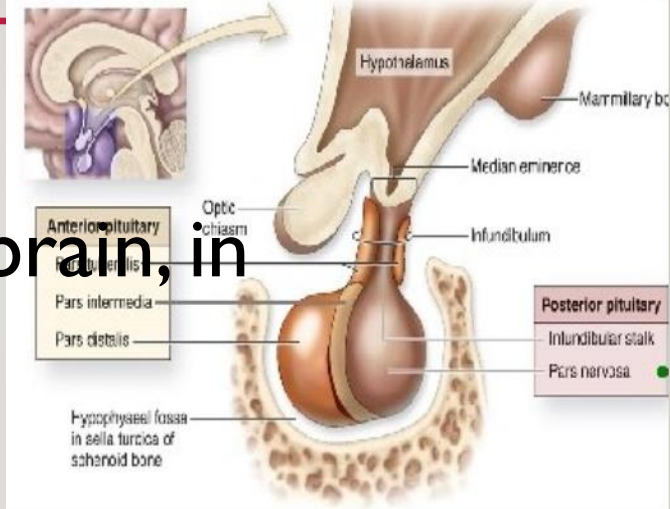


PITUITARY MASS

BY DR ZEINAB SHEIDAEI

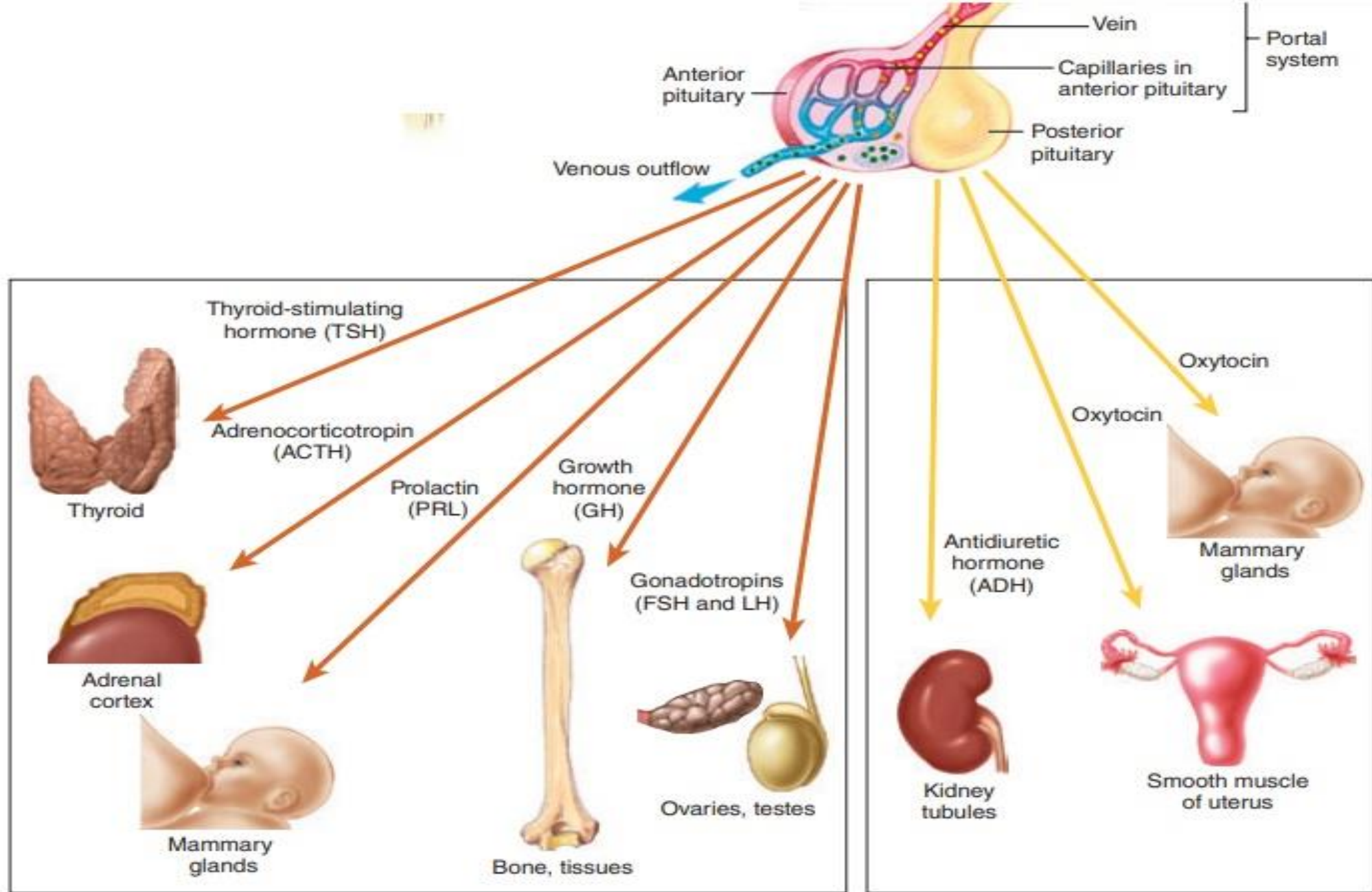


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- Pituitary gland is size of pea.
- Found in bony hollow beneath the base of the brain, in sella turcica, and beneath the hypothalamus.
- Divided into two major lobes ,the anterior and posterior lobe.

