

# *Pituitary Incidentaloma*

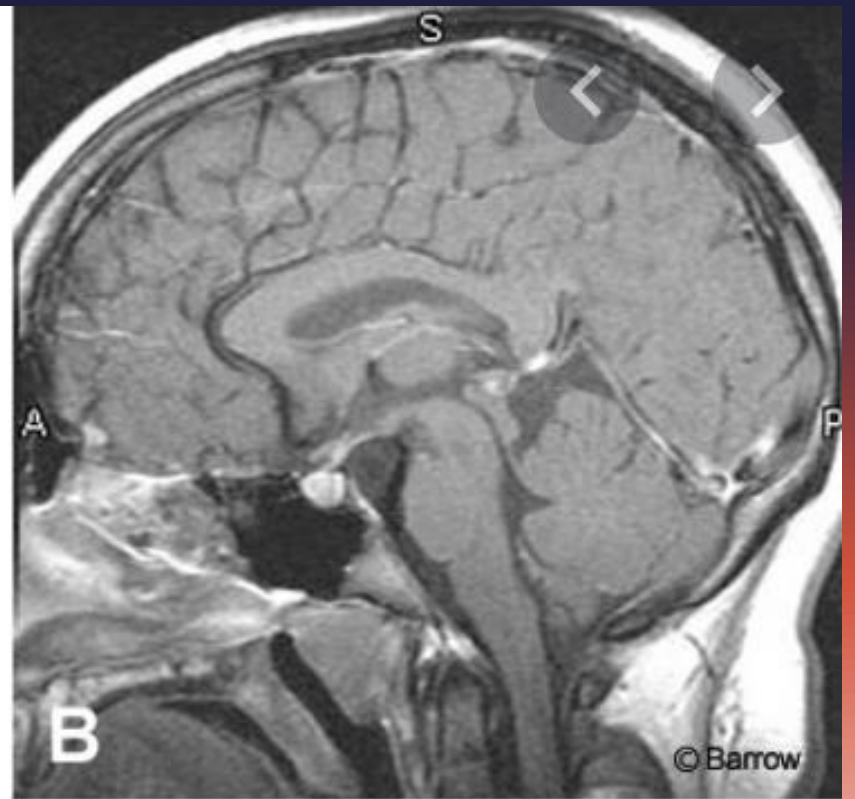
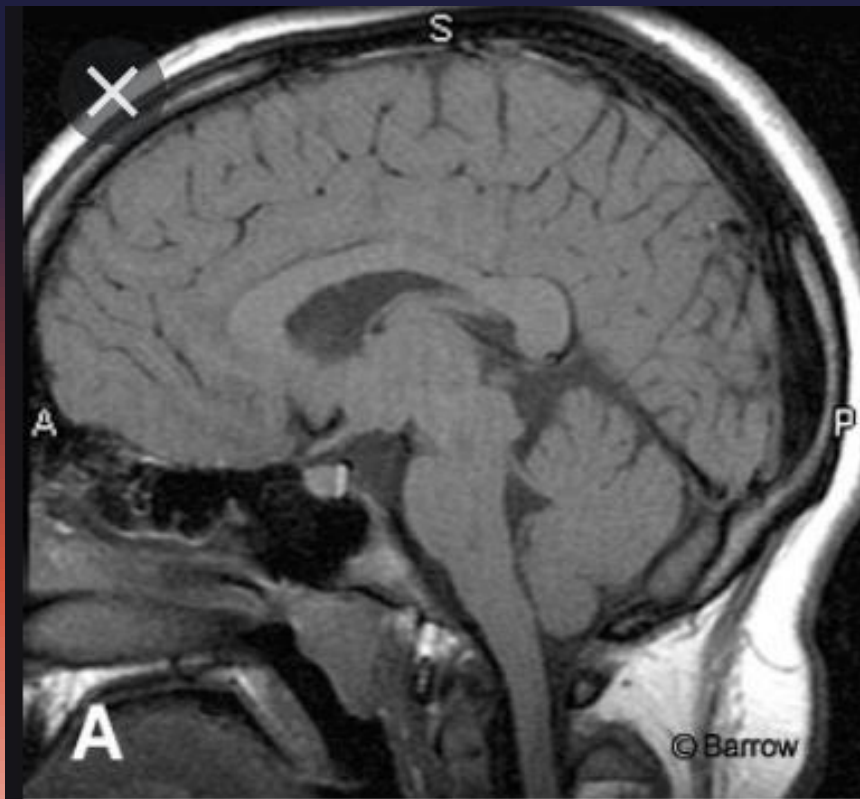
*Leena Shahla, MD*

