Growth hormone secreting pituitary macroadenoma and meningioma: An association or coincidence?

Sir,

Co-existence of growth hormone secreting pituitary adenoma and meningioma is rare. It is postulated that it results from pro-proliferative actions of high growth hormone (GH) and Insulin like Growth Factor (IGF) levels on central nervous system tumors expressing GH and IGF receptors. We describe a middle aged male in whom there is co-occurrence of GH secreting pituitary adenoma and meningioma.

A 65-year-old man presented to the Endocrinology Clinic with complaints of progressive increase in the size of hands and feet size of 10 years duration. The patient also reported fatigue, headache and arthralgias. He however denied of any visual symptoms. On physical examination patient was well built with prominent frontal bossing, thickened lips, large fleshy nose, mandibular enlargement with prognathism, hoarse voice and broadened hands and feet, thick palms, seborrhoic skin and spade like fingers. Intra oral examination revealed

that the patient had an overbite, macroglossia and diastema. Endocrine evaluation showed random growth hormone of 58 ng/ml, while the 60 minute post 75 gm oral glucose value was 14 ng/ml (normal <1 ng/ml). Testing of other anterior pituitary hormones were normal [Table 1]. Magnetic resonance imaging sella revealed pituitary macroadenoma and large frontal parasagittal meningioma [Figure 1]. The patient underwent trans-spheniodal pituitary surgery for removal of pituitary adenoma and is planned for removal of meningioma at a later date.

Acromegaly is associated with an enhanced risk for the development for other malignancy. The simultaneous occurrence of an intracranial meningioma and a pituitary adenoma is exceeding rare with only few cases reported previously.[1] The association of meningiomas with other intracranial tumors has been well documented. The tumors frequently encountered are neurofibromatosis, gliomas and neurilemmomas.[2] Abs *et al*., reported a predominant female distribution and perisellar location of meningiomas in their series consisting of seven patients.[3] Our patient had both growth hormone producing pituitary tumor and meningioma without any history of head trauma, infection or irradiation. There is no way to determine which tumor has developed first. Because our patient had meningioma before any radiation therapy, we conclude that either this is a coincidental radiological finding or may be related to the hypersecretion of growth hormone.

Ueba *et al*. have shown increased expression of Fibroblastic growth factor receptor 1 and 2 in human pituitary adenomas, whereas elevated circulating fibroblast (FGF) like activity is found in patients with sporadic pituitary adenomas and meningiomas.[4] The relationship between the GH-secreting adenoma and the meningioma is unclear. The exact causative factor explaining the co occurrence of two unrelated tumors i.e., pituitary adenoma and meningioma is yet to be determined. A common genetic dysregulation can explain the development of these tumors however; the possibility of coincidental occurrence of the two tumors cannot be ignored.

Table 1: Hormonal analysis of patient

Hormonal parameters	Patient value	Normal value
Basal GH (ng/ml)	58	UD-7
Post glucose suppressed GH (ng/ml)	14	<0.4
Serum T_4 (μg/dl)	8	5.5-13.5
Serum TSH (IU/L)	4.34	0.5-6.5
8 AM cortisol (μg/dl)	11.2	10-25
Cortisol (μg/dl) 60 min post 250 μg ACTH	23.8	>18
Serum LH (U/L)	4.92	0.5-10
Serum FSH (U/L)	4.38	1.6-11.6
Prolactin (ng/dl)	37	1-20
Testosterone (ng/dl)	320	180-700

T_4: Thyroxine, TSH: Thyroid stimulating hormone, LH: Luteinizing hormone, FSH: Follicle stimulating hormone, GH: Growth hormone, PRL: Prolactin, UD: Undetectable, ACTH: Adrenocorticotropic hormone

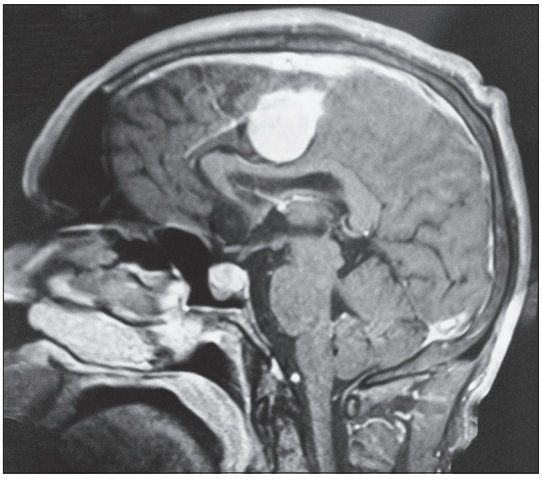

Figure 1: Magnetic resonance imaging pituitary sagittal view showing pituitary macroadenoma and frontal lobe meningioma

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