47 Year-Old Female with Headache

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HPI:

- 47 y.o. female presented to ER with c/o acute onset of headache at the vertex of her head and retro-orbital pressure started several hrs before her presentation to ER
- It was 8/10 in intensity
- Not associated with nausea, vomiting or visual changes
- She did not have any neurological changes associated with her headache
- Headache was similar to her ,,sinus,, headaches, however greater in intensity

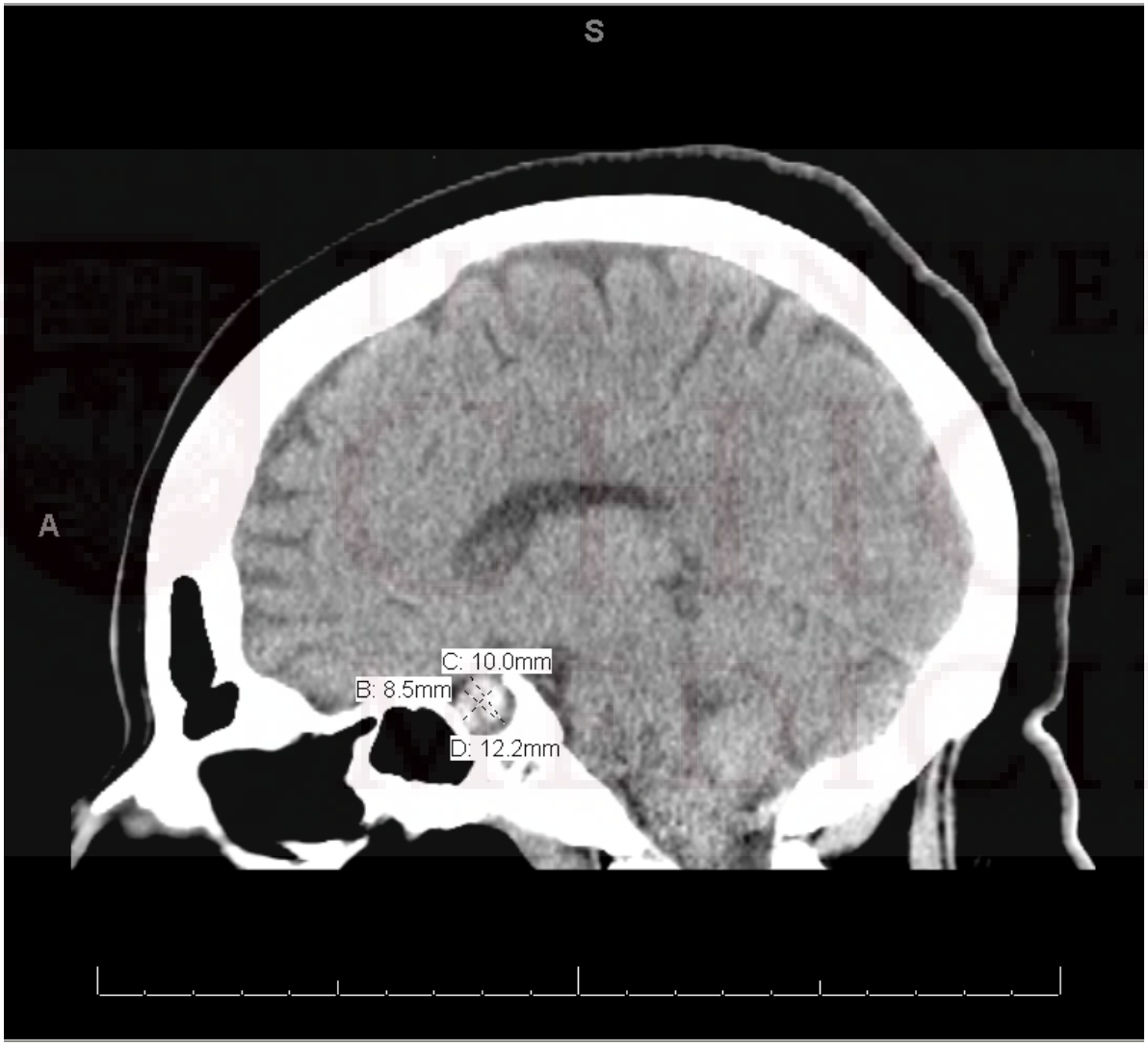
HPI:

