SMRT Student Scope Submission

Title and Author(s)

Title: Post-op MRI for the evaluation of pituitary tumor

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Introduction or Patient History

The patient is a 63- year- old gentleman who has a large 2.5 cm pituitary adenoma causing compression of optic chiasm. The surgery was performed to remove the tumor, and a post-op brain MRI scans was performed to confirm the removal of the tumor.

Patient Preparation and Scan Set up

This exam was completed on a GE 1.5 Tesla scanner. The patient was routinely screened for any ferrous metal objects inside and outside of his body prior to starting the exam, and before the patient entered the scan room. The patient was in the supine position on the scanning table with head going in first, and positioned in the appropriate head coil. The patient's head was in the straight position with the interpupilary line parallel to the surface of the scanning table. Soft sponges were used to restrict voluntary movement of the patient' head. Earplugs were also provided to reduce the noise level during the scans. The knee cushion was also placed under the patient knees for comfort. Squeeze ball (Call bell) was given to the patient in the event of an emergency. The patient also received an explanation of the whole procedure such as time, and how long it take for each scan, contrast injection, etc.

MR Imaging Parameters

There were nine different imaging sequences that were acquired during this exam with special attention to the pituitary gland, such as, Sagittal T1, Axial T2, Axial flair, Axial diffusion, Axial T1 post gadolinium including, high resolution sagittal T1, and coronal T1 pre and post gadolinium through the pituitary gland. This study sequences was set up as followed:

Sequence	Type	TR	TE	FOV	T/S	Matrix	NX	Band
3 Plan Loc								
Sag T1	SE – 2D	535 ms	min	18 cm	3/1	256x192	2	15.62
Ax T2	SE – 2D	4000 ms	85 ms	22 cm	5/1	256x192	1	16 2
Ax Flair*	FSE IR – 2D	1000 ms	133 ms	22 cm	5/1	256x192	1	24.4
Cor T1	SE – 2D	590 ms	min	18 cm	3/1	256x192	2	12.2
Diffusion	SE/EPI – 2D	10000 ms	min	30 cm	5/1	128x128	1	48.4
Administration 20 cc of Gadolinium Contrast								
Cor T1 Post	SE – 2D	450 ms	21 ms	18 cm	3/1	256x192	2	12.2
Sag T1 Post	SE – 2D	535 ms	min	18 cm	3/1	256x192	2	12.2
Ax Post	SE – 2D	600 ms	20 ms	22 cm	5/1	256x192	1	12.2

Findings and Discussions

According to the report," the findings is base on Sagittal T1, axial T2, axial flair, axial diffusion, axial T1 post gadolinium, including high resolution sagittal T1, and coronal T1 pre and post gadolinium through the pituitary gland. There were postoperative changes in the enlarged pituitary fossa with residual rim like and small nodular enhancement surrounding the surgical cavity, and is possibility of residual pituitary neoplasm cannot be excluded. There is adequate decompression of the suprasellar cistern and optic chiasm. Fluid levels and mucosal thickening in the paranasal sinuses is the result of transphenoidal surgery. "

Conclusions

Most all tumors of the pituitary gland are benign. Pituitary tumors make up nearly 10% of all brain tumors. They are most commonly found in young or middle aged adults. Like most brain tumors the cause of pituitary tumors is unknown. Research is being carried out into the possible cause.

Symptoms associated with pituitary tumors are either caused by direct pressure from the tumor itself as by disruption in normal hormone levels. As a tumor grows it puts pressure onto the optic nerve and this often causes headaches and visual problems.

Pituitary tumors are often discovered during a blood test. If excess amounts of pituitary hormones are found, usually CT scan or MRI scan is performed to confirm the diagnosis of a pituitary tumor.

Surgery is the most common treatment for pituitary tumors. Surgery is usually done by approaching the pituitary from the nose or by a small opening under the lip. The recovery after surgery is much quicker than other operations for brain tumors.

The reason for a post-op MRI of the pituitary tumor is to obtain a baseline study in order to see any leftover residue, and to check for injury to the surrounding tissue.

References

MRI report, Melhem, Elias R MD MRI staff Physician University of Pennsylvania Health Care System, May 23, 2006

Yuh WTC, Fisher DJ, Nguyen Hd et al. Sequential MR enhancement patterns in normal pituitary gland and in pituitary adenoma. AJNR 1994; 15: 101 – 108

Scotti G, Yu CYST, Dilon WP et al, MR Imaging of cavernous sinus involvement by pituitary adenomas AJR 1988; 151: 799 - 806

Images

This is an example on the axial T2, axial flair, sagittal pre and post, coronal pre and post:

