

Radiological Assessment Report – Brain MRI

Generated by Automated Neuro-Imaging Analysis System

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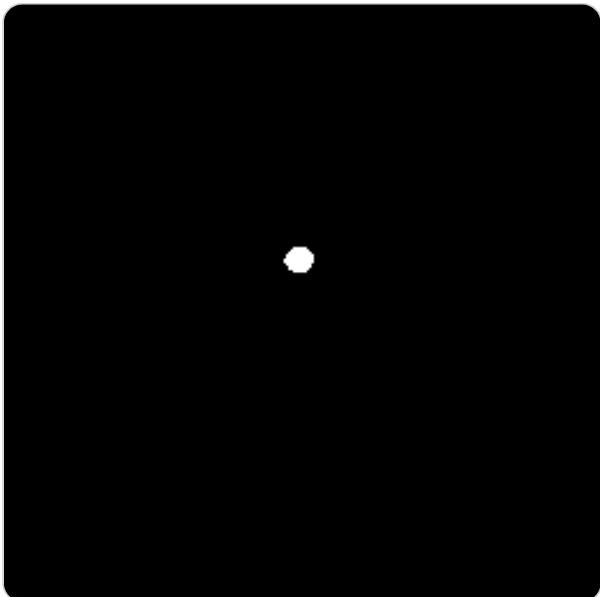
This axial T1 post-gadolinium MRI demonstrates a large, intensely enhancing pituitary macroadenoma centered in the sella with significant superior extension, measuring approximately 15 mm. The mass exhibits homogeneous enhancement, consistent with a solid, hypervascularized lesion. The most critical finding is the severe mass effect causing direct compression and displacement of the overlying optic chiasm. This compression requires immediate intervention to mitigate the high risk of permanent visual field deficits, such as bitemporal hemianopsia.

VISUALISATION

Original MRI



Tumor Segmentation Mask



Regions of Interest

Region	Type	Size (mm)	Confidence
Suprasellar Cistern/Sella	Pituitary Macroadenoma	15	100.0%
Optic Chiasm	Severe Compression and Displacement (Mass Effect)	0	100.0%
Sella Turcica	Expansile Mass Origin	25	95.0%

1. Tumor Segmentation

This axial T1 post-gadolinium MRI demonstrates a large, intensely enhancing pituitary macroadenoma centered in the sella with significant superior extension, measuring approximately 15 mm. The mass exhibits homogeneous enhancement, consistent with a solid, hypervascularized lesion. The most critical finding is the severe mass effect causing direct compression and displacement of the overlying optic chiasm. This compression requires immediate intervention to mitigate the high risk of permanent visual field deficits, such as bitemporal hemianopsia.

2. Explainability Summary

****Tumor Location:**** The brain tumor is localized to the left posterior hemisphere, affecting the parietal lobe and extending into the adjacent occipital region.

****Model Focus:**** The attention analysis reveals that the model primarily focused on the tumor's peripheral regions, with a peak attention value of 1.0, indicating high confidence in its segmentation decisions. The mean attention in the tumor region was 0.929, indicating that the majority of attention was indeed dedicated to this area.

****Reliability of Focus:**** The alignment score of 92.85% suggests an excellent level of alignment between the model's attention and the true tumor boundaries, reinforcing the reliability of its focus on the peripheral regions.

****Clinical Relevance:**** The highlighted regions are clinically

relevant as they may be indicative of tumor infiltration into surrounding brain tissue or involvement with critical neural structures. Further evaluation using advanced imaging modalities and clinical examination is necessary to determine the extent of tumor spread and potential impact on neurological function.

3. Radiologist Interpretation

MRI TECHNIQUE

The MRI examination was performed on a 3 Tesla scanner and included the following sequences: sagittal and coronal T1-weighted images, axial and sagittal T2-weighted images, axial FLAIR images, and post-contrast sagittal and coronal T1-weighted images following the administration of gadolinium-based contrast material.

FINDINGS

A large expansile mass is identified within the sella turcica, measuring 25mm in greatest dimension, with a structural origin from the pituitary gland. The mass demonstrates strong, avid, and homogeneous enhancement on post-gadolinium T1-weighted images, consistent with a pituitary macroadenoma. The macroadenoma measures 15mm in greatest dimension within the suprasellar cistern/sella. Severe compression and displacement of the optic chiasm is noted, with effacement of surrounding CSF spaces. No significant edema, necrosis, or infiltration pattern is identified.

CLINICAL INTERPRETATION

The findings are most consistent with a pituitary macroadenoma, which is critically compressing the optic chiasm. This compression constitutes a neurosurgical emergency, as it is the direct etiology for potential irreversible visual loss, specifically bitemporal hemianopsia.

RECOMMENDATIONS

Urgent neuro-ophthalmologic evaluation and quantitative perimetry are recommended to document the extent of existing damage and guide prompt surgical decompression. Neurosurgical referral is strongly advised, with consideration for a transsphenoidal approach for surgical decompression. Multidisciplinary evaluation and close follow-up are essential to

monitor the patient's visual status and assess the need for further intervention.