Retrosellar cyst and pituitary adenoma

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Summary

A case of a pituitary adenoma associated with hyperprolactinemia and contiguous to a supra and retrosellar cyst is presented. Only three patients with pituitary adenomas accompanied by parasellar cysts have been previously described. It is the first time that this relationship is illustrated by Magnetic Resonance Imaging (MRI). Simultaneous occurrence of arachnoid cysts and adenomas is generally regarded as incidental but the responsibility of the adenoma in the genesis of the cyst was clearly demostrated in one of the previous reports.

KEY-WORDS: Parasellar cyst. Arachnoid cyst. Pituitary adenoma.

Sumário

Apresenta-se o caso de um doente com um adenoma hipofisário associado a hiperprolactinemia e contíguo a um quisto supra e retrosselar. Até à presente data foram apenas descritos três adenomas da hipófise acompanhados de quistos parasselares. É a primeira vez que esta relação é documentada por Ressonância Magnética Nuclear. A ocorrência simultânea de quistos leptomeníngeos e de adenomas é tida geralmente como acidental, mas a responsabilidade do adenoma na formação do quisto foi claramente demonstrada num dos relatos anteriores.

PALAVRAS-CHAVE: Quisto parasselar. Quisto aracnoideu. Adenoma hipofisário.

Introduction

Rahimizadeh et al.[4] first described the association between an arachnoid cyst and a pituitary adenoma. The cyst, situated in the middle fossa, apparently did not contribute to the symptomatology and the adenoma was a nonsecreting one. Spaziante et al.[9] reported a patient with acromegaly and another with a prolactinoma with associated parasellar cysts. The growth-hormone secreting tumour was removed and the cyst, totally assymptomatic, left undisturbed. The prolactin-secreting tumour was treated with bromocriptine that induced the shrinkage of both the tumour and the cyst.

We present a case of a patient with a large pituitary adenoma causing a relatively moderate hyperprolactinemia and accompanied by a contiguous supra and retrosellar cyst. Both conditions contributed to the symptomatology and were surgically dealt with.

Case report

A 56-year-old obese man with a long history of severe myopia noticed loss of libido during 20 years without seeking medical advice. About 5 months before admission he reported unusual asthenia and somnolence. One month later he began to drag his feet when walking. Six weeks before being admitted he complained of intense headaches and of weakness in the lower extremities. Then, he progressively lost the notion of time and space, developed urinary and faecal incontinence and was finally taken in hospital.

At admission, dementia and an incapacity to walk due to a spastic weakness of the legs were apparent. The patient also presented a low visual acuity in both eyes, obesity and mild hypertension. Ophthalmoscopic examination disclosed degenerative changes related to the myopia. The patient did not co-operate in the assessment of the visual fields. Pituitary function studies revealed a serum prolactin level of 169 ng/ml (reference range for men 2.5 to 17 ng/ml), with T3 and T4 in the low normal range.

Computed tomography (CT) at admission (Fig. 1) showed an heterogeneous lesion with an isodense part that occupyed the sella turcica and the suprasellar region and a posterior and superior hypodense component that compressed the III ventricle and was responsible for an active biventricular hydrocephalus. The isodense part of the lesion had regular outlines. After the administration of contrast material, it demonstrated an intense and homogeneous enhancement. The hypodense part did not enhance.

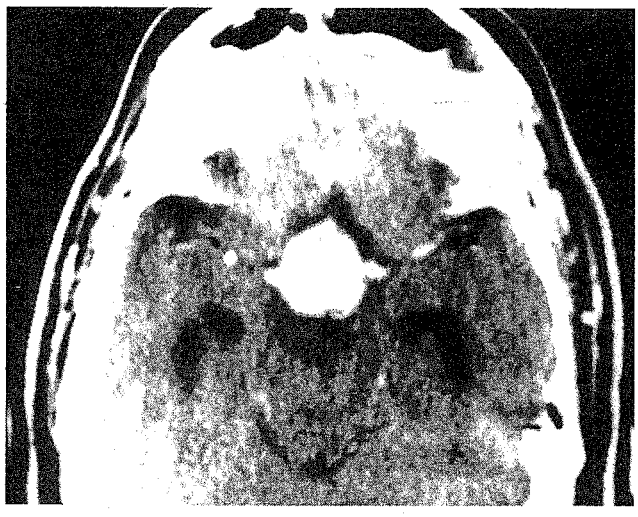

Fig.1.– *CT - A round sellar mass with smooth contours and intense and uniform contrast enhancement is well shown. A retrosellar hypodense image is also evident. Notice the dilated temporal horns.*