- ***PMH:***
  - Morbid obesity
  - DM2 diagnosed 1 years ago
  - Asthma
  - HTN
  - HLD
  - Plantar fasciitis
  - Sinus headaches
  - Diabetic neuropathy
- ***FH:***
  - Mother and maternal grandmother with DM2
- ***SH:***
  - Lives at home with 2 children (13 and 14 years old),
  - unemployed,
  - no smoking, alcohol or illegal drugs

Meds:

- Albuterol
- Amitriptyline
- Neurontin
- Lantus 20 units/day
- Metformin 500mg BID
- Lisinopril
- Monteleukast
- Simvastatin

CT head 10/04:



Probable hemorrhagic pituitary mass

- Endocrinology consulted for the evaluation of pituitary function

Review of system:

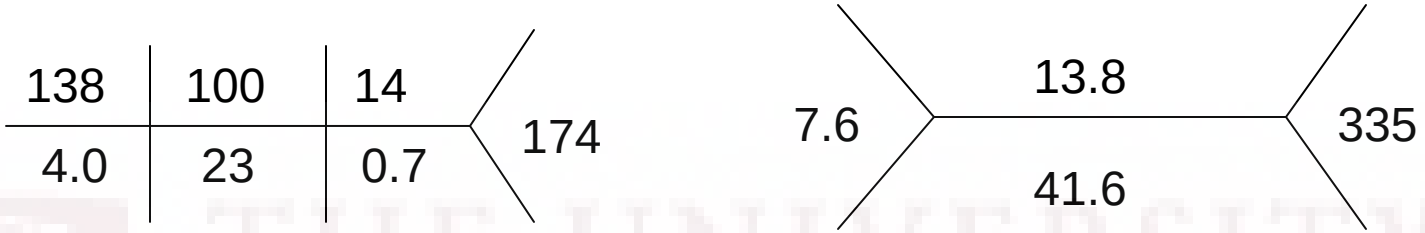
- Menarche at age 12, G2P2, breastfed her 1 child, but not the second child (did not want too), menstrual cycles stopped 6 months ago, which she attributed to menopause (they were irregular in the last 2 years and she also experienced hot flashes)
- No hx of galactorrhea
- No hx of visual problems
- No hx of changes in her clothes or shoe size in the last few years
- No hx of easy bruising, stretch marks, acne, muscular weakness
- No hx of hirsutism

- Diabetes was diagnosed 1 year ago, when her screening HA1C done by PCP was 13. She was started on Lantus 20 units/day, metformin 500mg BID and life-style modifications. Reported HA1C is 6.7 from 3 months ago. Reports her fasting blood sugars 80-110 and postprandial blood sugars 120-140. Reports hx on numbness in tingling sensation in her hands and feet for about 2-3 years.

Physical exam:

- Vitals: BP 150/83, T 37.2C, RR 16, Ht 172.7cm, Wt 169.6kg, BMI 56.87, Sat 97%
- General: not in acute distress
- Eyes: PERLA, no visual defects on confrontation
- Neck: no thyromegaly
- Heart: RRR, no murmurs
- Lungs: CTAB
- Abdomen: BS+, soft, nontender, nondistended
- Skin: **+acanthosis nigricans of the neck. Mild facial hair growth – upper lip, chin.** Ferriman-Gallwey score was 3.
- LE: no peripheral edema
- Neuro: AAOx3, no cranial nerve defect, normal DTR and motor tone

Labs 10/04:



Ca 9 (8.4-10.2 mg/dL)
Total protein 7.7 (6-8.3 g/dL)
Bilirubin, total 0.6 (0.1-1 mg/dL)
Bilirubin, conjugated 0.2 (0-0.3 mg/dL)
Bilirubin, unconjugated 0.5 (0.1-1 mg/dL)
Alk Phos 86 (30-120 U/L)
AST 16 (8-37 U/L)
ALT 19 (8-35 U/L)

