Commentary

Brain diseases are often discovered in an incidental manner through high-resolution imaging techniques. In some cases, signs or symptoms are absent or not so relevant for the health of the patient while, in other cases, a correct, prompt diagnosis can be crucial for reducing the life-threatening consequences of diseases as in the case of cerebral vascular disease or brain tumor. In the last few years, the prevalence of incidentally discovered brain diseases has increased with the diffusion and technical improvement of high-resolution imaging techniques.

Patients with pituitary adenomas periodically undergo computed tomography (CT) or magnetic resonance imaging (MRI) of the brain, and association of the pituitary lesion with other brain diseases has been frequently reported in literature.

In the presence of concomitant brain morbidities (benign lesions, malignant neoplasms and vascular diseases), treatment must be tailored to the patient, but an adequate knowledge of these coexistences based on their location is an important precondition to planning a correct surgical approach, avoiding life-threatening hemorrhagic complications.

Brain diseases are often discovered incidentally through high-resolution imaging techniques. In some cases, signs or symptoms are absent or not so relevant for the health of the patient while, in other cases, a correct, prompt diagnosis can be crucial for reducing the life-threatening consequences of diseases as in the case of cerebral vascular disease or brain tumor. In the last few years, the prevalence of incidentally discovered brain diseases has increased with the diffusion and technical improvement of high-resolution imaging techniques.

Patients with pituitary adenomas periodically undergo CT or MRI of the brain, and association of the pituitary lesion with other brain diseases has been frequently reported in literature. In addition, an elevated co-prevalence of independent primary

tumors has been found in patients with pituitary tumors, both benign and malignant, and in their relatives.[1] Coexistence of pituitary adenoma and intracranial tumor is not a rare event. On the contrary, the simultaneous occurrence of pituitary adenoma and intracranial meningioma, one of the most frequent primary intracranial tumors, accounting for 15–25% of all central nervous system neoplasms, is a rare clinical event.[2,3] This simultaneous occurrence was usually reported not only in patients with both functioning and nonfunctioning pituitary adenoma after radiotherapy,[4,5] but also in patients not previously irradiated for a pituitary mass, suggesting that this coexistence may be a casual finding without any relationship between the two diseases. A possible role of growth hormone (GH) or other growth factors in the appearance or growth of meningioma has also been hypothesized but, at the moment, this statement is not fully supported. In some cases, the appearance and growth of meningioma were observed despite effective octreotide treatment, suggesting that SSAs can play a growth-promoting role.[6]

Based on angiography evaluations and autopsy, the incidence of intracranial aneurysms ranges from 1% to 7% with dramatic, life-threatening consequences and a very high risk of death in the case of rupture. The relationship between pituitary adenomas and brain vascular disease is still not clear, but coexistence of pituitary adenoma and cerebral aneurysm (CA) is not so rare an event.[7] Indeed, CAs have been reported in 0.04–7.4% of patients harboring pituitary adenomas.[8,9] Literature data show that intracranial aneurysms are most frequently associated with acromegaly[10,11] suggesting that also in this type of association an important role in the genesis of intracranial aneurysms could be played by prolonged GH hypersecretion through inducing atherosclerotic and/or degenerative modifications in the arterial walls of the circle of Willis.[12] Other possible etiological factors include a mechanical effect due to direct contact between adenoma and aneurysm with vascular infiltration or traction caused by the adenoma adjacent to the arterial wall.[12]

On the contrary, the incidence of arteriovenous malformations (AVM) in patients with cerebral neoplasms is low in comparison with the incidence of CAs in the same patient type (0.1 vs. 0.2–0.7%) and until, the coexistence of AVM and pituitary adenoma has been shown in only five cases.

The recent paper by Yilmaz *et al*. describes the first case of a 28-year-old woman successfully treated with gamma-knife radiosurgery (GKR) for AVM, concomitant with a nonfunctioning pituitary adenoma in which, after a first GKR had performed for both pathologies, a second-stage GKR was necessary in the 3rd year for the residual AVM bed.[13]

In conclusion, in the presence of concomitant brain morbidities (benign lesions, malignant neoplasms and vascular diseases), treatment must be tailored to the patient, but an adequate knowledge of these coexistences based on their location is an important precondition to planning a correct surgical approach, avoiding life-threatening hemorrhagic complications.

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