M.R.I. helped to define better the morphology of the lesion, underlining the possibility of the coexistence of two separate lesions (Fig. 2, 3 and 4). The apparently solid component was isointense to the cerebral parenquima on T1-weighted images and moderately hyperintense on T2. The likely cystic component had a signal intensity slightly superior to the cerebrospinal fluid (CSF) on T1 and was hyperintense on the long TR, with signal reinforcement from the first to the second echoes. Obliteration of the opto-chiasmatic cisterns, compression and collapse of the anterior portion of the III ventricle and Monro's foramen, active biventricular hydrocephalus and marked forward and superior deviation of the optic chiasm were also evident.

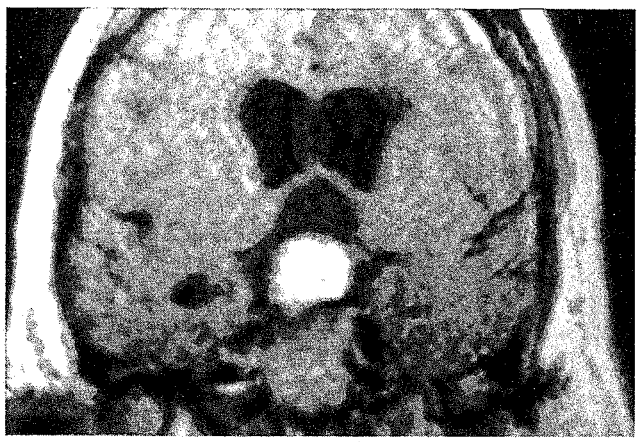

Fig. 2.– *Post-contrast T1-weighted MRI scan in coronal view. A sellar mass with clear boundaries and intense gadolineum enhancement and a suprasellar lucent image which content is slightly more intense than C.S.F. are demonstrated.*

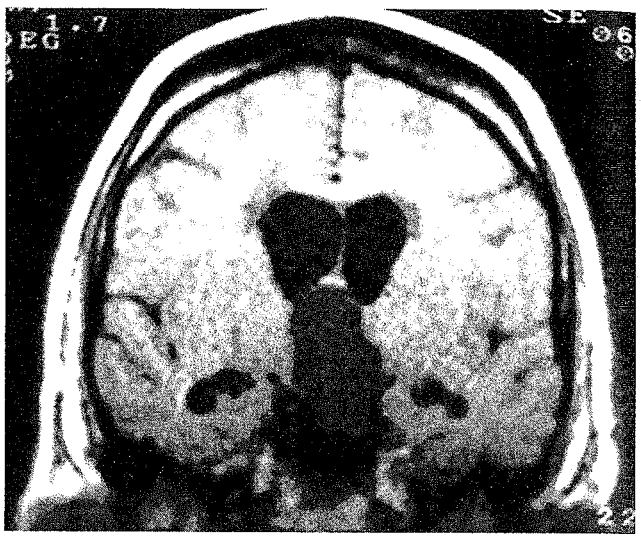

Fig. 3.– *Post-contrast T1-weighted MRI image in coronal view, just behind the sella. The signal intensity of the content of the presumed cyst is homogeneously higher than C.S.F. The cyst wall didn't enhance on contrast injection.*

Therapeutic options were discussed. The presence of an active hydrocephalus and the existence of an important cystic component argued apparently against a trial of bromocriptine medication. We decided to operate.

At operation, a right pterional craniotomy was performed and a soft pituitary tumour was easily removed. After completion of removal, a contiguous but apparently independent cyst situated upper and behind the adenoma was found. It was fenestrated into the suprasellar cistern, allowing the release of a clear, CSF-like fluid. A fragment of cyst wall was sent for pathological examination.

Following surgery, the patient's state of consciousness steadily improved. He was referred for physical therapy.

