



A RARE CASE OF INVASIVE PITUITARY MACROADENOMA

Radiodiagnosis

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ABSTRACT

Pituitary macroadenomas are the most common suprasellar mass in adults, and responsible for the majority of transsphenoidal hypophysectomies. They are defined as pituitary adenomas greater than 10 mm in size and are approximately twice as common as pituitary microadenomas. On imaging attenuation and signal characteristics can significantly vary depending on tumor components such as hemorrhage, cystic transformation or necrosis. We report a rare case of invasive pituitary macroadenoma complicated by fatal intracranial hemorrhage in a 22 year young female presenting with headache, vomiting and convulsions.

KEYWORDS

pituitary, invasive, macroadenoma, hemorrhage.

Case History & clinical presentation:

A 22 year female referred for a CT Head scan with the complains of fever and headache since 3 days alongwith associated 4-5 episodes of vomiting and 2 episodes of generalized tonic clonic seizures a day back. There was no history of loss of consciousness, altered sensorium, head trauma, neck rigidity, drug use, visual complains. Also there was no history of medical or surgical illness in past. The patient later succumbed to cardio respiratory arrest on 3rd day of admission.

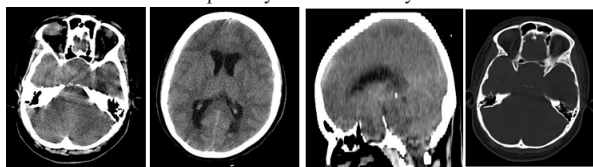


Fig.1:

- Axial non contrast CT shows heterogeneously isodense sellar mass lesion with widening and remodelling of sella.
- Axial non contrast CT section shows diffuse cerebral oedema along with hyper densities with fluid level in bilateral occipital horns of lateral ventricles suggestive of intraventricular haemorrhage.
- Mid sagittal non contrast CT section shows expansion and deepening of sella with supra and infrasellar extension of the sellar mass lesion. Also, hyper densities are noted along the falx cerebri.
- Axial CT section with bone window shows marked thinning of the sella turcica margins.

CT findings:

Diffuse cerebral edema as evidenced by effacement of sulci – gyri and loss of lateral CSF spaces and complete effacement of bilateral sylvian fissures. A solitary well defined midline space occupying lesion which appears heterogeneously iso to hyperdense on non enhanced CT noted in the sellar and suprasellar region measuring 6.5 x 5.8 x 8.4 cms (TxAPxCC) with HU value of hyper densities ranging between 56-78 HU s/o hemorrhage within the lesion. The lesion is seen causing mass effect in the form of compression of third ventricle with resultant dilatation of bilateral lateral ventricles s/o obstructive hydrocephalus. Hyper densities noted in occipital horns of bilateral lateral ventricles with fluid-fluid level with HU value ranging from 55-70 s/o intraventricular hemorrhage. Significant widening and remodelling of sella is noted with non visualization of sphenoid sinus which suggests a benign long standing lesion.

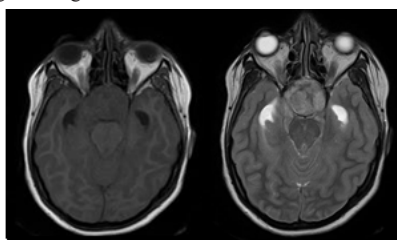


Fig.2:

- Axial T1WI shows the hypo to isointense sellar mass lesion with subtle areas of hyperintensities within the lesion.
- Axial T2WI shows the heterogeneously iso to hyperintense lesion. Also note the dilated temporal horns of bilateral lateral ventricles.
- On axial FLAIR the lesion appears heterogeneously iso to hyperintense.
- Gradient echo / T2* axial image shows significant areas of blooming suggestive of intratumoral haemorrhage.

