Abscess Formation in Rathke’s Cleft Cyst

L. Bognár, G. T. Szeifert, I. Fedorcsák, and E. Pásztor

National Institute of Neurosurgery, Budapest, Hungary

Summary

Two patients are discussed who presented at our Institute with endocrine dysfunction and sellar enlargement. CT scans revealed intra and suprasellar expanding lesions with ring enhancement. The postoperative histological examination showed remnants of Rathke’s cleft cyst together with signs of inflammation. CT and MRI pictures, and possible mechanisms of abscess formation in this region are discussed.

Keywords: Rathke’s cleft cyst; pituitary; abscess.

Introduction

Rathke’s cleft cyst is a benign tumour-like lesion in the sellar region, which is a remnant of Rathke’s cleft. Pre-operative differentiation from other cystic sellar processes has great importance in planning the specific intervention. There are several cases of pituitary abscess reported in the literature, although this site for abscess formation is not frequent. To the best of our knowledge, only one case is documented where the histological examination showed an abscess in Rathke’s cleft cyst.

The authors report two cases of Rathke’s cleft abscess which simulated a craniopharyngeoma with sellar extension. Third generation CT scans and MR images are discussed comparing them with the histopathological characteristics.

Case Reports

Case One: A 33 year-old woman was admitted to our hospital on 11/24/1984 with a history of diabetes insipidus, amenorrhea, obesity and signs of affective psychosis extending over 11 years. Skull films showed sellar enlargement with double floor and attenuated dorsum. First generation CT scan showed a large suprasellar mass with ring enhancement, compressing the chiasma, the oral part of the third ventricle and the frontal horns of the lateral ventricles. At ophthalmological examination we found pale optic discs and left homonymous hemianopsia. The neurological examination was otherwise unremarkable. She was afebrile. Angiography (AG) confirmed the large suprasellar extension by the characteristic stretching and deviation of the adjacent arteries and veins. No aneurysm was seen. The pre-operative radiological diagnosis was craniopharyngioma. At operation the transsphenoidal approach was used. After the opening of the hard and thick wall of the cyst, whitish pus like fluid was evacuated. On light microscopy, biopsy specimens contained pieces of a cyst wall lined by pseudostratified ciliated columnar epithelium and scattered squamous cells surrounded by remnants of the adenohypophysis.

Only partial removal of the cyst wall was possible by this approach. Because of the intra-operative observation of CSF leakage we used muscle tamponade. There was no post-operative nasal CSF leak. Preventive multiple lumbar punctures had been done. The immediate post-operative course was uneventful but there was progression in the left visual field defect after two weeks. The check CT showed supra and parasellar residual abscess so we decided to reoperate using a left frontolateral approach. We removed the residual abscess totally but we left some closely attaching parts of the wall on the hypothalamic region. The post-operative period was stormy. We lost our patient on the 9th post-operative day with signs of a hypothalamic lesion and meningitis. The microbiological investigation of the abscess proved staphylococcus aureus and streptococcus pyogenes infections. The antibiotic treatment used was based on sensitivity tests.

Case Two: This 53 year-old woman was well until 1979 when she developed signs of polydipsia-polyuria. She sought medical help only in 1981 with this complaint and after a general check up the diagnosis of diabetes insipidus was made, and substitution therapy with Adiuretin was begun. There was no neuro-ophthalmological deficit and the endocrinological laboratory examinations were normal. Plain skull X-rays were normal until 1988 when they showed moderate sellar enlargement with an attenuated and porotic dorsum sellae. Third generation CT scan showed in 1989 an intra and suprasellar cystic mass with ring enhancement. MR showed an intra and suprasellar mass slightly elevating the optic chiasma. On T1 weighted images the contents of the cyst showed a high signal while the wall showed a low signal. At this time the neuro-ophthalmological examination was again normal. With her substitution therapy the patient was symptom free.

The pre-operative diagnosis was craniopharyngioma. At operation we used the trans-sphenoidal approach. When the hard thick walled cyst was opened, white-yellow pus like fluid was evacuated.
The cyst wall was totally removed. There was C.S.F. leakage during the operation and we used spongostan and muscle tamponade to control it. The patient had a lumbar C.S.F. drain for three days post-operatively.

Because of unfortunate technical problems no exact bacteriological diagnosis was made, but the presence of bacteria and an inflammatory process was proved by cytological and histological examinations.

In the post-operative phase the patient received antibiotic therapy for one week based on the pharyngeal culture results. No fever was noted. The administration of Adiuretin was continued. She left the hospital on the 11th post-operative day in good condition and unchanged neurological status.

Histological examination of removed tissue specimens revealed foci of squamous epithelial cells surrounded by necrotic debris (Fig. 1). Richly vascularised granulation tissue was observed in the cyst wall with a strong inflammatory reaction, and remnants of ciliated columnar or pseudostratified epithelial cells, characteristic of Rathke's cleft cyst were identified (Fig. 2).

Discussion

Infection and abscess formation in the sellar region is very rare. In most cases these were results of spread from sphenoid sinusitis or other septic processes. Cases of abscess formation within a pituitary adenoma which invaded the sellar dura and caused erosion of the osseous floor are mentioned. Bjerr et al. found that pituitary abscess (excluding the rare cases seen in meta-

---

**Fig. 1.** The epithelial cell lining of the cyst (H. & E., 400 x)

**Fig. 2.** Numerous thin-wall capillaries in the cyst wall lined by ciliated pseudostratified columnar epithelium (arrow), (H. & E., 400 x)