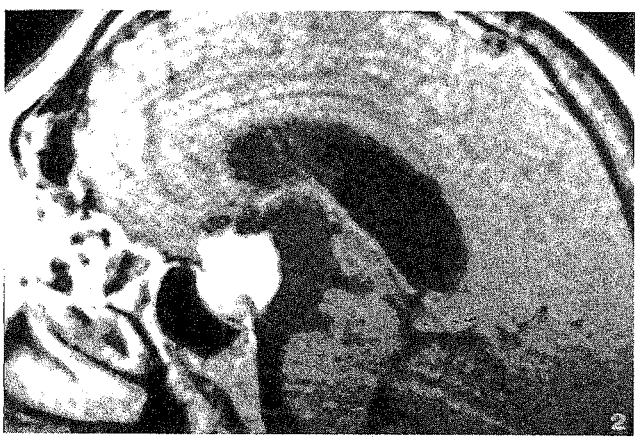

Fig. 4.– *Sagital post-contrast T1-weighted MRI depicts relationship of the adenoma, the cyst and the ventricles. The suprasellar portion of the tumour has markedly elevated the floor of Third ventricle.*

Fig. 5.– *Follow-up sagital T1-weighted MRI. 30 months after surgery, the adenoma and the cyst are not apparent. Probable pituitary tissue can be seen in the bottom of the sella and the Third ventricle has somewhat irregular contours.*

Some weeks after the operation, he had recovered his independent march. His visual acuity did not change.

CT scan performed on week after surgery did not show any cyst or residual tumour. A marked improvement in the hydrocephalus was evident.

Light microscopy identified an acidophilic pituitary adenoma and a portion of a normal arachnoid membrane.

Thirty months after surgery, his memory and intellectual abilities are apparently normal, as well as the march. Serum prolactin levels returned to the normal. He continues to take a small oral dose of thyroxine and lost about 20 kg.

M.R.I. (Fig. 5) demonstrates a rim of pituitary tissue in the bottom of the sella and some irregularity in the contour of the Third ventricle. The cyst and the adenoma are not apparent.

Discussion

The association of an arachnoid cyst and a pituitary adenoma, two frequent neurosurgical entities, is exceedingly rare. Only three such cases were previously published[4,9].

All afflicted patients were adult males with ages among 36 and 52 years. The secretory capacity of the adenoma appears to be irrelevant, since every reported tumour had different characteristics.

The contribution of the tumour and the cyst to the symptomatology appears to be variable. The cyst was totally assymptomatic in the case of Rahimizadeh and in one of Spaziante's cases. In our patient, both lesions contributed to the patient suffering. The hydrocephalus due to the compression of the III ventricle and Monro's foramen by the cyst performed an important role.

Our case is unique in its supra and retrosellar location. All other cysts were found in the temporal fossa.

Whether the association between an arachnoid cyst and a pituitary adenoma is fortuitous or depends on a pathophysiological link remains an open question. In one of Spaziante's cases the relationship could be proved since both lesions were reduced in size by the bromocriptine treatment. Changes in CSF dynamics may be related to haemorrhage, necrosis or inflammatory reactions, as suggested by Spaziante et al.[9]. They may also be due to the simple compression of an individually narrow CSF pathway that leads to the sequestration of a cistern. Given the prevalence of both situations, the association is probably coincidental in most cases.

The finding of a heterogeneous lesion with apparent solid and cystic components in the parasellar area certainly suggests alternative diagnosis. The hypothesis of a craniopharyngioma comes first to the mind. In our patient, calcifications were not visible and prolactin levels were probably excessively high to be explained by impingement on the pituitary stalk.

CT scan allowed, in every reported instance, to presume the correct nature of the lesions. In our case, we had for the first time the help of MRI. The round, smooth contour of the pituitary adenoma, already apparent in the CT scan, the clear delimitation of both lesions in spite of their contiguity and the distinct interface between cyst and cerebral parenquima, underlined the probability of the coexistence of two separate entities.

When it is considered that both the cyst and the adenoma deserve surgery, the approach must be designed to deal with the two lesions simultaneously. A craniotomy allows the removal of the adenoma and the fenestration of the cyst in the same operation. Transsphenoidal pituitary surgery and cyst and/or ventriculoperitoneal shunting[5,8] constitute valuable alternatives.

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