate from totipotential or multipotential cells that reside in the pineal gland. They also proposed neoplastic metastasis as another possible mechanism of pineal involvement. However, metastasis has never been described in this benign neoplasm, and therefore we think that the former hypothesis is more reasonable than the latter.

Craniopharyngioma would not usually be included in the differential diagnosis of a temporal lobe mass. Given the well-defined cystic mass with peripheral dense enhancement, our preoperative diagnosis was pilocytic astrocytoma. The histologic features showed typical adamantinous craniopharyngioma.

Craniopharyngiomas can be classified into two histopathologically and clinically distinct subtypes (i.e. adamantinous and squamous-papillary variants) (8). The adamantinous type consists of a predominantly cystic lobulated tumor, which is often observed in an intrasellar/suprasellar location in children. These cysts contain various amounts of cholesterol, triglycerides, methemoglobin, protein, desquamated epithelium, and watery fluid content. Squamous-papillary craniopharyngioma, on the other hand, consists of a predominantly solid or mixed solid-cystic spherical tumor in a suprasellar location in adults. The solid tumor parts have an inhomogeneous but intense enhancement with small necrotic areas, and calcifications are rare. The combination of papillary and

adamantinous tumor parts within the same neoplasm has been described in 15% of these tumors.

In summary, although our case did not show any specific radiologic finding permitting the differentiation of craniopharyngioma, to the best of our knowledge, this is the first case of a craniopharyngioma originating in the temporal lobe. It does not appear to be embryologically derived from ectopic embryonic remnants of the craniopharyngeal duct.

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