# *Prevalence*

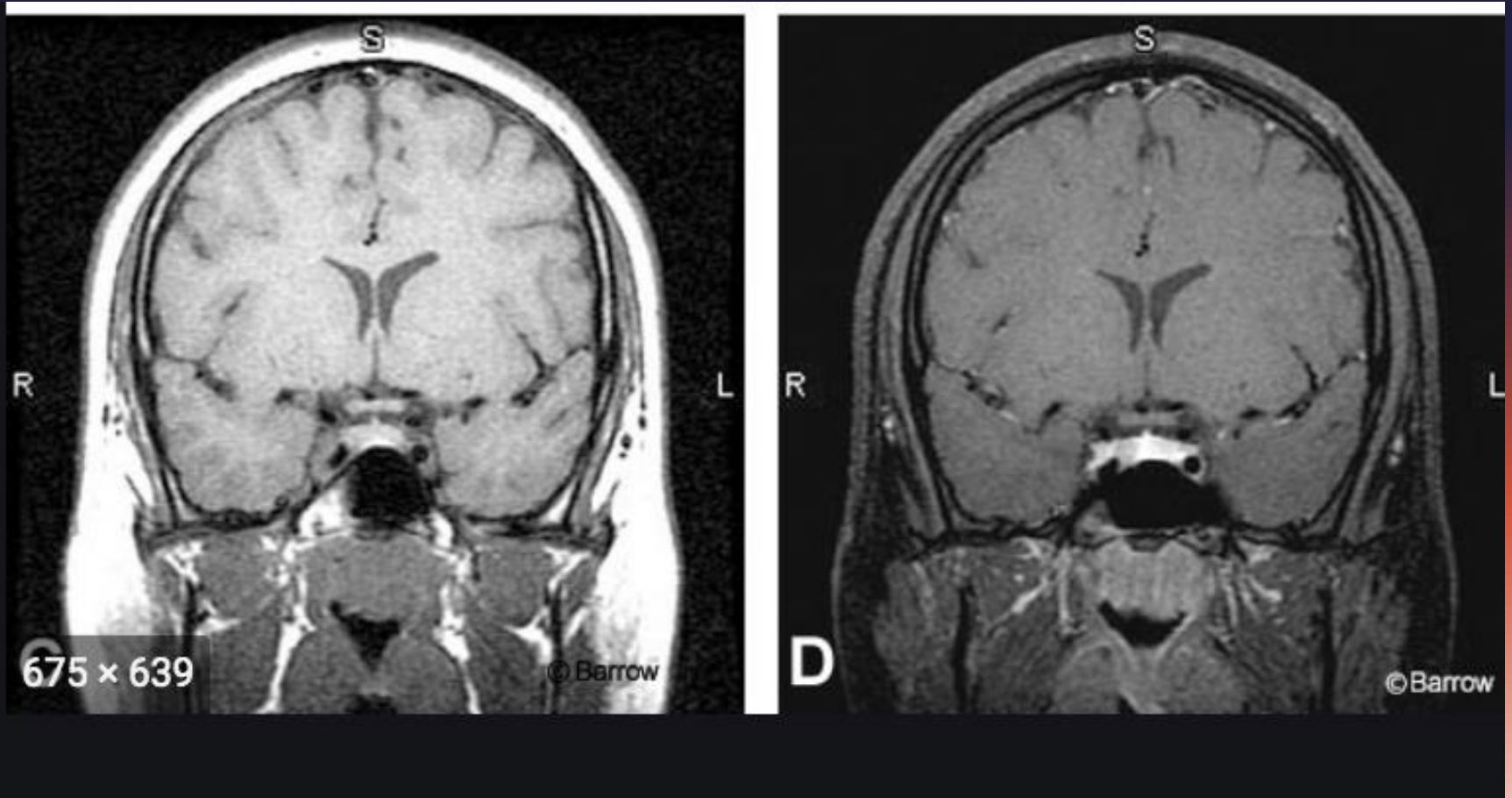
- Pituitary adenomas account for approximately 15% of intracranial tumors.
- The prevalence has increased over the past years (increased awareness and improved diagnostic tests)