HA1C 8.3

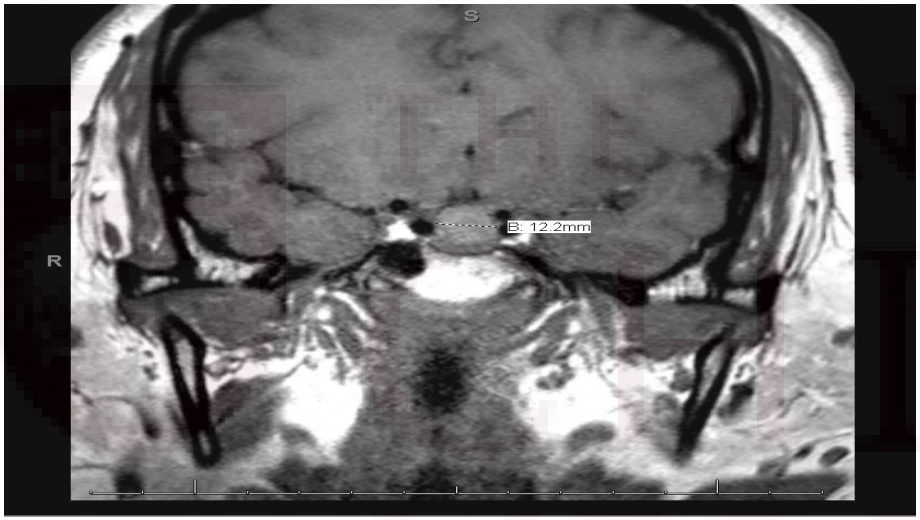
PT 12.4 (11.8-14.5 s)
INR 0.9 (0.9-1.1)
PTT 31.6 (24-34 s)

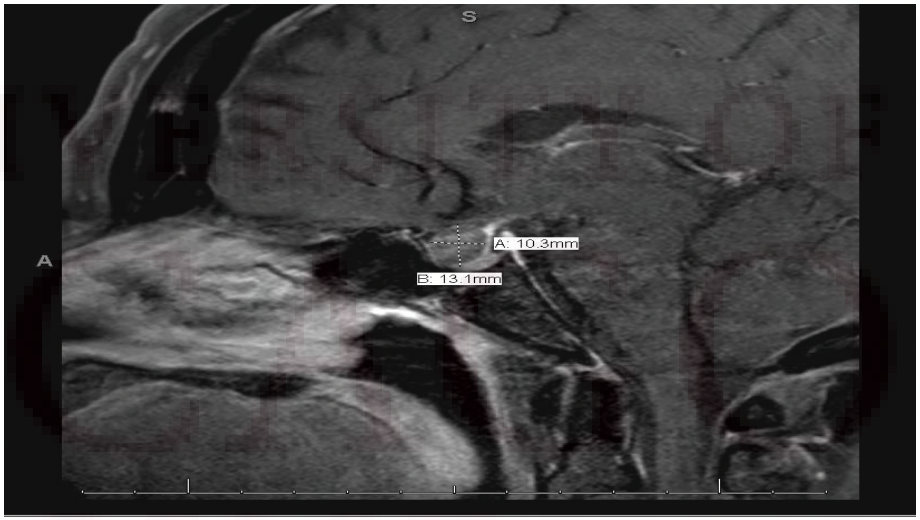
Labs 10/04:

ACTH 21 at 8PM
Cortisol 9.8 at 8PM
LH 12.5
FSH 16.8
Estradiol 20
Prolactin 13.7
IGF1 105
TSH 0.89
Free T4 0.9

- The pt was seen by neurosurgery, ophtalmology evaluation and MRI were recommended, however the pt needed to leave AMA due to family reasons
- Endocrine labs were not available at the time the pt signed up to leave AMA
- The pt returned to ER for further evaluation in 2 days

MRI:





Area of acute hemorrhage measuring 1x1.3x1.2cm not significantly changed from prior CT

- The pt was seen by ophthalmology and had no visual field defects
- Neurosurgery planned to watch her conservatively without a surgical intervention

Labs:

10/04

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10/07

ACTH 55.9 at 12PM
Cortisol 21.5 at 12PM
TSH 1.04
Free T4 0.88
Total T3 140

10/10

ACTH 53 at 8AM
Cortisol 21.9 at 8AM

- The pt was instructed to have her ACTH and cortisol levels checked at 7-8 AM in 3 days
- She was given a clinic appointment

Labs:

10/04

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10/07

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10/10

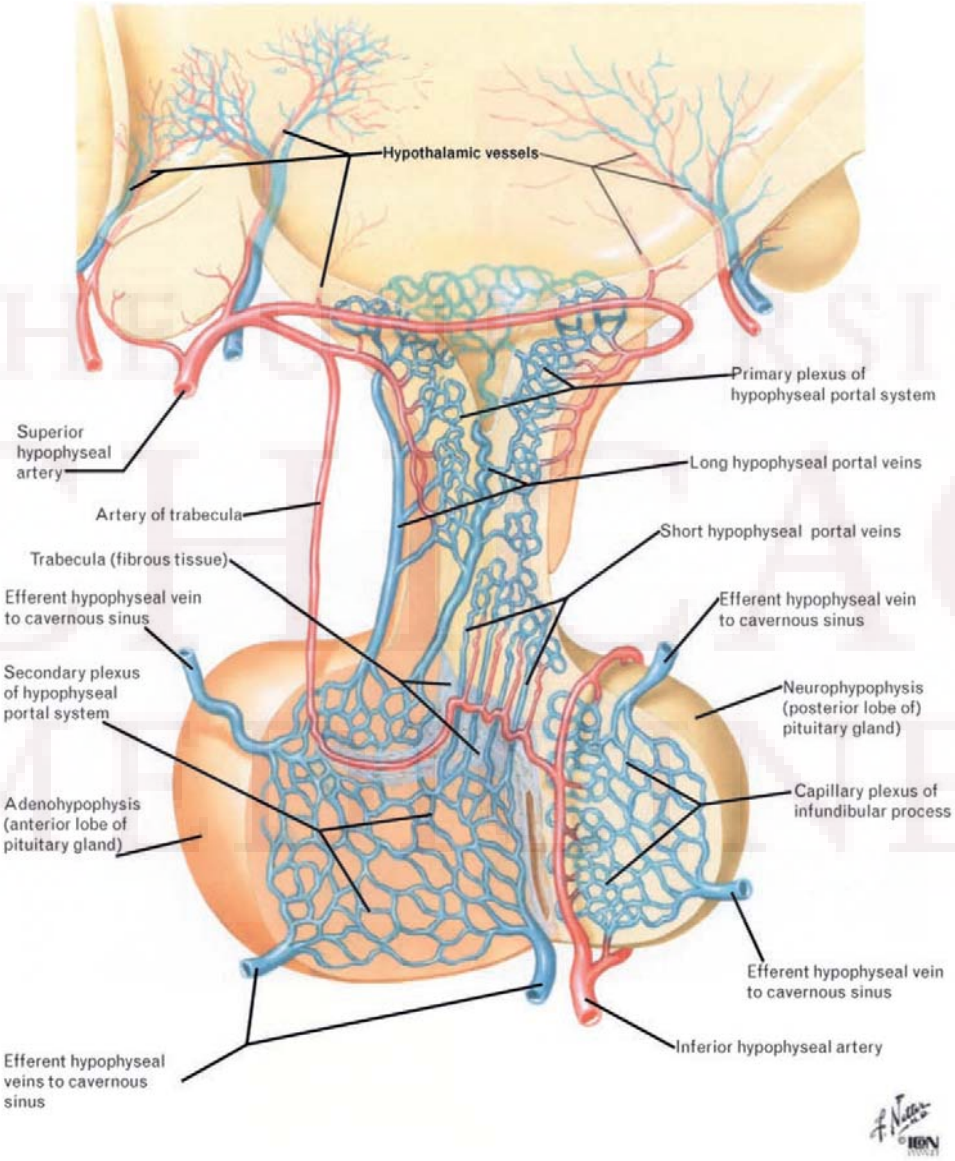
ACTH 53 at 8AM
Cortisol 21.9 at 8AM

- The pt was started on hydrocortisone 10/5 and levothyroxine 50mcg/day

Clinical questions:

- What is the mechanism of pituitary apoplexy?
- Who needs surgical treatment and who should be managed conservatively?
- Hypopituitarism with pituitary apoplexy

Pituitary circulation



Pituitary apoplexy: evaluation, management, and prognosis. Murad-Kejbou S, Eggenberger E. Curr Opin Ophthalmol. 2009 Nov;20(6):456-61.