-
- The anterior pituitary gland is composed of differentiated cell types: somatotrophs, lactotrophs, corticotrophs, thyrotrophs, and gonadotrophs.
 - The posterior pituitary, is composed of large neuronal axons that originate in cell bodies in the supraoptic and paraventricular nuclei of the hypothalamus.



The pituitary gland.

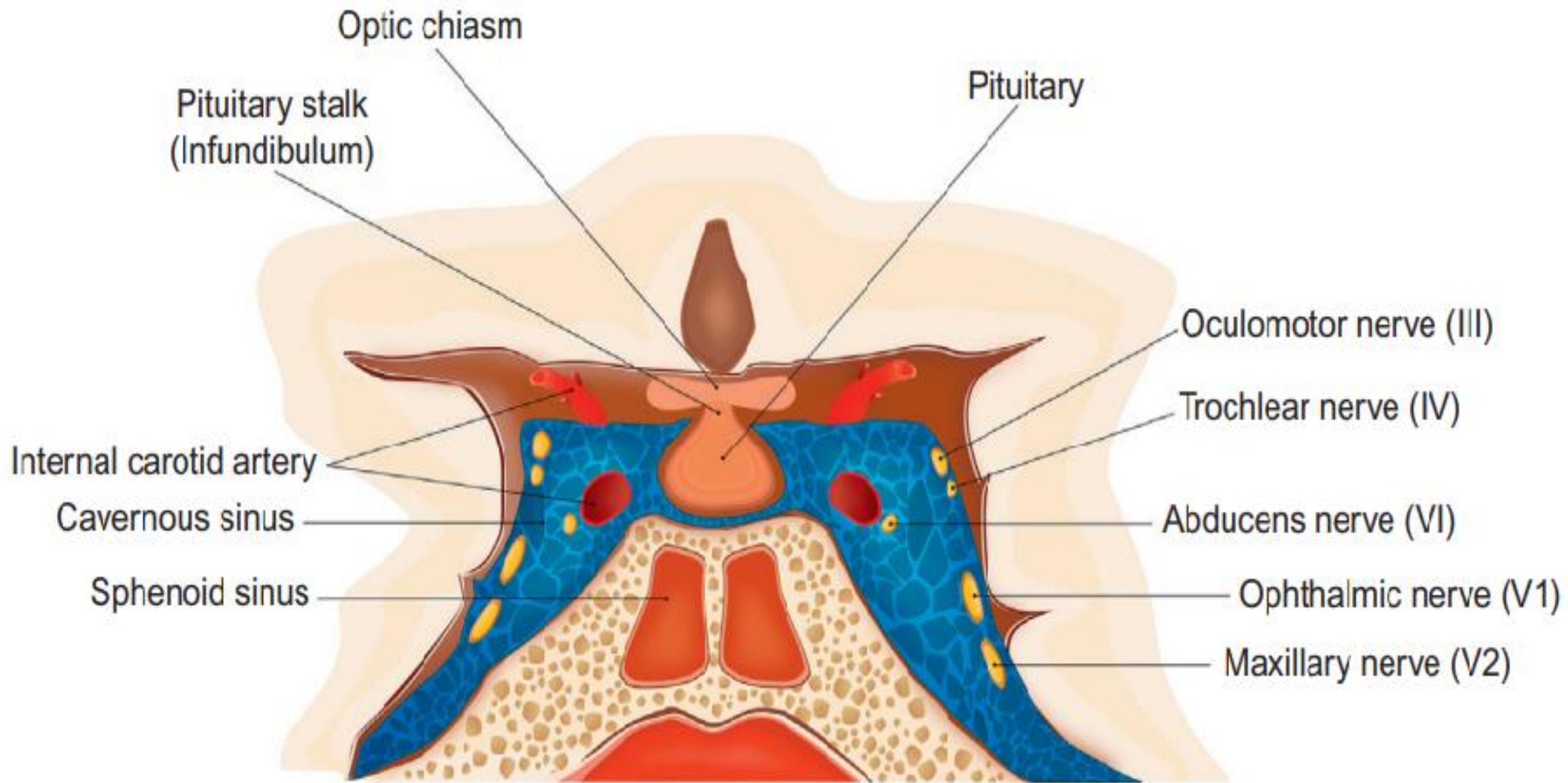
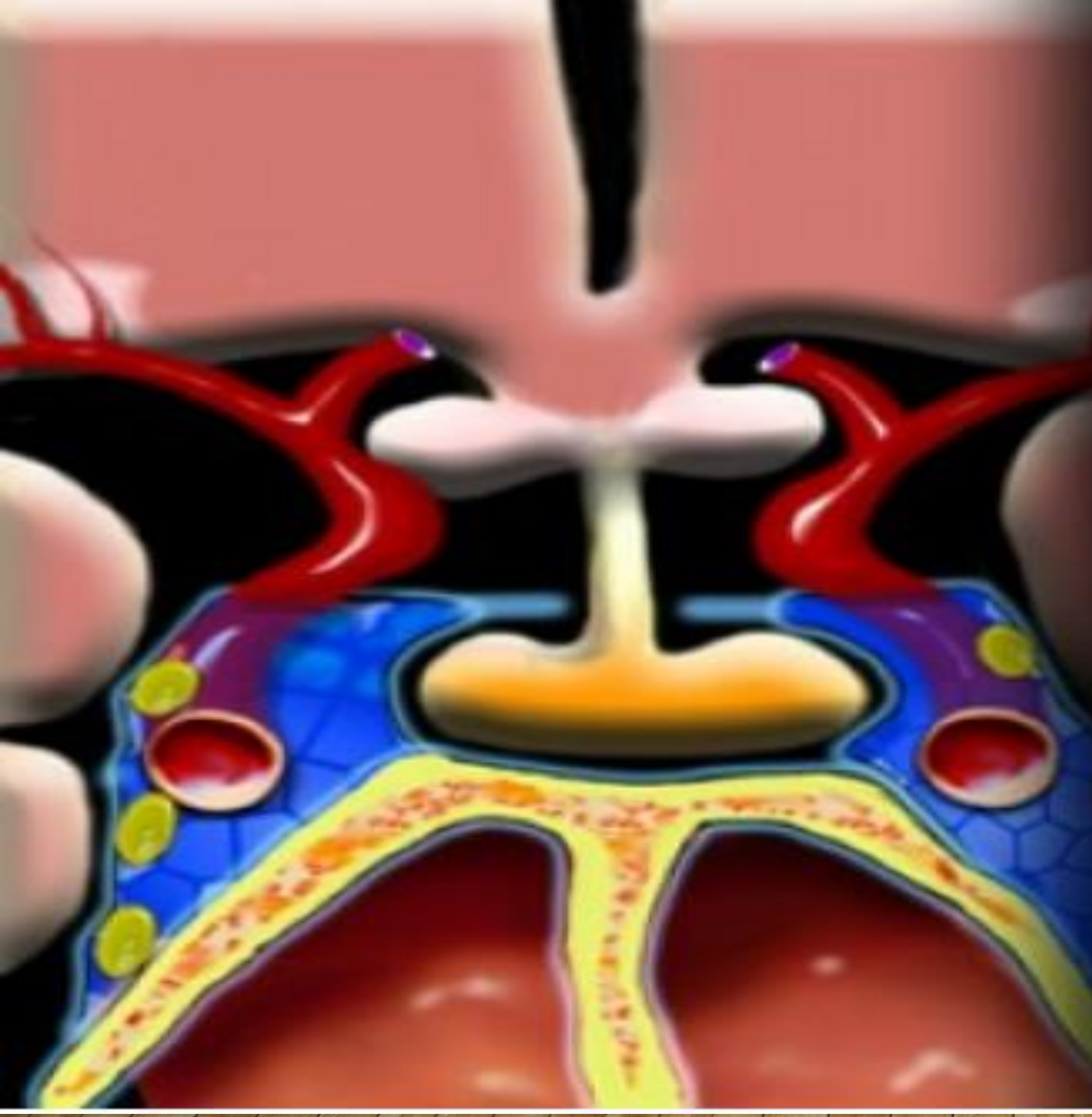


FIGURE 1.1 Schematic of normal pituitary gland anatomy.



Identify
pituitary gland
sella turcica



Determine Epicentre of the lesion
In, above, below or lateral to the sella



Analyse the lesion
signal, cystic, solid
flow void, calcifications



Differential Diagnosis

PITUITARY TUMORS

Most pituitary masses are adenomas.

Ninety-one percent of 1120 patients undergoing transsphenoidal surgery for sellar masses were diagnosed as pituitary adenomas.

Most commonly encountered nonadenomatous lesions include **Rathke cleft cyst**, **craniopharyngioma**, and **meningioma**.



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- Pituitary tumors cause morbidity by both **abnormal hormone secretion** as well as **compression of regional structures**.
 - Pituitary adenomas are **benign tumors** of the anterior pituitary.