- Pituitary adenomas: 115 cases per 100,000 population :
  1. *Prolactinomas* 54 cases per 100,000
  2. *Nonfunctioning* adenomas 42 per 100,000

# Normal



# Normal

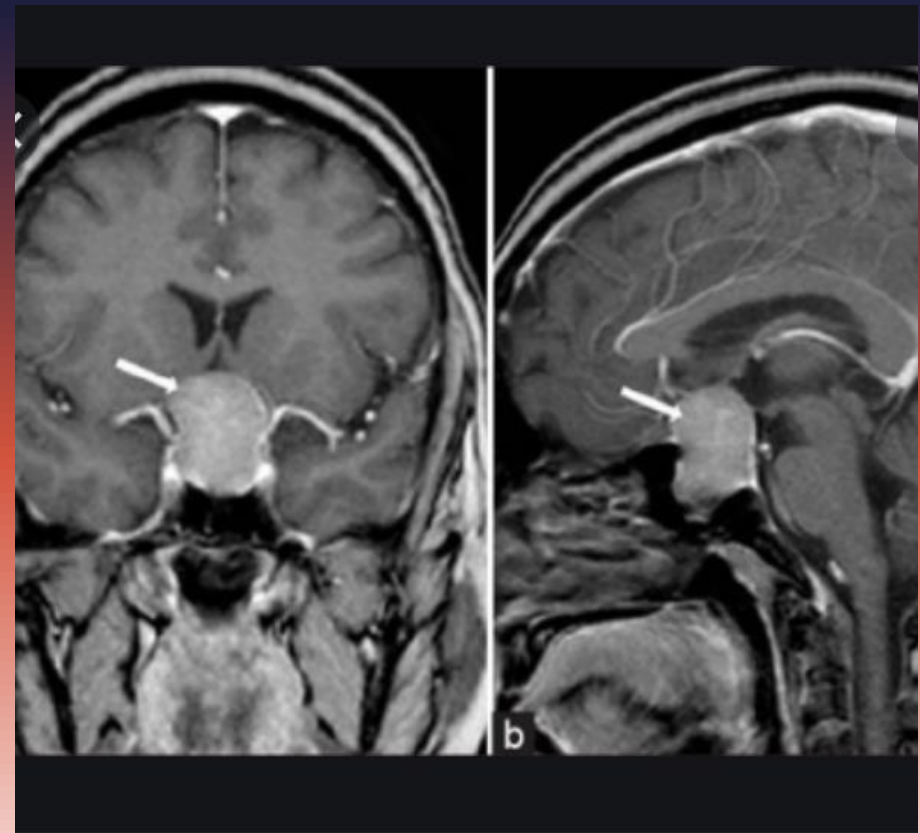


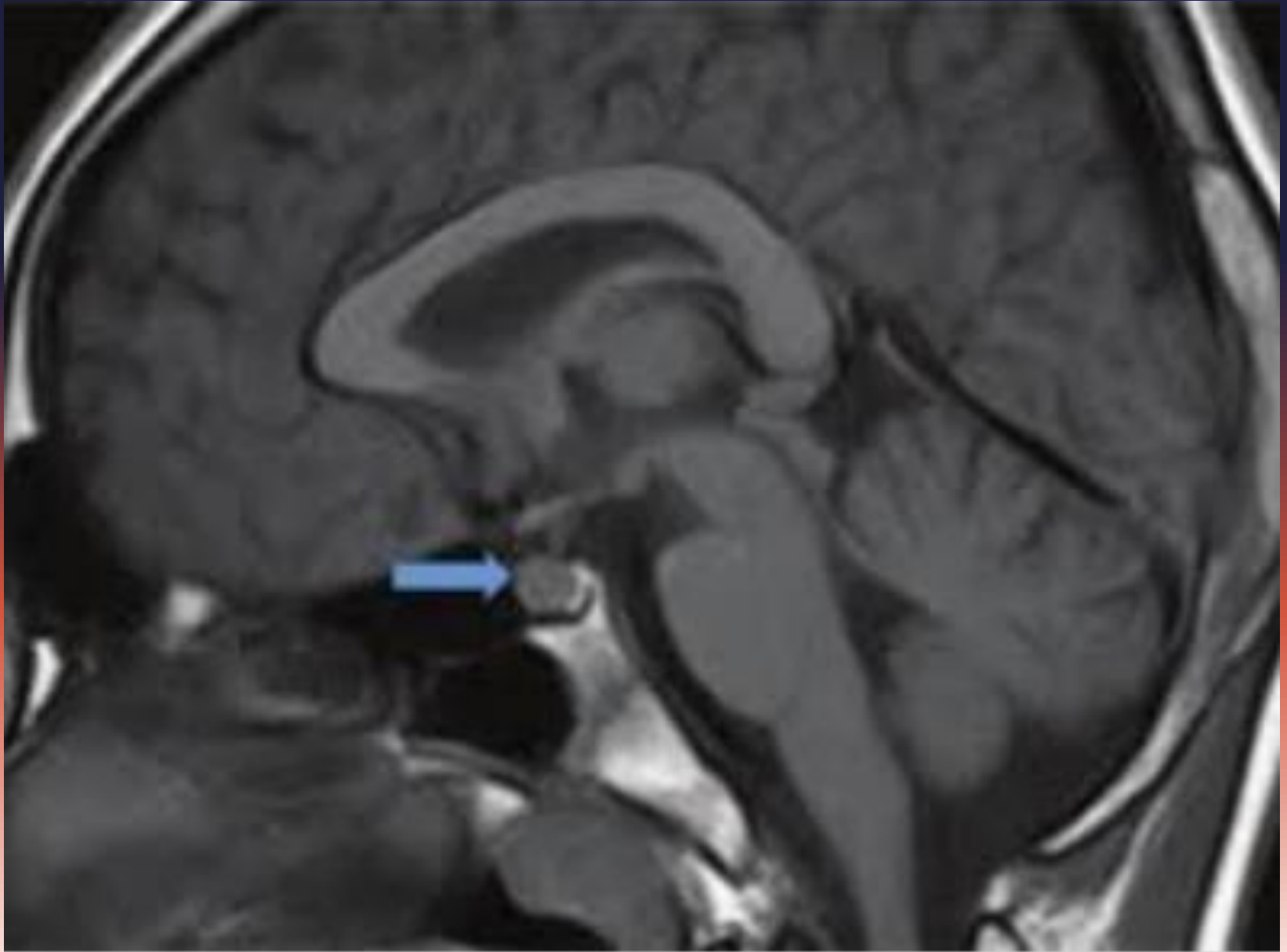
# Definition

Microadenoma <10 mm



