Ptosis and hyponatremia : a diagnosis not to miss

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Introduction

Pituitary apoplexy (PA) is a rare condition that can present with atypical clinical features. Physicians should be careful as these could be misleading and delay the diagnosis of this life-threatening condition. We report here the case of an 86-year-old women with a clinical presentation of hyponatremia and ptosis.

Emergency department (day 1)

- First symptoms : asthenia, nausea, vomiting and diarrhea
- Physical examination: right eye ptosis, unstable gait, and lower extremity edema
- First biology (table 1): severe hypotonic hyponatremia with increased natriuresis.
- Brain CT-scan (figure 1A) : enlargement of the pituitary gland without signs of compression.

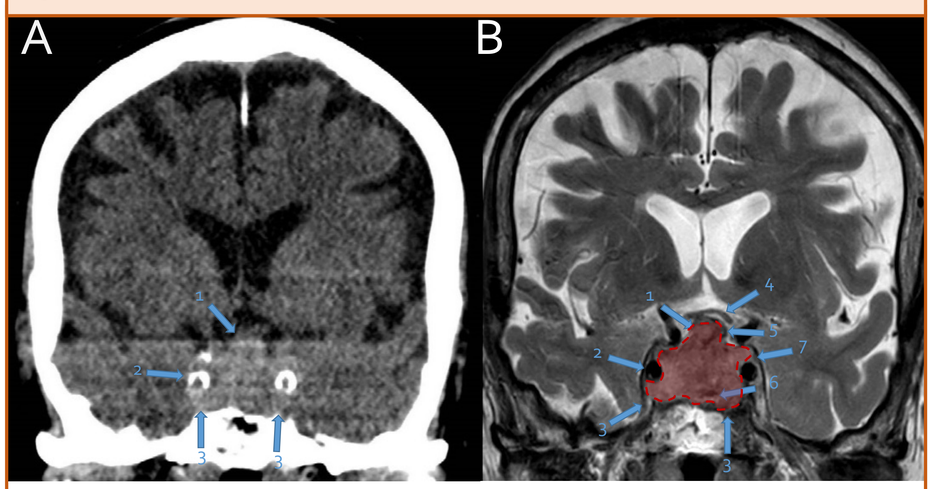
Geriatric ward (day 1-6)

- Management of supposed syndrome of inappropriate antidiuretic hormone secretion (SIADH).
- Unsatisfactory evolution with persistent hyponatremia (table 1) despite well conducted fluid restriction.

Geriatric ward (day 7-9)

- Development of acute right ophthalmoplegia, right visual loss, areactive mydriasis, complete right ptosis and worsening of headaches (day 7).
- Urgent brain MRI (figure 1B) : diagnosis of macroadenoma with intra-adenomal hemorrhage.
- Pituitary hormone function tests (table 2) confirmed the diagnosis of PA.
- Urgent surgery was performed (day 9).

Figure 1. Admission brain CT-scan (A) versus MRI (B)



1. Macroadenoma with extrasellar extension ; 2. Internal carotid artery ; 3. Cavernous sinus invasion ; 4. Optic chiasma ; 5. Pituitary stalk ; 6. Microbleeds; 7. Oculomotor nerve (III)

Table 1. Serum and urinary sodium and osmolality over time

	SERUM NA+ (MMOL/L)	SERUM OSMOLALITY (MMOSM/KG)	URINARY NA+ (MMOL/L)	URINARY OSMOLALITY (MMOSM/KG)
DAY 1	117	238	/	/
DAY 2	117	/	91	559
DAY 3	119	240	/	/
DAY 5	117	240	/	/
DAY 6	/	/	<10	301
DAY 7	117	/	/	/
DAY 8 [1]	121	252	/	/
DAY 9 [2]	126	268	/	/
DAY 10 [3]	127	270	<10	183