Image 1 – Axial T2

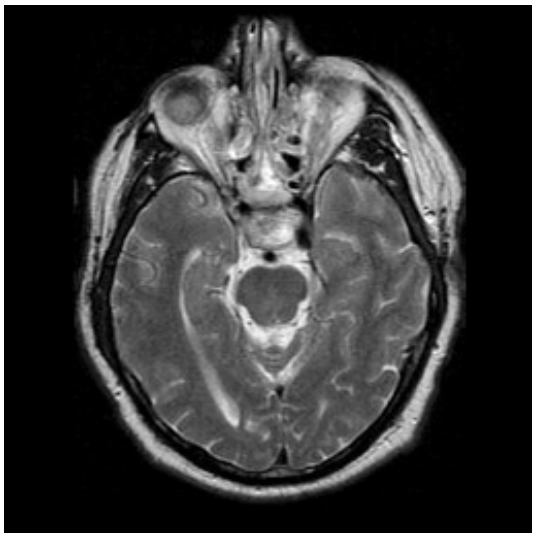

Image 2 – Axial flair

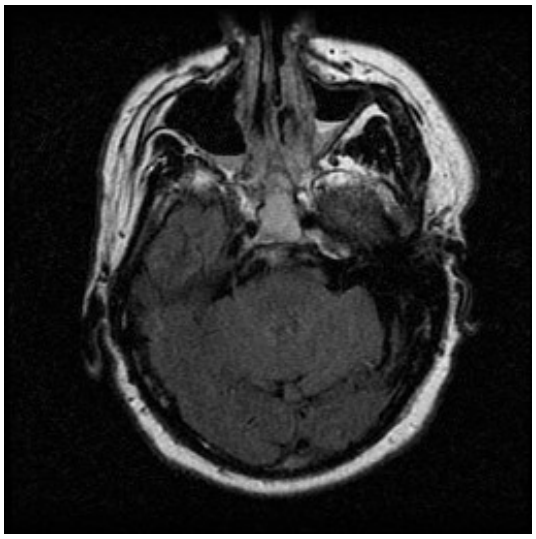

Image 3 - Coronal Pre

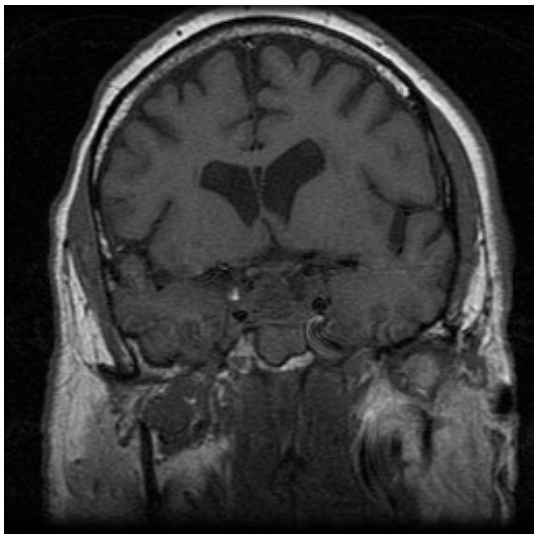

Image 4 – Coronal post

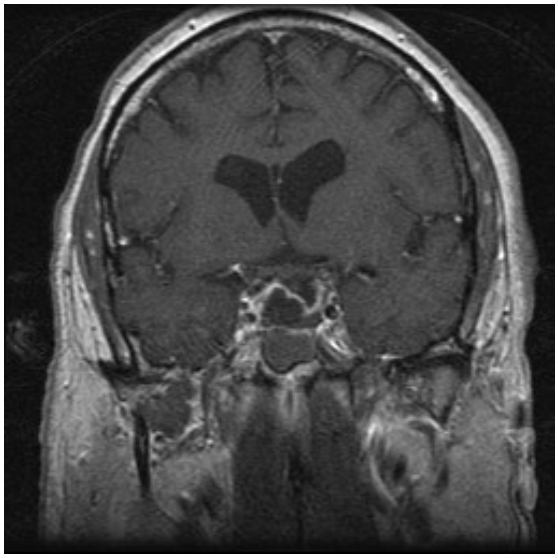

Image 5 – Sagittal Pre

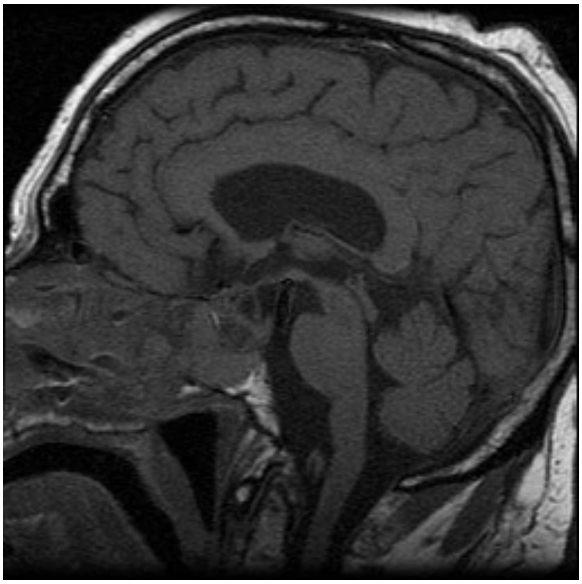

Image 5 – Sagittal Post