CASE REPORT

Cushing's disease and marked hyperprolactinemia in a patient with a pituitary macroadenoma: effectiveness of bromocriptine treatment


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ABSTRACT. The case of a young boy bearing a pituitary PRL secreting adenoma (20-30,000 ng/ml) with the unusual association of clinical and endocrinological features of Cushing's disease successfully treated with bromocriptine is described. Brain computed tomography evidenced a huge pituitary adenoma leading to visual field defects and raised intracranial pressure. Due to the very large size of the tumor, which rendered the complete neurosurgical removal unlikely, medical treatment with bromocriptine (10 mg/day) was started. Follow-up for more than six months demonstrated an impressive reduction of tumor size, the lowering of prolactin levels into the normal range, the normalization of visual field, and the regression of both clinical and biochemical signs of hypercortisolism.

INTRODUCTION

The simultaneous occurrence of endogenous hypercortisolism and marked hyperprolactinemia in patients with pituitary adenomas is uncommon (1, 2). We report the case of a patient with this unusual association who, during a follow-up of more than six months with bromocriptine treatment, showed reduction of tumor size, normalization of plasma prolactin levels, and regression of hypercortisolism.

CASE REPORT

History

A 13-year-old boy was admitted to our hospital because of the recent finding of a pituitary macroadenoma. He was well until one year earlier, when he started complaining of frontal headache and emotional lability, treated with benzodiazepines with some benefit. Some months later the patient began to gain weight, coarsening of the voice and acne appeared and headache worsened. For these reasons he underwent a computed tomography of the brain which evidenced a huge pituitary adenoma with extrasellar extension. Thus, he was referred to us for endocrinological evaluation.

Physical examination showed a prepubertal patient with clinical signs of hypercortisolism, i.e. centripetal obesity, a thin skin with large purple striae, acne heightened color of face, and some degree of muscle wasting. He was alert and normally oriented. Blood pressure was 150/90; the remainder of the examination was normal.

Laboratory data

Laboratory tests of hematologic, renal, and liver function were normal. Fasting blood glucose was 80 mg/100 ml. Chest X ray and ECG were normal. Lateral X ray of the skull revealed an asymmetrically enlarged and partially destroyed sella turcica. Brain computed tomography showed a dense tumoral mass in the pituitary fossa, with an enormous supra- and parasellar extension (Fig. 1). The lesion expanded in the posterior fossa and to the right, filling most of the right middle fossa. A large lobulated component of this mass extended to the third ventricle which was compressed and displaced to the left. In the right parietal lobe a hypodense mass was evident, probably a cystic zone of the tumor. Computed tomography of the abdomen showed no abnormalities: in particular, both adrenals were of normal size and morphology. Ophthalmologic evaluation showed a visual acuity of 10/10 in both eyes; funduscopic examination evidenced normal optic disks. A bitemporal superior visual field defect was documented by Goldman's perimetry. Tests of endocrine function gave the following results.

Basal plasma prolactin levels were extremely elevated,
ranging from 20 to 30,000 ng/ml: thyroxine was 4.5 μg/100 ml, triiodothyronine 88 ng/100 ml, LH 10 mU/ml, FSH 2.2 mU/ml, and testosterone 0.5 ng/ml. Urinary 17-OH corticosteroids ranged from 12 to 25 mg/24 h; urinary 17-ketosteroids were 14 mg/24 h. Cortisol secretion lacked the normal diurnal rhythm: 20.8 μg/100 ml at 08.00, 18 μg/100 ml at 00.00. Insulin induced hypoglycemia did not modify ACTH, GH, or cortisol levels. After a standard dexamethasone suppression test (0.5 mg po every 6 hours for 2 days) urinary 17-OH corticosteroids were not reduced: 12.2 mg/24 h, basal value, 11.9 mg/24 h after dexamethasone, but fell to 1.9 mg/24 h after a “high dose” dexamethasone test (2.0 mg po every 6 hours for 2 days). Serum ACTH levels were low-normal (28-38 pg/ml) on repeated days.

Course
On the 15th day, just after the above mentioned examinations, classic features of raised intracranial pressure, i.e. headache, vomiting and papilloedema appeared. Treatment with both dexamethasone (16 mg/day im) and bromocriptine (2.5 mg/day po) was started: the latter drug was increased up to 10 mg/day within 5 days. In spite of a subjective improvement after the first 2 days of treatment, the patient was transferred to a neurosurgical department where his conditions furtherly improved with a complete regression of headache, vomiting and papilloedema. The patient was discharged after 7 days under the same dosage of bromocriptine, whereas dexamethasone was discontinued. After 3 weeks of bromocriptine treatment the patient was reevaluated. He was feeling well; clinical signs of hypercortisolism were reduced. Visual field was normalized: plasma prolactin was 25 ng/ml. Brain computed tomography evidenced an impressive reduction of the tumor, mainly in its extrasellar portion (Fig. 1). Neurological examination was normal. Bromocriptine treatment was continued at the same dosage (10 mg/day). Forty days later the patient was readmitted to our division. He was still feeling well; perimetry was normal. A third computed tomography showed a further slight reduction of the tumor in its both intra- and extrasellar portion. Plasma prolactin levels were normal (13 ng/ml); a normal rhythm in cortisol secretion was restored (11.3 μg/100 ml at 08.00, 2.6 μg/100 ml at 00.00); urinary 17-OH corticosteroids were in the normal range and they were normally suppressed by a low dose dexamethasone test (from 3.8 mg/24 h to 1.2). Moreover, insulin induced hypoglycemia was fol-

Fig. 1 - Upper panel, before treatment. Brain computed tomography shows a huge, dense, lobulated tumor. Note the enormous extrasellar extension of the mass. Lower panel, after 3 weeks of bromocriptine administration. An impressive reduction of tumor size is evident.