Macroadenoma  $\geq 10$  mm





# *Pathogenesis*

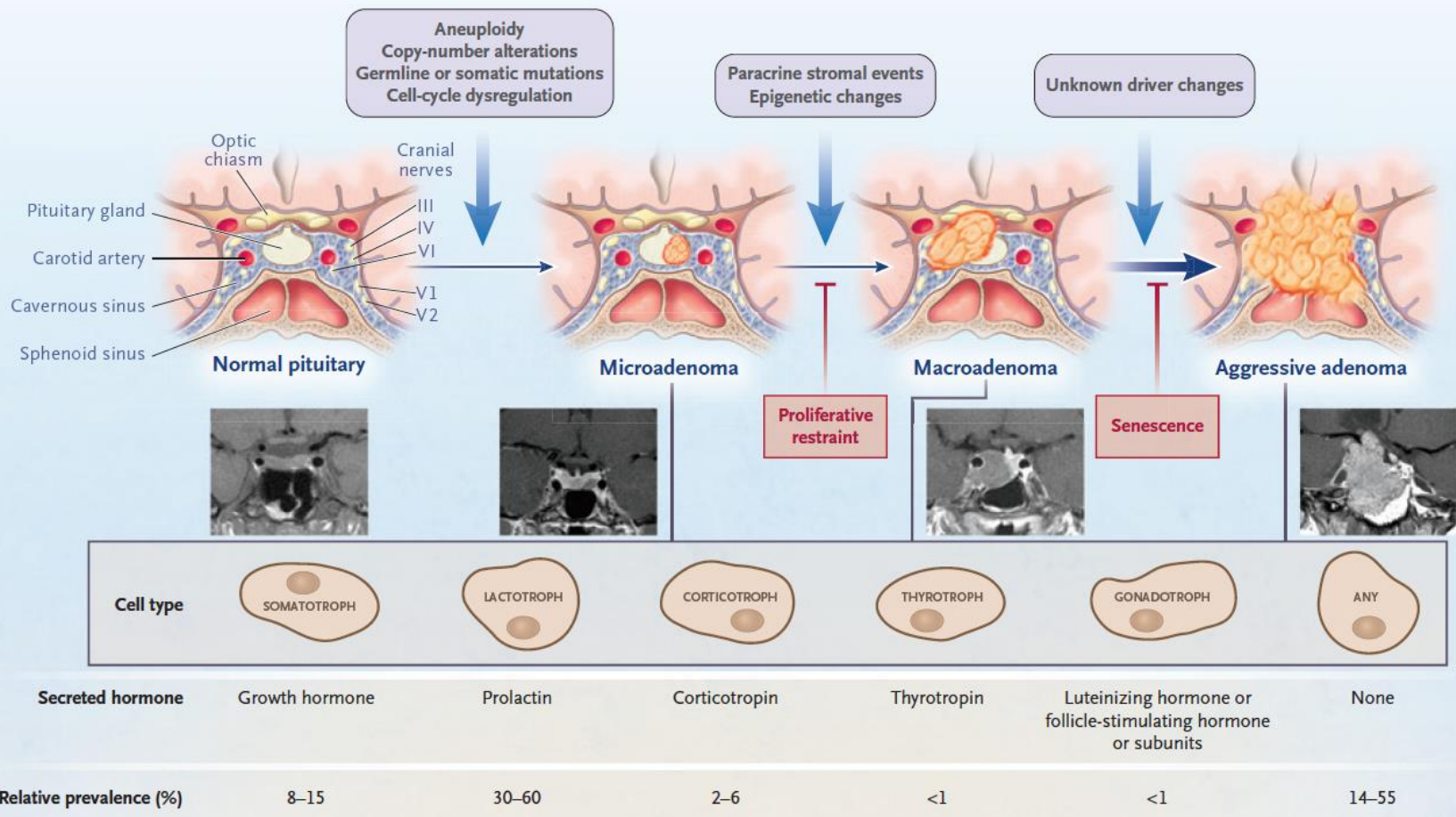
- Pituitary adenomas arise from:
  - A differentiated hormone-expressing cell
  - A null cell.
- Clinical phenotype is determined by the cell of origin and the presence or absence of autonomous, hormone hypersecretion.



1. Cushing's disease: corticotropin-secreting corticotroph
2. Acromegaly: growth hormone–secreting somatotroph
3. Hyperprolactinemia: prolactin-secreting lactotroph
4. Hyperthyroidism: thyrotropin-secreting thyrotroph