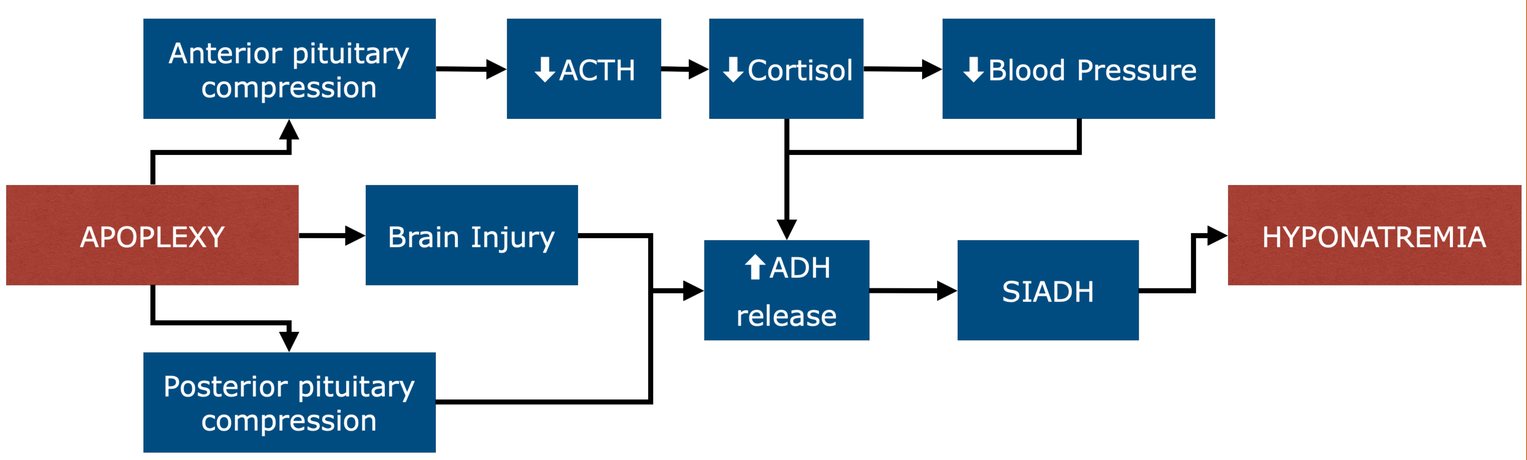
1: Patient received 50mg of hydrocortisone ; 2: Patient received 100mg of hydrocortisone ; 3: Patient underwent surgery

Table 2. Hormonal findings

	DAY 7 (BEFORE CORTICOIDS)	REFERENCE RANGE
TSH	0.22	0,27-5,5 mU/L
T_3	2.6	3,1-6,8 pmol/L
T_4	16	12-22 pmol/L
LH	1.0	7,7-58,5 UI/L
FSH	5.0	25,8-134,8 UI/L
IGF	68.9	100-232 ng/mL
ACTH	5.0	5-49 pg/mL
CORTISOL [1]	137.1	70-280 nmol/L

1: sample taken at 6 p.m.

Figure 2. Supposed physiopathological mechanism of SIADH in pituitary apoplexy



Discussion

- PA is a rare disease that is most of the time due to sudden hemorrhage of a non-functioning pituitary adenoma. This causes an enlargement of the gland with a subsequent pituitary stalk compression that can lead to a large panel of symptoms (typically: headaches, visual field impairment and decreased visual acuity) and biological findings (hypopituitarism).
- Our patient presented with ptosis and SIADH, as early signs of compressive macroadenoma. This atypical clinical and biological presentation could therefore have delayed the diagnosis.
- The initial cerebral CT-scan performed in the ED was also misleading as it described enlargement of the pituitary gland without signs of compression.
- Interestingly, SIADH has been described in cases of hypopituitarism and PA but is rather an uncommon initial finding.
- The supposed mechanisms leading to SIADH in PA are complex. Firstly, the anterior pituitary gland insufficiency decreases ACTH and cortisol production, which itself increases ADH production in two ways: a direct one due to the loss of negative feedback of cortisol on ADH, and an indirect one due to the decreased arterial blood pressure induced by the adrenal insufficiency. Secondly, brain injuries stimulates neurons in supraoptic and paraventricular nuclei of hypothalamus, leading to an abnormal release in ADH.
- The presumed cause of the intra-adenomal hemorrhage in our patient is the introduction of an oral anticoagulant to treat atrial fibrillation, a few weeks before the occurrence of PA.

CONCLUSION

- Physicians should think of sella turcica masses, including PA, in case of hyponatremia with signs of optic compression. MRI is the preferred imaging.