

THE 7TH ASIAN NEURO-OPHTHALMOLOGY SOCIETY CONGRESS 27-29 SEPTEMBER 2013



CERTIFICATE
OF
ATTENDANCE

THIS IS TO CERTIFY THAT

M. HIDAYAT, MD

HAS ATTENDED THE 7TH ASIAN NEURO-OPHTHALMOLOGY SOCIETY CONGRESS AS

SPEAKER

Muhammad Sidik, MD
Chairman

Masato Wakakura
President of Asian Neuro-Ophthalmology Society

Young Man with Pituitary Adenoma

M. Hidayat, MD
 Faculty of Medicine, Andalas University/
 M. Djamil Hospital

Introduction

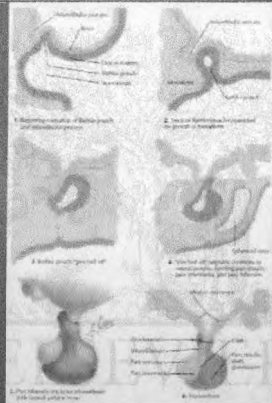
The pituitary gland, or hypophysis, is an endocrine gland which produce number of hormones which control the secretions of many other endocrine glands

Its anatomical position is important in ophthalmological view

Development

The anterior pituitary (adenohypophysis) arises from Rathke's pouch, an upward growth from the ectodermal roof of the stomodeum

The posterior pituitary (neurohypophysis) arises from a downward growth from the floor of the diencephalon



Anatomy

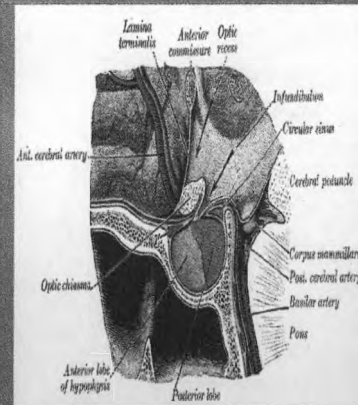
Occupies a cavity of the sphenoid bone called sella turcica at the middle cranial fossa

Roof is formed by diaphragma sellae

The stalk of pituitary is attached above to the floor of third ventricle

Size of a pea (< 8 mm)

It weighs about 0.5 gm.



Secretions

Anterior Lobe:

- FSH
- LH
- ACTH
- TSH
- Prolactin
- GH

Posterior Lobe:

- ADH
- Oxytocin

Anterior Lobe:


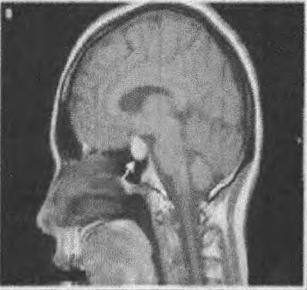
- Somatotrophic cells produce growth hormone-releasing and growth-inhibiting hormones.
- These hormones may then exert a direct effect.
- These hormones are secreted into a portal system.
- Each type of hypothalamic hormone either stimulates or inhibits production and secretion of an anterior pituitary hormone.
- The anterior pituitary secretes its hormones into the bloodstream.

Posterior Lobe:

- These hormones are secreted into a portal system.
- Each type of hypothalamic hormone either stimulates or inhibits production and secretion of an anterior pituitary hormone.
- The anterior pituitary secretes its hormones into the bloodstream.

Endocrine gland	Hormone	Function	Secretion control is made by		
Pituitary	Anterior	GH	Stimulates liver to produce growth factors that stimulate bone and cartilage growth	GHRH (Hypothalamus)	
		Prolactin	Stimulates mammary gland growth and milk production	-----	
		ACTH	Stimulates adrenal cortex to produce hormones (glucocorticoids and mineralocorticoids)	CRH (Hypothalamus)	
		FSH	Stimulates development of follicles Stimulates the production of sperm in the seminiferous tubules of the testes	GnRH (Hypothalamus)	
		LH	Stimulates development of ovaries	Oestrogen secreted by Graafian follicles	
		ICSH	Stimulates testosterone production by the interstitial cells of the testes	GnRH (Hypothalamus)	
		TSH	Stimulates thyroid gland to produce hormones (T3, T4, calcitonin)	TRH (Hypothalamus)	
		MSH	Promotes distribution of melanin granules	-----	
		Posterior	ADH	Stimulates retention of water, increasing its permeability at distal convoluted tubules and collecting ducts of the nephrons	Status of the extracellular fluid and blood plasma
			Oxytocin	Stimulates uterine contractions during parturition and promotes milk ejection reflex in the mammary glands	Suckling by the neonate initiates a reflex arc