Mechanisms of pituitary apoplexy:

- ***Theory 1:*** growing pituitary tumor compresses pituitary stalk causing interruption of blood supply, ischemia and necrosis of both pituitary tumor and anterior pituitary
- ***Theory 2:*** critical perfusion pressure of pituitary adenomas is below normal arterial pressure and that sudden alterations in perfusion pressure predispose the adenoma to infarction
- ***Theory 3:*** as the tumor enlarges, it outgrows its blood supply resulting in ischemic necrosis and secondary hemorrhage

Presenting symptoms of pituitary apoplexy

Table 3. Presenting Signs and Symptoms of Pituitary Tumor Apoplexy Extracted From Recently Reported Series Involving More than 400 Patients

Sign or Symptom	% of Patients		
	Range	Mean	Median
Headache	63-100	93	96
Visual symptoms			
Nerve palsies	40-100	68	69
Decreased visual acuity or visual field defects	40-100	75	73
Lethargy, altered consciousness meningismus	0-42	22	24
Nausea or vomiting, other nonspecific symptoms	20-77	37	42

Pituitary tumor apoplexy: a review. Nawar RN, AbdelMannan D, Selman WR, Arafah BM. J Intensive Care Med. 2008 Mar-Apr;23(2):75-90.

Surgical vs conservative approach

	Conservative management ($n=20$)	Surgical management ($n=10$)	Overall ($n=30$)
Age	23–86 (54)	17–70 (46.5)	17–86 (53.5)
Gender			
Male	16 (80%)	7 (70%)	23 (77%)
Female	4 (20%)	3 (30%)	7 (23%)
Headache	17 (85%)	10 (100%)	27 (90%)
Decreased conscious level	3 (15%)	0	3 (10%)
Vomiting	8 (40%)	6 (60%)	14 (47%)
Blind			
One eye	1 (5%)	1 (10%)	2 (7%)
Both eyes	3 (15%)	1 (10%)	4 (13%)
No visual deficit	4 (20%)	1 (10%)	5 (17%)
Blind excluded ($n=24$):			
Reduced visual acuity (VA)	7 (44%)	5 (62.5%)	12 (50%)
Acuity worse than 6/18	3 (19%)	3 (37.5%)	6 (25%)
Reduced visual field (VF)	4 (25%)	6 (75%)	10 (42%)
>50% field loss	1 (6%)	4 (50%)	5 (21%)
Opthalmoplegia	12 (75%)	3 (37.5%)	15 (62.5%)

TABLE III. Outcome of visual defects in patients treated conservatively compared with patients treated surgically. Some patients had more than one of loss of visual acuity, loss of fields and/or ophthalmoplegia

Feature and outcome	Conservative management	Surgical management
Any visual defect		
Complete resolution	8 (40%)	2 (20%)
Partial resolution	6 (30%)	5 (50%)
No change	2 (10%)	2 (20%)
(No defect)	4 (20%)	1 (10%)
Blindness ($n=6$) (mono- or binocular)		
Partial resolution	2 (50%)	1 (50%)
No change	2	1
Loss of acuity (excluding blindness, $n=24$)		
Complete resolution	5 (71%)	4 (80%)
Partial resolution	2 (29%)	1 (20%)
No change	0	0
(No defect)	9	3
Loss of field (excluding blindness)		
Complete resolution	2 (50%)	2 (33%)
Partial resolution	1 (25%)	3 (50%)
No change	1 (25%)	1 (17%)
(No defect)	12	2
Opthalmoplegia (excluding blindness)		
Complete resolution	10 (83%)	2 (67%)
Partial resolution	2 (17%)	1 (33%)
No change	0	0
(No defect)	4	5

Pituitary apoplexy: retrospective review of 30 patients--is surgical intervention always necessary? Gruber A, Clayton J, Kumar S, Robertson I, Howlett TA, Mansell P. Br J Neurosurg. 2006 Dec;20(6):379-85.