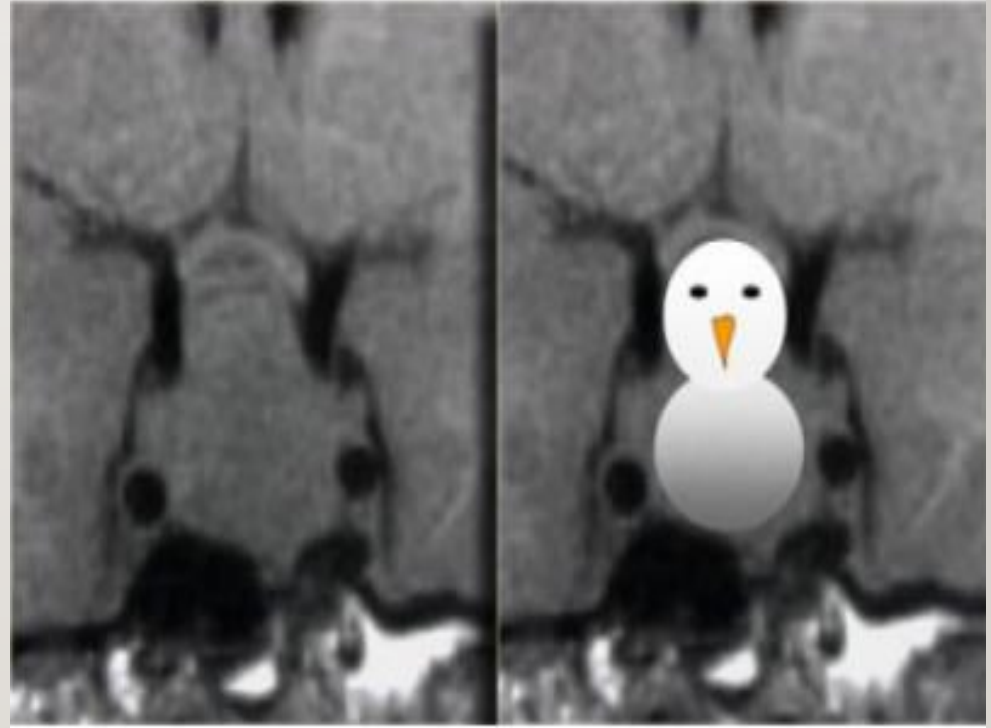
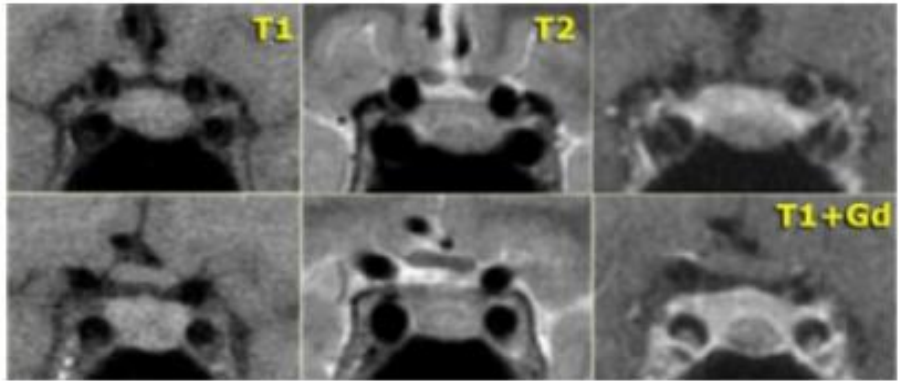
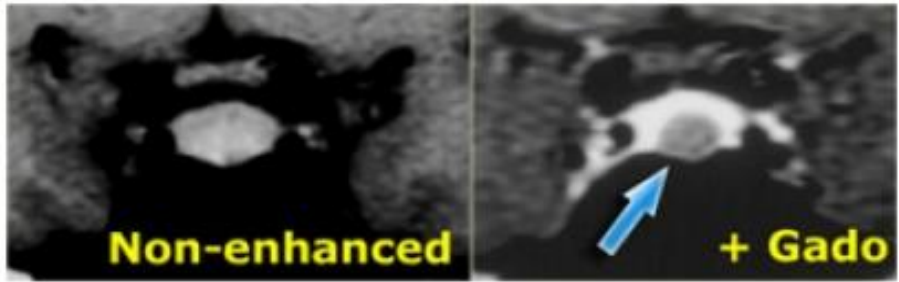
CLASSIFICATION:

Size:

Microadenoma (less than 10 mm)

Macroadenoma (larger than 10mm)

Giant adenoma (more than 40 mm)



Function:

Functional

Nonfunctional

Location:

Intrasellar

extrasellar

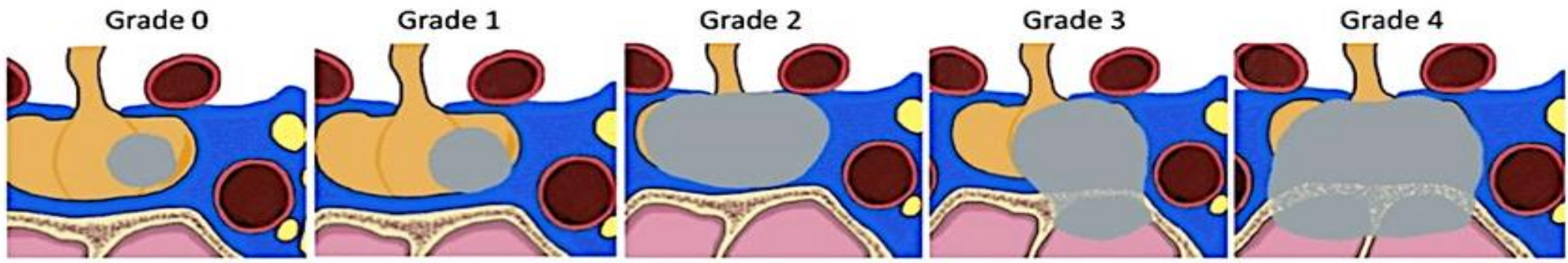
CLINICAL MANIFESTATIONS

- Sellar masses can present with **neurologic symptoms**, **abnormalities related to under- or over secretion of pituitary hormones**, or as an **incidental finding** on radiologic examination performed for some other reason.

-
- **Visual defects:** Visual impairment is caused **by suprasellar extension of the adenoma**, leading to compression of the optic chiasm.
 - The most common complaint is diminished vision in the temporal fields (**bitemporal hemianopsia**).
 - Other patterns of visual loss can also occur.

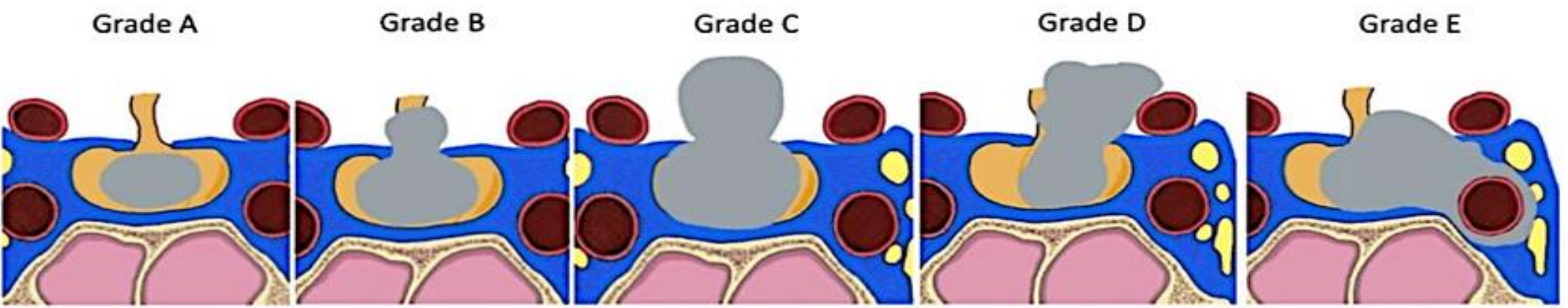
Other neurologic symptoms include:

- Headaches, presumably caused by expansion of the sella. The quality of the headache is not specific.
- Diplopia
- Pituitary apoplexy induced by sudden hemorrhage into an adenoma, causing excruciating headache and diplopia
- And ...



Sellar enlargement

Sellar erosion



Symmetrical parasellar extension

Asymmetrical parasellar extension

-
- **Pituitary stalk compression** by a hormonally active or inactive intrasellar mass may compress the portal vessels, disrupting pituitary access to hypothalamic hormones and dopamine; this results in early hyperprolactinemia.

-
- under- or over secretion of pituitary hormones

EVALUATION OF SELLAR MASSES

- Sellar masses should be evaluated both radiologically and hormonally.

-
- **MRI** — Magnetic resonance imaging (MRI) with gadolinium is the best imaging procedure for most sellar masses

The CSF, on the T1-weighted image (A), appears black, whereas on the T2-weighted image (B) it appears bright white.