Benign tumors of pituitary gland

Epidemiology

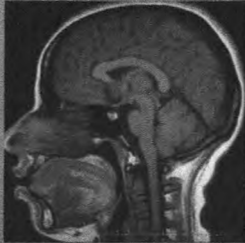
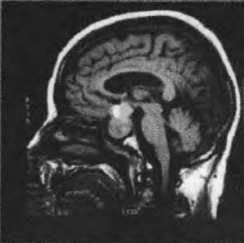
- Etiology is unknown
- 10-15% of all primary brain tumors
- 75% of adenomas are endocrinologically secreting
- 25% of those with MEN-I develop pituitary adenomas

Classification

	Hormones	Clinical features
Secreting (75%)	Chromophobes (50%) Prolactin	Female: Infertility, amenorrhea, galactorrhea Male: Hypogonadism, impotency, sterility, libido, gynecomastia, galactorrhea
	Acidophils (20%) GH	Acromegaly(adult) Gigantism(child)
	Basophils(5%) ACTH, FSH & TSH	Cushing disease, FSH & TSH tumors
Nonsecreting (25%)		

Classification

Microadenoma	< 10 mm diameter	Secreting adenoma
Macroadenoma	> 10 mm diameter	Mass effects Non secreting

Clinical presentation

Localized mass effects

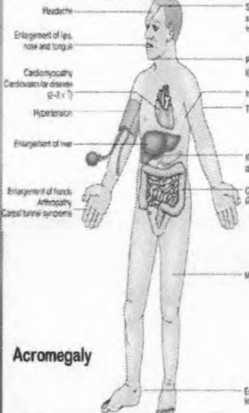
- Chiasmal syndromes
- Compression of other adjacent structures
 - ~ Cavernous sinus (paresis of 3rd, 4th or 6th CN causing disorders of extraocular motility)
 - ~ Hypopituitarism (direct pressure, vascular damage)
 - ~ Papilloedema (raised ICP, very rare)

Endocrine effects

- Hypersecretion

Hyperscretion


Growth Hormone



Acromegaly

- Reddish nose and tongue
- Cardiomegaly
- Hypertension
- Enlargement of liver
- Enlargement of hands, wrists, feet
- Myopathy
- Enlargement of feet, increased heel pad thickness

ACTH



Cushing Syndrome

- Red cheeks
- Fat pads
- Buffalo hump
- Thin skin
- High BP
- Thin arms and legs
- Osteoporosis
- Poor wound healing
- Moon face
- Bruisability
- Ecchymoses
- Red Striae
- Pendulous abdomen

Females: Hirsutism
Males: Gynecomastia

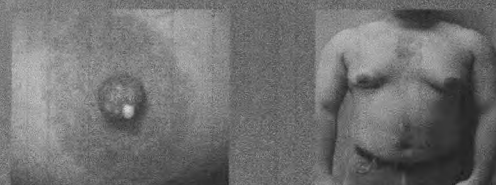
Hyperscretion Prolactin

Female

- Infertility-amenorrhea- galactorrhea

Male

- Hypogonadism, impotence, sterility, ↓ libido, gynecomastia, galactorrhea



Hyposecretion

Growth hormone deficit

- In children: dwarfism
- In adults: weakness, overweight, reduced cardiac output, low blood sugar levels, and reduced exercise tolerance

TSH deficit

- Hypothyroidism

ACTH deficit

- Underactive adrenal gland, which causes low blood pressure, hypoglycemia, fatigue, weight loss, vomiting, and low stress tolerance