5. Gonadotroph adenomas, are typically nonsecreting.

Presentation: hypogonadism or sellar mass



# *Malignancy?*

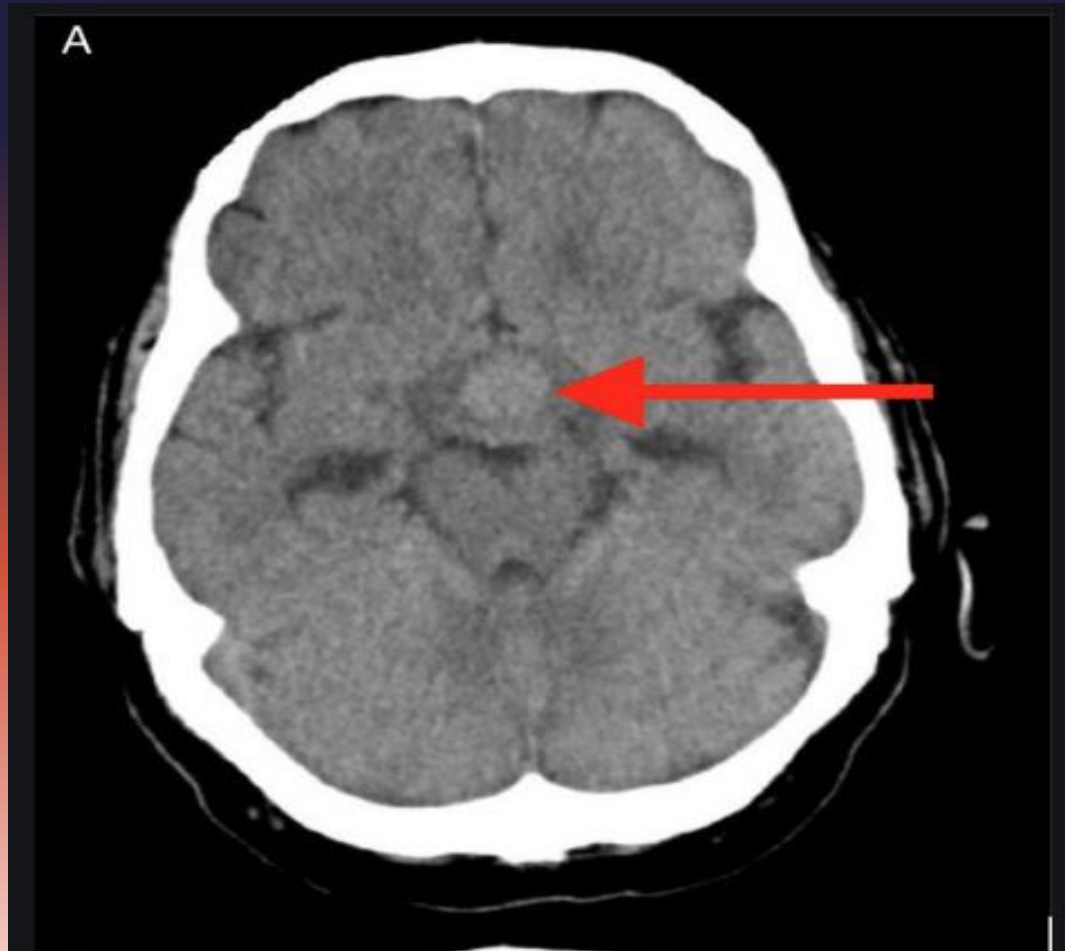
Pituitary carcinoma rare.

- < 0.5% of pituitary tumors
- Inconsistent response to Temozolomide

# *Evaluation*

- Usually diagnosed as incidentaloma on CT head or brain MRI.

# *Evaluation*



## *MRI*

- All patients should have pituitary MRI if possible, to better evaluate the nature and extent of the tumor.

## *VF*

- If tumor abutting optic nerve or optic chiasm on MRI

## *Hormonal evaluation*

- **All Patients** (including asymptomatic) should undergo clinical and laboratory evaluations for hormone hypersecretion and for hypopituitarism.



1. Prolactin (with dilution in macroadenoma/ HOOK effect)
2. IGF-1
3. Saliva Cortisol x2, 24 h urine free cortisol, am cortisol (1 mg Dexamethasone suppression test) (ACTH excess )

(screening in all patients VS screening if clinical suspicion, due to the high false positive rate)

4. FreeT4 (TSH)

5. am cortisol and ACTH

6. Testosterone/ Estradiol

7. LH, FSH

8. Alpha subunit.

# *Treatment*

- Surgical resection
- Medical treatment
- Radiation therapy

# *Indications for Surgery*

- VF deficit
- Mass effect.
- Lesion abutting the optic nerves or chiasm on MRI.
- Pituitary apoplexy with visual disturbance.
- Hypersecreting tumors, other than prolactinoma.
- Persistent tumor growth

*Consider surgery:*

- Clinically significant growth of the pituitary tumor.
- Loss of endocrinological function.
- A lesion close to the optic chiasm and a plan for pregnancy
- Unremitting headache.

## *Surgery:*

- Transsphenoidal surgical resection: **POS**
  - ✓ Rapid clinical and biochemical remission.
  - ✓ Cure possibility.
  - ✓ Mass effect alleviation.
  - ✓ Tumor debulking >> enhance adjuvant therapy

Is surgery always successful?