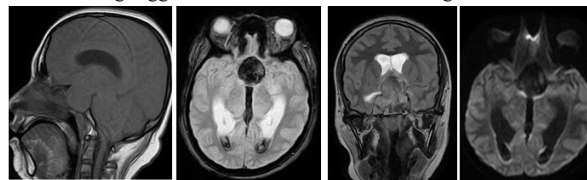


Fig.3)

- Mid sagittal T1WI shows suprasellar and infrasellar extension of sellar mass with invasion of sphenoid sinus.
- Axial GRE image shows significant blooming within the lesion suggestive of intratumoral hemorrhage. Also, note the areas of blooming in the occipital horns of bilateral lateral ventricles indicating intraventricular hemorrhage.
- Coronal T2WI shows the superior displacement of the tentorium with the characteristic "snowman/ figure of eight " appearance consistent with pituitary macro adenoma.
- Diffusion Weighted MR Image of the sellar mass shows no restriction of diffusion.

MRI findings:

Well defined space occupying lesion in the sellar region approximately measuring 5x6x8 cms noted with infrasellar and suprasellar extension appearing hypo-isointense on T1WI, heterogeneously hyperintense on T2WI & FLAIR with no diffusion restriction on DWI and significant areas of blooming on GRE/T2*. The lesion shows moderate heterogeneous enhancement post contrast. Obstructive hydrocephalus was noted due to compression third ventricle with intraventricular hemorrhage in occipital horns of bilateral lateral ventricles and hemorrhage along the falx cerebri. Infrasellar extension of the tumor by invasion into the sphenoid sinus was also noted. Hence, a diagnosis of invasive pituitary macro adenoma was made after having confirmed it with the highly raised prolactin levels retrospectively.

DISCUSSION

Pituitary macroadenomas are defined as adenomas measuring >10 mm diameter arising from the pituitary gland, and usually extending superiorly. Bilateral indentation at the diaphragma sellae can give a snowman or figure-eight configuration.³ Some macroadenomas demonstrate invasive growth, and extension into the cavernous sinuses is characteristic. Prolactin-secreting tumors are most frequently responsible for cavernous sinus extension, and typically prolactin levels increase significantly when the tumor gains access to the sinus.³ Once in the sinus, these tumors. Assessment of cavernous sinus invasion can be difficult. The most convenient method is to assess the degree of encasement of the cavernous portion of the internal carotid artery. Less than 90 degrees makes involvement of the sinus very unlikely, whereas greater than 270 degrees makes involvement almost certain.³ Are difficult to resect completely. Intratumoral hemorrhage occurs most frequently in pituitary adenoma among all types of brain tumors.¹ Pituitary apoplexy (or classic pituitary apoplexy) is characterized by acute clinical syndrome (sudden onset of headache, vomiting, visual disturbance, ophthalmoplegia, and altered consciousness) and has been detected in 2% to 14% of patients who underwent surgery for pituitary macroadenomas.²⁻⁶ Also, clinically silent pituitary hemorrhage (or subclinical pituitary apoplexy) has been frequently detected in many clinical series, so the real incidence of intratumoral hemorrhage in pituitary adenoma may be higher.⁷ Subclinical intratumoral ischemia or hemorrhagic infarction may be common in pituitary adenoma and may result in cyst formation or hematoma, or both.^{2,6-10} Conventional MR imaging and surgical findings suggest that approximately

50% of pituitary adenomas contain cysts or hematomas, or both.¹⁰ Such intratumoral vasogenic events may be important in the progression of pituitary macroadenomas. Exact evaluation of intratumoral hemorrhage may also be important in surgical indication and planning.^{2,5,6,8,9} The most sensitive neuroimaging technique for the detection of blood is T2*-weighted gradient-echo (GE) MR imaging, which is widely applied for the evaluation of intracerebral hemorrhage in both the acute and chronic stages.¹¹⁻¹⁶ T2*-weighted GE MR imaging shows a hemorrhage as marked low signal intensity, because the differences in the magnetic susceptibility resulting from the presence of blood or paramagnetic blood products create local magnetic field inhomogeneities.^{11,12} Truly aggressive pituitary tumors are uncommon, with the incidence of not more than 2%. Such tumors prove their atypical behavior by invading adjacent tissues, by proliferating rapidly

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