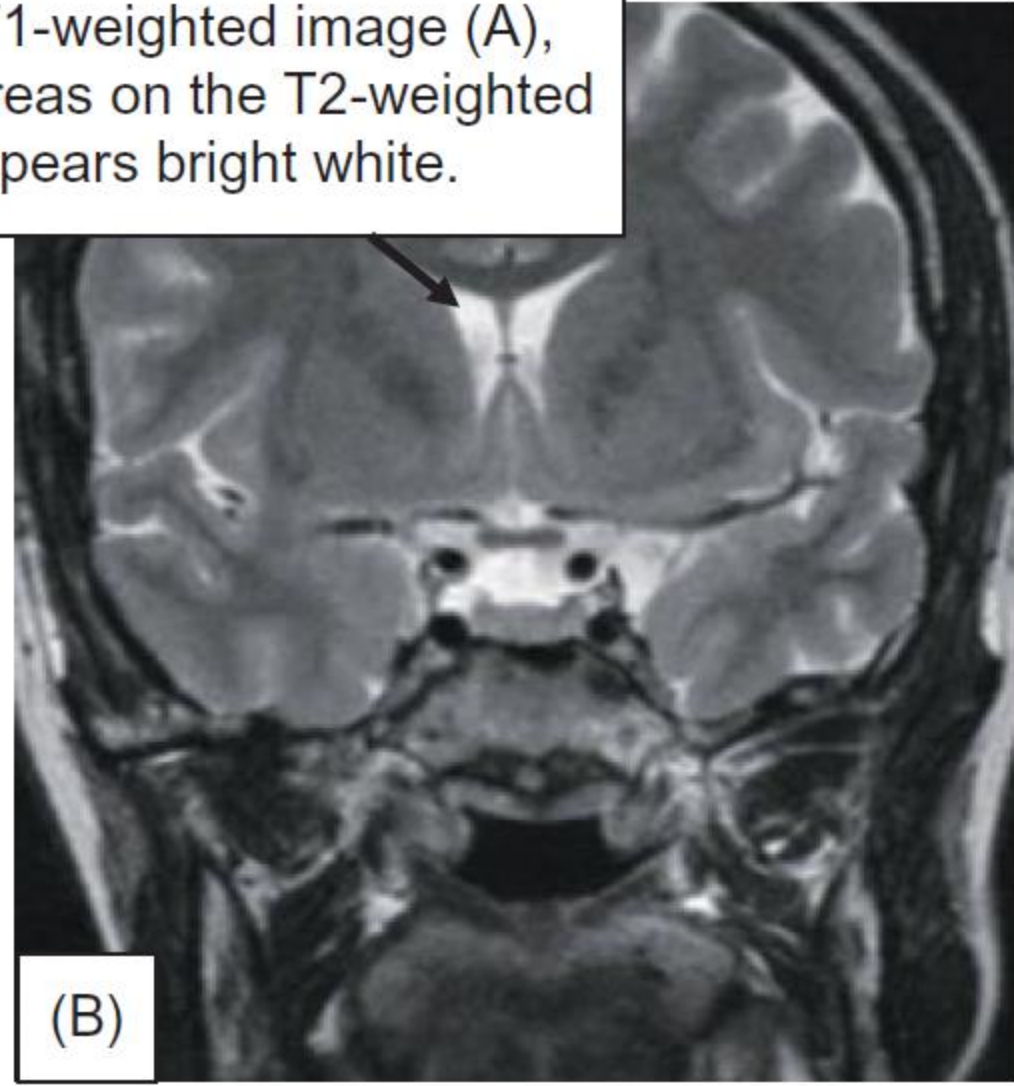
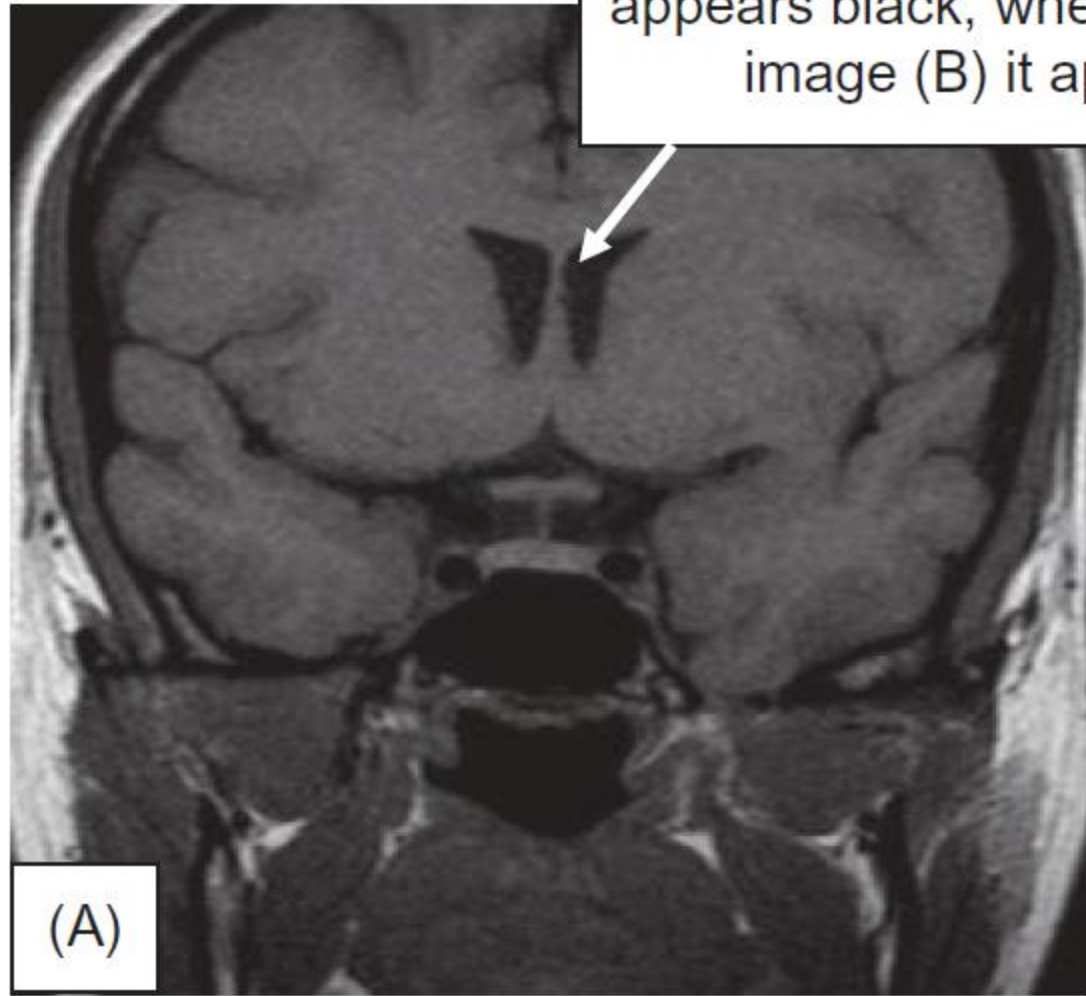