ADH deficit

- Diabetes Insipidus

Chiasmal Syndromes

- Blurred vision
- Headache
- Diplopia
- Colour desaturation
- Visual field defect
- Optic atrophy
- Post fixation blindness
- Visual hallucination
- See-Saw nystagmus

Visual field defect in pituitary adenoma

- Bitemporal hemianopia
- Incongruous homonymous hemianopia
- Bitemporal central scotoma
- Diffuse scotoma
- Junctional scotoma

Bitemporal hemianopia

Classic defect in pituitary adenoma

Occurs in central chiasmal defect

Superotemporal field affected first
↓
Lower temporal field defect

<u>Incongruous homonymous hemianopia</u>	<u>Bitemporal central scotoma</u>
Occurs in optic tract lesion	Occurs in post. Chiasmal lesion
	Compressing only the macular fibers

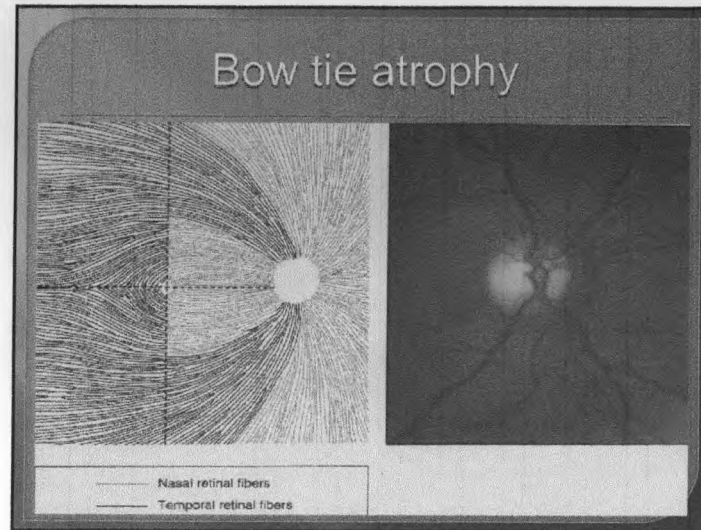
Junctional scotoma

Central scotoma in one eye with superotemporal visual field loss in the other eye

Caused by compression to anterior loop to the decussating nasal fibers in posterior optic nerve (Von Wilbrand's knee)

Fundus picture

Bow tie atrophy Diffuse atrophy



Pituitary apoplexy

- Large adenoma leading to haemorrhage or infarction of pituitary gland
- Occur in pregnancy
- Compresses hypophysial portal vessels
- Presentation: hyperacute chiasmal syndrome
- Treatment : high dose steroid / surgery

Ocular Examination

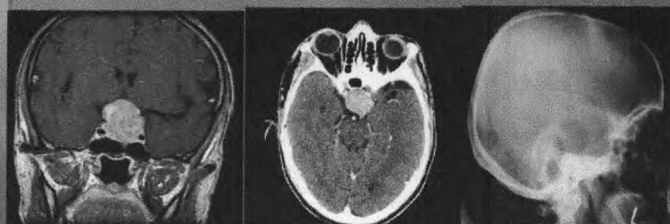
- Visual acuity
- RAPD
- Color vision
- Ocular motility
- Fundus examination

Investigations

- Endocrinological evaluation
 - Serum prolactin
 - FSH
 - TSH
 - GH
 - Insulin stress test
- Ocular investigation
 - Visual Field Analysis
 - Hess / Lees chart

Imaging

- MRI / CT scan of brain
- X-ray skull (Ant. & Lat. view)