Panhypopituitarism post apoplexy

Table 4. Impairment in Pituitary Function in Patients With Pituitary Tumor Apoplexy at Presentation Extracted from Published Series

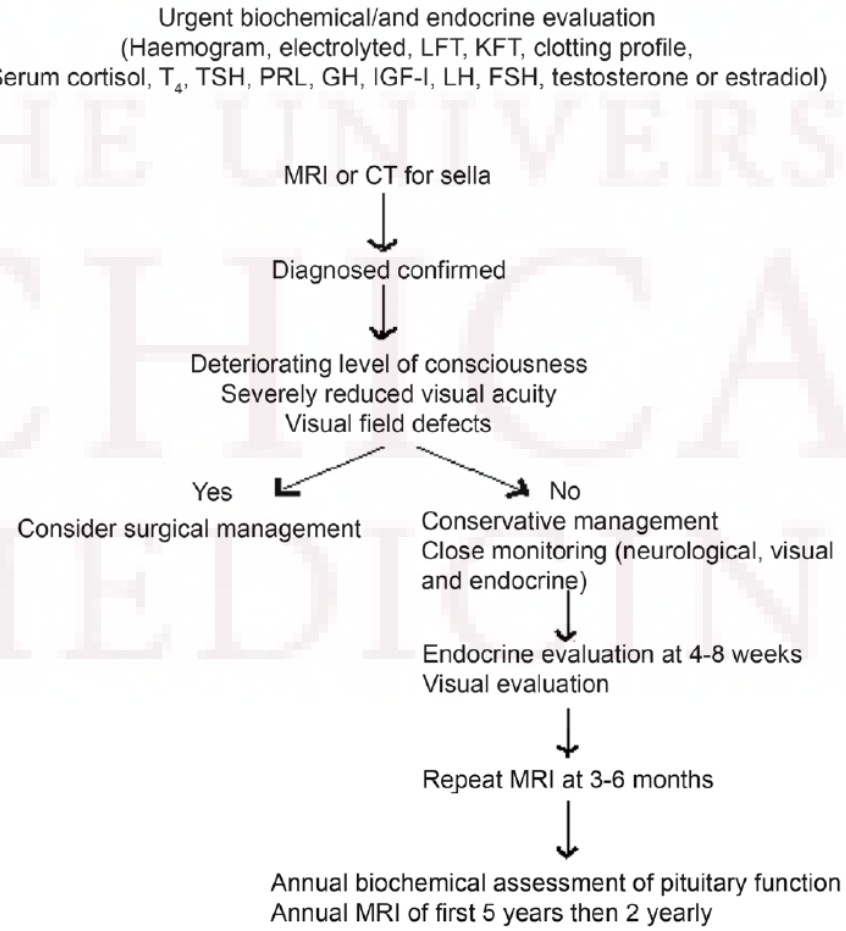
	Pituitary Axis Involved			
% of patients with deficiency	Adrenal	Thyroidal	Gonadal	Prolactin[a]
Range	50-100	25-75	60-100	6-40
Mean	67	45	82	23

[a]Frequently not determined.

- Since the pts has macroadenomas, the majority of them has at least partial hypopituitarism before apoplectic episode
- 50% of the pts are able to at least partially recover pituitary function
- However about 80% of pts need at least one form of hormone replacement
- Levels of prolactin at presentation could have a prognostic function: normal or high prolactin levels at presentation tend to have better pituitary function

Pituitary tumor apoplexy: a review. Nawar RN, AbdelMannan D, Selman WR, Arafah BM. J Intensive Care Med. 2008 Mar-Apr;23(2):75-90.

Proposed algorithm of pituitary apoplexy management



Pituitary apoplexy. Ranabir S, Baruah MP. Indian J Endocrinol Metab. 2011 Sep;15 Suppl 3:S188-96.

Take home points:

- Pituitary apoplexy is a potentially life-threatening disorder, requiring urgent evaluation of pituitary function and hormone replacement as necessary
- Cases with no visual deficits, optic chiasm compression, or neurological deficits could potentially be managed conservatively
- Pituitary function should be reevaluated in 4-6 weeks after the episode apoplexy and then annually based on expert opinion

References:

- Pituitary apoplexy: evaluation, management, and prognosis. Murad-Kejbou S, Eggenberger E. Curr Opin Ophthalmol. 2009 Nov;20(6):456-61.
- Pituitary tumor apoplexy: a review. Nawar RN, AbdelMannan D, Selman WR, Arafah BM. J Intensive Care Med. 2008 Mar-Apr;23(2):75-90.
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