No!

- 30% of resected adenomas have persistent or progressive growth for > 40 years.

*cont:*

- Predictors of remission:
  1. Surgeon experience.
  2. low levels of secreted hormone (if any)
  3. Small tumors.



- Complication:
  1. Hypopituitarism
  2. Diabetes insipidus
  3. Cerebrospinal fluid leaks
  4. Recurrence 10% in 10 years

## *Radiation:*

- ◇ Conventional external-beam
- ◇ Proton-beam techniques
- ◇ Stereotactic radiosurgery

*cont:*

- Indication:
  - Resistant tumors to medical treatment and/ or surgery.
- Slow gradual effect:
  1. Decrease in tumor size over several yrs.
  2. Hormone hypersecretion continue first few yrs.

*cont:*

- Complications:
  - Hypopituitarism (10 yrs)
  - Deterioration in vision and cranial-nerve palsies (rare)
  - CVA and increased mortality (conventional).

## *Medical Treatment:*

- Prolactinoma

# *Follow-up Plan*

- No indication for surgery:

**1- MRI** 6 months after the initial scan in macroincidentaloma and 1 yr after the initial scan in microincidentaloma

**2- VF** if tumor enlarges to abut or compress the optic nerves or chiasm on a follow-up MRI

# *Prolactinoma*

- Most common pituitary adenoma 60%
- 75% of pituitary adenomas in women

## Presentation:

- Women: amenorrhea, oligomenorrhea, infertility  
galactorrhea 50%
- Men low libido, ED, infertility, galactorrhea 35%



## Diagnosis:

- ❖ Prolactin  $>150$  ng/ml
- ❖  $> 250$  ng/ml MACroprolactinoma

## Treatment:

- ❖ Dopamine agonist

- Decrease prolactin levels and tumor mass:

- ◇ Bromocriptine (rarely)

- ◇ Cabergoline (more effective, less side effects)

- A 47-year-old man is evaluated in the emergency department after 24 hours of severe headache and change in vision. He has a history of a nonfunctioning pituitary tumor and hypertension. His only medication is losartan.
- On physical examination, temperature is 37 °C (98.6 °F), blood pressure is 100/68 mm Hg, and pulse rate is 102/min. Bilateral temporal visual field deficits are present. The remainder of the physical examination is normal.
- Laboratory studies show a serum sodium level of 130 mEq/L (130 mmol/L).
- Intravenous hydrocortisone is administered.
- Which of the following is the most appropriate diagnostic test to perform next?
  - A. Cosyntropin Stimulation
  - B. Pituitary MRI
  - C. Thyroid-Stimulating hormone and free thyroxine level
  - D. Urine osmolality

- B. Pituitary MRI

- A 32-year-old woman is evaluated for a 3-month history of galactorrhea, fatigue, constipation, and weight gain of 3.6 kg (8.0 lb). With the onset of galactorrhea, her menstrual periods have become irregular and associated with excessive bleeding. Her most recent menstrual period was 5 weeks ago. She has no other medical concerns and takes no medications.
- On physical examination, vital signs are normal. BMI is 28. Spontaneous galactorrhea is present. Visual fields are intact. Deep tendon reflexes are delayed. The remainder of her physical examination is normal.
- Human chorionic gonadotropin testing is negative. Serum prolactin level is 68 ng/mL (68 µg/L).
- Which of the following is the most appropriate management?
  - A. Cabergoline therapy
  - B. Estrogen and progesterone therapy
  - C. Pituitary MRI
  - D. Thyroid-stimulating hormone measurement

- D. Thyroid-stimulating hormone measurement

- A 57-year-old woman is evaluated for enlargement of her hands and feet. Medical history is significant for hypertension. Her only medication is amlodipine.
- On physical examination, vital signs are normal. BMI is 24. The patient has a wide nose and enlargement of hands and feet. Prognathism is noted.
- Which of the following is the most appropriate diagnostic test?
  - A. Insulin-like growth factor-1 measurement
  - B. Oral glucose tolerance test
  - C. Pituitary MRI
  - D. Random growth hormone measurement

- A. Insulin-like growth factor-1 measurement





*Questions?*

*THANK YOU!*