Treatment

Referral to Endocrinologist & Neuro-surgeon

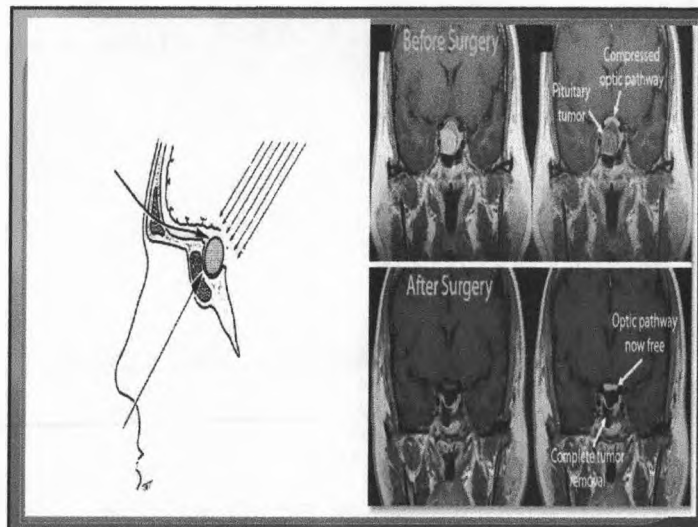
Observation

Medical therapy

- Dopamine agonists – Cabergoline/Bromocriptine

Surgery

- When mass causing severe compression
- Endoscopic - Transphenoidal, transfrontal
- Craniotomy
- Visual recovery is tri-phasic



Radiotherapy

- Following incomplete removal of tumour
- Primary treatment

Gamma knife stereotactic radiotherapy

- Close proximity to the optic nerve
- Cavernous sinus invasion

Therapeutic Modalities Summary

	Surgery	Radiotherapy	Medical
Non-functioning adenoma	1 st line	2 nd line	-
Prolactinoma	2 nd line	2 nd line	1 st line
Acromegaly	1 st line	2 nd line	2 nd line
Cushing's disease	1 st line	2 nd line	-

Follow-up after treatment

Medical therapy –

- Monthly for large tumors or during pregnancy for tumors of any size
- 6 month intervals in microadenoma for 1 year, then yearly

Surgery –

- Immediately postoperatively
- 4-6 weeks postoperatively
- 4 months intervals for a year
- Yearly for 5 years
- Every 2 years

Radiotherapy –

- At the midpoint and end of radiotherapy
- 3 months interval for a year
- 6 months interval for a year
- Yearly

Evaluation -

- Visual acuity
- Fundoscopy
- Visual field
- Imaging

Conclusions

Pituitary adenomas occurs with a wide spectrum of clinical features

Should be managed between different specialists

Neuro-ophthalmological manifestations are frequent and varied

Physicians must be aware about these in order to refer patients to ophthalmologist for early diagnosis and treatment

Case Report

- 39-year-old male with painless progressive vision loss
- Chief Complaint:** Painless central vision loss in the left eye
- History of Present Illness:** This adult female presented to the comprehensive ophthalmology clinic with painless central vision loss in the left eye, recently detected on an employee screening examination. She had noted difficulty with reading and an opaque "white light" in her central vision of the left eye.

Past Ocular History: Negative for surgery or trauma

Past Medical History: Hypothyroidism

Medications: Levamisole

Family History: Negative for cancer or ocular disease

Social History: Machinist, longtime smoker

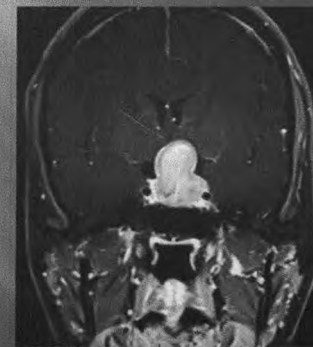
Review of Systems: Negative, including no weight change, mood change, fatigue, or loss of libido.

Ocular Examination

- Visual acuity without correction: 20/25 right eye (OD), 20/125 with eccentric fixation left eye (OS)
- Intraocular pressure: 10 mmHg OD, 12 mmHg OS
- Pupils: 5 → 3 mm in both eyes (OU), brisk reaction OU, 0.3 log-unit relative afferent pupillary defect OS
- Confrontation visual fields: temporal loss OD, central scotoma OS
- Anterior segment: 1+ nuclear sclerosis OU, otherwise normal



Because of the decreased visual acuity, binocular visual field loss, and temporal optic nerve of the left eye, we concern for intracranial pathology affecting the optic chiasm, and the patient was referred to neuro-ophthalmology. Contrast-enhanced magnetic resonance imaging (MRI) of the patient's brain was ordered (Figures 3-4).



5/13/2019

