Cushing's disease presenting as an intracerebral hemorrhage

Sir,

Hypertension is one of the most distinguishing factors of endogenous Cushing's disease and is present in approximately 80% of adult patients and in almost half of the children and adolescents with this disease.[1] Cases of hypertensive intracerebral hemorrhage associated with Cushing's disease are extremely rare.

A 38-year-old male presented with an episode of acute giddiness and limb weakness on the left side. He had been diagnosed with hypertension and diabetes mellitus a year prior to this incident and was not consistently taking medication. The patient also had weight gain and progressive Cushingoid body features, but preferred not to be investigated or treated. A neurological examination at the time of admission revealed Grade 3 left hemiparesis. He was otherwise alert and oriented. He had only mild to moderate clinical features of Cushing's syndrome. A Computerized tomography (CT) scan was performed that showed an intracerebral hematoma in the right basal ganglia with minimal local mass effect [Figure 1]. It also showed an enlarged sella turcica with a hyperdense enhancing mass and a suprasellar extension. A hormonal profile showed a serum cortisol level of 27.1 mcg/dl. The patient was managed conservatively for the intraparenchymal hematoma and was then referred to our institution after 3 months. A magnetic resonance imaging (MRI) showed a large lobulated sellar mass with multiple necrotic areas and foci of hemorrhage, suggestive of pituitary macroadenoma with apoplexy. The mass was heterogeneously hyperintense on T2 weighted images [Figure 2] and isointense on T1 weighted images [Figure 3]. The lesion showed multiple fluid intensity areas within which were areas of necrosis. There were a few hyperintense foci seen within the lesion on T1 weighted images that showed blooming on gradient echo images. These represented hemorrhagic foci. There was also an irregular hemosiderin stained area in the right basal ganglionic region, hypointense on T2 weighted images, and hypointense to hyperintense on T1 weighted images. A hormonal study at this time revealed a basal cortisol level of 20.4 mcg/dl, a midnight cortisol level of 16.4 mcg/dl, and a midnight adrenocorticotrophic hormone (ACTH) level of 96.2 pg/ml. A diagnosis of pituitary macroadenoma with Cushing's disease was made. The patient was operated on by transsphenoidal route and a radical excision of the pituitary macroadenoma was performed. The postoperative course was uneventful. The patient noticed a weight loss of 3 kilograms in 15 days. His blood pressure also showed better control. Histopathology confirmed that the tumor was a mucoid cell pituitary adenoma.

The prevalence of hypertension in adult patients

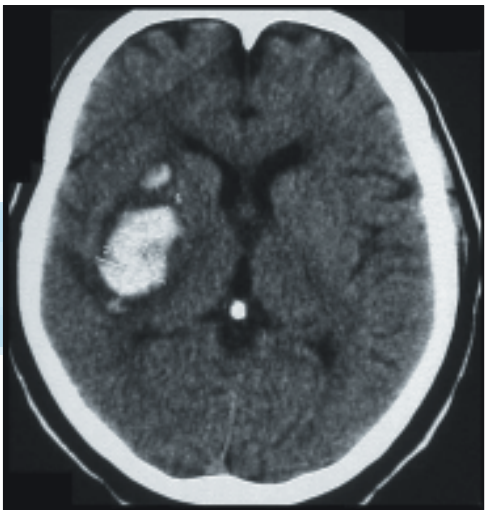

Figure 1: CT Brain showing right basal ganglionic bleed

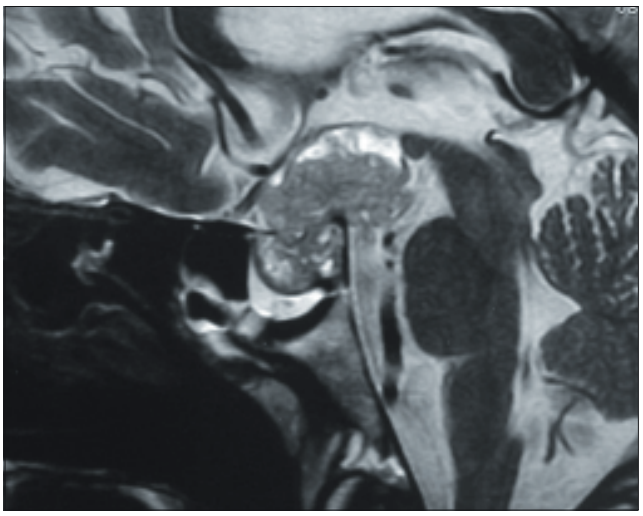

Figure 2: Sagittal T-2 weighted image showing a lobulated heterogeneously hyperintense sellar mass

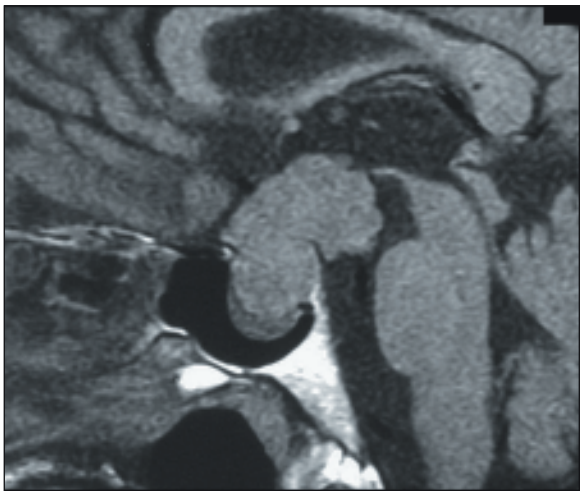

Figure 3: Sagittal T-1 weighted image showing an isointense sellar lesion

with Cushing's disease is approximately 80% whereas in children and adolescents it is approximately 47%.[1] The causes of hypertension in patients with Cushing's disease are multifactorial. These include intrinsic glucocorticoid activity, activation of the renin-angiotensin system, and suppression of the vasodilatory systems.[1]

Hypertension has been regarded as the most prevalent and powerful of the risk factors for intracerebral hemorrhage. The mechanism is thought to involve a hypertension-induced degeneration of the walls of small arteries (lipohyalinosis) that leaves them prone to rupture. Accelerated atherosclerosis after prolonged corticosteroid administration has been shown in both animals[2,3] and humans.[4] Faggiano, *et al*. found a higher prevalence of atherosclerotic damage in patients with Cushing's disease.[5] Also, patients with Cushing's disease have elevated plasma endothelin levels. There are reasons to assume that elevated endothelin levels mediate the accelerated early atherosclerosis and hypertension typical of this disorder.[6] Hence, theoretically patients with Cushing's disease are at an increased risk of developing intracerebral bleeds both due to hypertension and the accelerated atherosclerosis. Despite this, the incidence of reported hypertensive intracerebral bleeding in a case with Cushing's disease is extremely rare.

Our patient also had radiological features that suggested pituitary apoplexy. Apoplexy is most often obvious and discrete but may have a more subtle onset, or even be clinically silent.[7] Hypertension is also known to precipitate pituitary apoplexy.

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