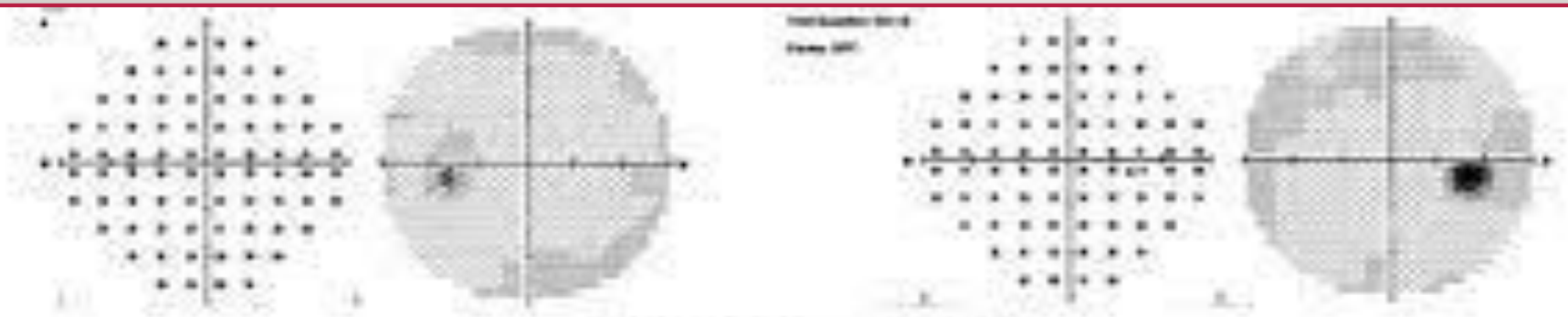


