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Case report

Classical pituitary tumour apoplexy: Clinical features, management and outcomes in a series of 24 patients

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Abstract

We retrospectively analysed the incidence, clinical presentation, endocrinological and radiological findings, medical and surgical management of pituitary apoplexy in our department (single-centre study), having a large experience in pituitary surgery.

Among 1540 pituitary lesions, 24 patients presented with pituitary apoplexy. Their charts were retrospectively reviewed. The symptoms included headache (92%), nausea and vomiting (54%), visual deficit (50%), oculomotor paresis (54%) and/or an altered mental state (42%). Skull X-rays ($n = 14$) demonstrated an enlarged sella turcica in all cases; CT-scan and/or MRI always revealed a sellar and suprasellar expanding lesion. Panhypopituitarism was present on admission in 70% of the patients. Urgent therapeutic management included high-dose cortisone treatment in all but one patients and CSF drainage in three. Three patients were treated conservatively. Nine patients were operated on rapidly, within hours or a few days because of severe visual deficit and/or altered level of consciousness. Nineteen patients were operated by the trans-sphenoidal approach; one of them required a second operation by craniotomy. There were two deaths related to the illness and one to an ill-defined reason at 4 months. Among the other patients 95% made a good recovery. All but two patients required a substitutive treatment with adrenal (83%), thyroid (68%), gonadal (42%) and/or growth (16%) hormones. The preoperative visual deficits recovered in all but one patients (92%) whereas the oculomotor pareses improved in all but two patients (85%).

In conclusion, pituitary tumour apoplexy is a rare event, complicating in our series 1.6% of 1540 pituitary adenomas. Even in severe cases, complete recovery is possible if the diagnosis is rapidly obtained and adequate management is initiated in time. Surgical results after trans-sphenoidal approach are in the majority of cases very satisfactory.

Keywords: Pituitary adenoma; Pituitary apoplexy; Pituitary diseases; Sella turcica; Trans-sphenoidal approach; Cabergolin

1. Introduction

Pituitary apoplexy (PA) is one of the most serious, life-threatening complications of pituitary adenoma. The term PA should be reserved for those cases with the abrupt onset of typical symptoms and signs including headache, nausea and vomiting, visual disturbances, oculomotor paresis, drowsiness, confusion and/or coma. From 1968 to 2004, 1540 patients were seen in our department for a pituitary lesion. Among these patients, 24 presented with fulminating symptoms from ischemic or hemorrhagic infarction of the pituitary mass. We present the detailed clinical picture of these 24 patients and discuss their management.

2. Materials and methods

2.1. Patient population

From 1968 to 2004, 24 cases of PA were retrospectively reviewed among 1540 pituitary lesions seen by the senior author (AS). Data collected included the age and sex of the patient, past medical history, clinical presentation,

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preoperative neurological, endocrinological and ophtalmological status, and postoperative outcome.

2.2. Endocrine evaluation

Standard blood evaluations were performed in emergency in all patients (ionogram, glycemia, blood cell count, etc.). Moreover, anterior pituitary functions were assessed in 20 patients. The following hormonal dosages were obtained: serum prolactin (PRL), growth hormone (GH), insulin-like growth factor (IGF1), thyroid stimulating hormone (TSH), adrenocorticotropic hormone (ACTH), luteinizing hormone (LH), follicle stimulating hormone (FSH), free thyroxine (T4), free triiodothyronine (T3), serum cortisol and urinary free cortisol. Dynamic endocrine testing was done in eight cases using injection of thyroid releasing hormone (TRH), luteinizing hormone-releasing hormone (LHRH) and insulin tolerance test.

2.3. Radiological studies

Neuroradiological studies included skull X-rays in the antero-posterior and lateral planes in 14 patients. Computerized tomography (CT) was performed in 16 patients. Twelve patients were studied by MRI. Angiograms were done in seven patients and pneumoencephalograms in five before the era of CT-scan.

2.4. Surgical procedure

Twenty-one patients were submitted to surgery, using the trans-sphenoidal ($n = 19$) and/or cranial ($n = 3$) approaches. The operative findings were collected from the operative note, as well as the surgical therapeutic procedure.

2.5. Postoperative follow-up

Relief of preoperative symptoms and occurrence of postoperative complications were noted from the charts. All patients underwent a postoperative ophtalmological examination. A repeated endocrinological work-up was done at 7–10 days postoperatively. The yearly follow-up in the pituitary diseases clinics was noted in the charts of 20 patients.

3. Results

3.1. Clinical presentation

There were 16 males and eight females, ranging in age from 23 to 87 years (mean: 56). There were 25 episodes of PA, including two episodes in a single patient. Six patients had a known pituitary adenoma; two of them had been operated on by a trans-sphenoidal ($n = 1$) or cranial ($n = 1$) operation, respectively, 5 and 15 years before the apoplectic episode, which thus developed in a recurrent adenoma. Another patient had undergone bilateral adrenalectomy for Cushing's disease 5 years previous to PA and developed a Nelson syndrome. PA occurred in three patients with a prolactinoma a few weeks after a treatment by cabergolin was started. Other predisposing factors included arterial hypertension ($n = 4$), Von Willebrand disease ($n = 1$) and anticoagulant or antiaggregant therapy ($n = 3$).

The clinical data are summarized in Table 1. The most common symptoms were headache ($n = 22$), nausea and vomiting ($n = 13$), visual disturbances ($n = 12$, including two patients with bilateral blindness), oculomotor pareses ($n = 13$) and/or decreased level of consciousness ($n = 10$, including three comatous patients). A meningeal syndrome was noted in four patients. A lumbar puncture done in two of these and in three other patients revealed signs of subarachnoid haemorrhage (presence of 45–1170 red blood cells).

3.2. Endocrine evaluation

Fourteen of the 20 studied patients were found to have panhypopituitarism; three patients had a partial pituitary insufficiency (gonadotroph, 1; gonadotroph + thyreotroph, 1; thyreotroph + corticotroph, 1) and three other patients had no insufficiency. None had diabetes insipidus. Two patients had mild hyponatremia.

3.3. Radiological studies

On skull X-rays, the sella was enlarged in all ($n = 14$) patients with erosion of the sellar floor and dorsum sellae in two cases. CT-scan was performed at day 1 in five cases, at days 2–4 in five cases, at days 6–7 in two cases, between weeks 2 and 4 in three cases and beyond 1 month in the last two cases. It visualized a sellar lesion in all 16 studied cases and a suprasellar extension in 14 cases, which appeared predominantly hyperdense in 13 cases, isodense in two cases examined at days 6 and 12 and hypodense in one case examined on day 20. MRI performed at day 1 (two cases), between days 3 and 7 (five cases), between days 13 and 25 (three cases) and at month 3 (one case) showed an intra- and suprasellar expanding mass in all studied cases (Figs. 1 and 2). The largest diameter of the lesions ranged between 15 and

Table 1
Clinical presentation of 24 patients with pituitary tumour apoplexy

	N	%
Acute headache	22	92
Nausea/vomiting	13	54
Visual deficit	12	50
Oculomotor deficit	13	54
Complete III palsy	9	
Ptosis	7	
VI palsy	1	
Altered mental state	10	42
Hyperthermia	3	13
Seizure	1	4