NEUROCIRUGÍA

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Case report

Spontaneous subarachnoid haemorrhage from rupture of an anterior communicating artery aneurysm in a patient with pituitary macroadenoma

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ARTICLE INFO

Article history:
Received 20 October 2012
Accepted 14 March 2013
Available online 9 July 2013

Keywords:
Intracranial aneurysm
Pituitary gland
Subarachnoid haemorrhage
Pituitary neoplasms
Cerebral angiography

ABSTRACT

The presence of a cerebral aneurysm in patients with pituitary adenoma is a rare event. Diagnostic suspicion may stem from magnetic resonance imaging, which should lead to complementary investigation. As for treatment, even in conditions in which there has been no previous bleeding, the simultaneous approach should be considered, prioritising the aneurysm most of the time.

The present report describes the case of a patient with a history of pituitary macroadenoma, who had undergone a partial transsphenoidal resection ten years earlier. Admission to our service occurred after a sudden headache followed by mental confusion. A cranial computed tomography showed subarachnoid haemorrhage and expansive suprasellar lesion. Cerebral angiography showed a saccular aneurysm of the anterior communicating complex. The patient underwent a surgical procedure for microsurgical clipping of the aneurysm and partial resection of the pituitary tumour. We have also included a brief review of the literature on this subject.

Hemorragia subaracnoidea espontánea debida a ruptura de aneurisma en la arteria de comunicación anterior en un paciente con macroadenoma hipofisiario

Palabras clave:
Aneurisma intracraneal
Hipófisis
Hemorragia subaracnoidea
Tumor de hipofisís
Angiografía cerebral

RESUMEN

La presencia de aneurisma cerebral en pacientes con adenoma pituitario es un evento raro. La sospecha diagnóstica se puede obtener con la resonancia magnética, que debería conducir a una investigación complementaria. En cuanto al tratamiento, incluso en condiciones en las que no ha habido ningún sangrado previo, el enfoque simultáneo debe ser considerado, priorizando el aneurisma mayor parte del tiempo.

El presente informe describe el caso de una paciente con antecedentes de macroadenoma hipofisario, que fue sometido a una resección transesfenoidal parcial diez años antes. La

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1130-1473/$ – see front matter
http://dx.doi.org/10.1016/j.neucir.2013.03.005

entrada a nuestro servicio se produjo después de que un dolor de cabeza repentino seguido por la confusión mental. Una tomografía computarizada craneal mostró hemorragia subaracnoidea y lesión supraselar expansiva. La angiografía cerebral mostró un aneurisma sacular del complejo comunicante anterior. El paciente se sometió a un procedimiento quirúrgico para clipaje de aneurisma y la resección parcial del tumor pituitario. También hemos incluido una breve revisión de la literatura sobre este tema.

Introduction

The presence of a cerebral aneurysm in patients with pituitary adenoma is a rare event and its frequency has not yet been definitively established. However, the incidence of cerebral aneurysms in patients with pituitary tumors is believed to be greater than that of the general population.[1] Pant et al.[1] found an incidence rate of 5.4% for this association, demonstrating that 97% of these aneurysms were located in the anterior circulation and that in 12% were multiple. Wakai et al.[2] state that in 7.4% of pituitary tumors there is an association with cerebral aneurysms. Also according to these authors, the association of cerebral aneurysms with pituitary tumors is more common than the coexistence with other cerebral tumors. These facts highlight the questioning as to the existence of a causal or favorable link between the same.

The articles that deal with the subject in their majority relate situations in which the coexistence occurs with unruptured aneurysms and leads to the modification of the diagnostic and therapeutic strategy. The present case study has the objective of presenting and reviewing the appropriate literature on an even more uncommon event: the occurrence of subarachnoid hemorrhage due to the rupture of the anterior circulation aneurysm in a patient who already has the diagnosis of pituitary macroadenoma.

Case report

A male, 53-year-old patient with a history of pituitary macroadenoma (prolactinoma) was submitted to a partial transsphenoidal resection at another service ten years prior to the current hospitalization. He had associated bilateral amaurosis and had missed neuroendocrinological follow-up for 6 years. He was admitted to the emergency unit at our service following a sudden very intense headache condition accompanied by mental confusion. Upon neurological examination, the patient presented confusion, Glasgow coma scale score 14, without appendicular motor deficits (Hunt and Hess grade III). His pupils were mydriatic and not photoreactive.

A cranial computed tomography (CT) was solicited and it showed subarachnoid hemorrhage (Fisher IV) in base cisterns and left sylvian fissure, as well as interhemispheric hemorrhage collection (Fig. 1A–C). In addition, the presence of suprasellar expansive lesion (Fig. 1A–C) was observed. This formation was observed to be homogeneously contrast-capturing in the CT performed 7 days after the ictus (Fig. 1D–F). In view of these images and the history of pituitary tumor, two principal diagnostic hypotheses arose: tumor bleeding or hemorrhage due to the rupture of the partially thrombosed giant aneurysm. Therefore, a cerebral angiography was performed and it showed a saccular aneurysm in the anterior communicating complex, associated with a superior deviation in the anterior cerebral arteries (Fig. 2).

The patient was submitted to a surgical procedure in which right pterional access had been opted for, followed by the microsurgical opening of the sylvian fissure and exposure of the anterior cerebral arteries and anterior communicating complex for the clipping of the aneurysm and partial resection of the pituitary tumor. The tumor was intimately adhered to the optic nerves and the chiasmus, as well as to the anterior cerebral arteries. The patient presented a good progression, without additional deficits, being classified in Glasgow outcome scale 4, due his previous amaurosis. He was once again referred to neuroendocrinological follow-up.

Discussion

The first register of an association between a cerebral aneurysm and a pituitary adenoma, documented by the French ophthalmologist Offret G, dates back to 1959.[3] However, to this day the joint incidence of these two disorders has not been completely determined, so it is possible to consider such association more frequent when comparing it with other primary tumors in the central nervous system.[2] Pituitary adenomas, producers of the growth hormone, are the most commonly involved.[4] Despite the fact that the prolactinoma is the most frequent pituitary tumor, the incidence of coexistent cerebral aneurysms seems to be lower in comparison with other adenomas, considering that approximately 2% of the prolactinomas are associated with cerebral aneurysms.[1] However, in a recent retrospective study, which included 800 patients with pituitary adenoma, Min Chu Oh et al. observed no relationship between aneurysms and the tumoral histological type tumoral.[5]

In the present case, we report on the association between a pituitary macroadenoma, producer of prolactina, and an anterior communicating artery aneurysm. The factors which determine this association are yet unknown, but there are situations in which the causal relationship is consistent. The epidemiological value on which this association is based rests on the fact that in the general population, according to the ISUIA study,[6] aneurysms are located at a frequency of 89% in the anterior circulation and 11% in the posterior circulation. When associated with pituitary adenomas, 97% are found in the anterior circulation.[1]

In 1990, Reddy et al.[7] operated on a patient with a pituitary adenoma, producer of the growth hormone, who had a