FIGURE 1.2 (A) Coronal T1-weighted image without contrast, and (B) coronal T2-weighted image.

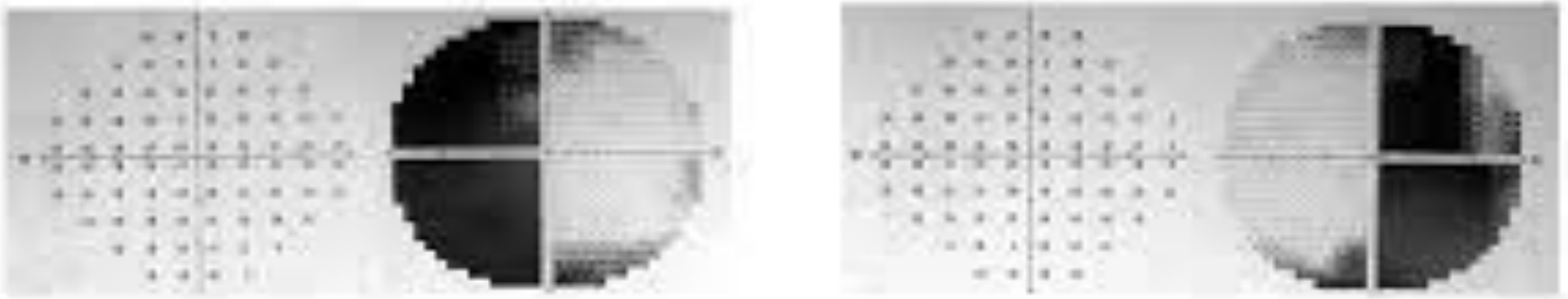
OPHTHALMOLOGIC EVALUATION

- visual field assessment using perimetry techniques should be performed on all patients with sellar mass lesions that impinge the optic chiasm.
- Bitemporal hemianopia, often more pronounced superiorly, is observed classically.

-
- Early diagnosis reduces the risk of optic atrophy, vision loss, or eye misalignment



NORMAL VISUAL FIELD



PATHOLOGIC VISUAL FIELD IN A PATIENT WITH PITUITARY ADENOMA

Hormonal hypersecretion --The presenting clinical features of functional pituitary adenomas (e.g., acromegaly, prolactinoma, or Cushing's disease) should guide the laboratory studies.

When a pituitary adenoma is suspected based on MRI, initial hormonal evaluation usually includes:

PRL

IGF-I

24-h urinary free cortisol (UFC) and/or overnight oral dexamethasone (1 mg) suppression test

FSH and LH

TSH and T4

SCREENING TESTS FOR FUNCTIONAL PITUITARY ADENOMA

| | TEST | COMMENTS |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acromegaly | Serum IGF-1 Oral glucose tolerance test with GH obtained at 0, 30, and 60 min | Interpret IGF-1 relative to age- and sex-matched controls Normal subjects should suppress growth hormone to <1 µg/L |
| Prolactinoma | Serum PRL | Exclude medications MRI of the sella should be ordered if PRL is elevated |
| Cushing's disease | 24-h urinary free cortisol Dexamethasone (1 mg) at 11 P.M. and fasting plasma cortisol measured at 8 A.M. Late night salivary cortisol ACTH assay | Ensure urine collection is total and accurate Normal subjects suppress to <5 µg/dL Distinguishes adrenal adenoma (ACTH suppressed) from ectopic ACTH or Cushing's disease (ACTH normal or elevated) |

| | | |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gonadotropinoma | Baseline FSH, LH, free α subunit, ovarian hyperstimulation, estrogen (females), testosterone (males) TRH stimulation test with assays for LH, FSH, free α subunit, free LHβ, free FSHβ subunits | Rare; more commonly nonfunctioning adenomas Consider screening for hypopituitarism Some gonadotropinomas exhibit an inappropriate gonadotropin response to TRH |
| TSH-producing adenoma | Free T₄, free T₃, TSH, free α subunit | Key feature is an inappropriately normal or high TSH in the setting of elevated free T₄ and T₃ |

-
- **Hormonal hyposecretion** — In addition to testing for hormonal hypersecretion, the possibility of hormonal hyposecretion should be evaluated in all patients who have a sellar mass >1 cm in order to identify and replace hormonal deficiencies

-
- The order of diminished trophic hormone reserve function by pituitary compression usually is as follows: GH > FSH > LH > TSH > ACTH.

FEATURES OF SELLAR MASS LESIONS

| IMPACTED STRUCTURE | CLINICAL IMPACT |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Pituitary | Hypogonadism Hypothyroidism Growth failure, adult growth hormone deficiency Hypoadrenalism Hyperprolactinemia (stalk compression) |
| Optic chiasm | Loss of red perception Bitemporal hemianopia Superior or bitemporal field defect Scotoma Blindness |
| Hypothalamus | Temperature dysregulation Appetite and thirst disorders |

| | |
|-----------------|-------------------------------------------------------------------------|
| Cavernous sinus | Ophthalmoplegia with or without ptosis or diplopia Facial numbness |
| Frontal lobe | Personality disorder Anosmia |
| Brain | Headache Hydrocephalus Psychosis Dementia Laughing seizures |

TREATMENT

- The goals of pituitary tumor treatment include **normalization of excess pituitary secretion, amelioration of symptoms and signs of hormonal hypersecretion syndromes, and shrinkage or ablation of large tumor masses** with relief of adjacent structure compression.
- Residual anterior pituitary function should **be preserved during treatment** and sometimes can be restored by removing the tumor mass.
- Ideally, adenoma recurrence should be prevented.

TAKE HOME

- ❑ Most pituitary tumors are benign and slow growing.
- ❑ Clinical features result from local mass effects and hormonal hyper- or hyposecretion syndromes caused directly by the adenoma or occurring as a consequence of treatment.
- ❑ Thus, lifelong management and follow up are necessary for these patient



No. :

Date :

Thank You
For Your
Attention

No. :