Hiponatremia grave – uma forma de apresentação de apoplexia hipofisária

Severe hyponatremia – a form of presentation of hypophyseal apoplexy

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Resumo

Os autores descrevem o caso de um homem, 68 anos, ex-fumador, com antecedentes de alcoolismo. Admitido no serviço de urgência por polaquiúria e dor hipogástrica com 2 dias de evolução, febre na semana anterior, acompanhada de cefaleias e vómitos. Apresentava rarefacção pilosa e ginecomastia; o exame neurológico era normal. Constatou-se hiponatremia grave (Na+ 113 mEq/L), osmolaridade sérica baixa, com osmolaridade, ionograma e exame sumário de urina normais. Iniciou fluidoterapia intravenosa para correcção da natremia. A tomografia computorizada torácica e crâneo-encefálica foram normais, a ecografia abdominal mostrou sinais de hepatopatia crónica. O estudo hormonal mostrou diminuição dos níveis de cortisol, hormona adrenocorticotrópica, luteinizante, foliculo-estimulante, testosterona e tiroxina; triiodotironina, hormona estimulante da tiróide e prolactina normais. A ressonância magnética nuclear hipofisária revelou lesão hemorrágica, intra-adenomatosa, estabelecendo-se o diagnóstico de apoplexia hipofisária. Não tendo indicação cirúrgica, iniciou hidrocortisona e levotiroxina, com boa resposta clínica e analítica.

Este caso ilustra a importância da investigação etiológica da hiponatremia.

Palavras chave: hiponatremia, hipopituitarismo, apoplexia hipofisária.

Abstract

The authors describe the case of a 68-year-old man, formerly a smoker with a history of alcoholism. Admitted to the emergency department complaining of pollakiuria and hypogastric pain evolving for a couple of days and fever in the previous week, with headaches and vomiting. He presented diffuse hair loss and gynecomastia; neurological examination was normal. Severe hyponatremia was found (Na+ 113 mEq/L), along with low serum osmolarity, normal urinary osmolarity, urinary ionogram and urinalysis. He started intravenous fluid therapy to correct the natremia. The chest and brain computed tomography scans were normal, the abdominal ultrasound showed signs of chronic liver disease. The hormonal study showed decreased levels of cortisol, adrenocorticotropic hormone, luteinizing hormone, follicle-stimulating hormone, testosterone and thyroxine; triiodothyronine, thyroid-stimulating hormone and prolactin were normal.

The pituitary magnetic resonance imaging revealed intra-adenomatous hemorrhagic lesion, establishing the diagnosis of hypophyseal apoplexy. Since surgery was not recommended, he started hydrocortisone and levothyroxine therapy with clinical and analytic improvement.

This case shows how important it is to ascertain hyponatremia etiology.

Key words: hyponatremia, hypopituitarism, hypophyseal apoplexy.

INTRODUCTION

The current case describes the diagnosis research of severe hyponatremia, associated with hyposmolarity together with euvolemia.

Hyponatremia is the more common hydro-electrolytic disturbance in hospitalized patients, and might reach incidences as high as 25-30%.[1] Severe hyponatremia (Na^+ < 120 mEq/L), it is a clinically important change with a high rate of morbidity and mortality.[1]

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The most frequent cause of euvolemic hypo-osmolality hyponatremia is the syndrome of inappropriate antidiuretic hormone (SIADH), having as more frequent etiologies neoplasms, central nervous system changes, pulmonary disease or drugs.[2] The necessary clinical criteria to diagnose, are basically the same presented by Bartter and Schwartz in 1967: clinic euvolemia; reduced serial osmolality (<275 mOsm/Kg H_2O); inappropriate urinary concentration (> 100 mOsm/Kg/H2O); high urinary Na^+ excretion; absence of other causes of euvolaemic hypo-osmolality.[2] Dealing with an exclusion diagnosis, other causes should be excluded, namely hypothyroidism and hypoadrenalism.

Secondary adrenal failure to hypopituitarism can

TABLE I

Hormone study results

Endpoint (Unit)	Result	Reference values
Thyroglobuline (ng/mL)	21,20	0,0 – 55,0
T3 total (ng/mL)	0,82	0,58 – 1,59
T3 free (pg/mL)	1,93	1,71 – 3,71
T4 total (ug/mL)	3,7	4,87 – 11,72
T4 free (ng/mL)	0,48	0,70 – 1,48
TSH (uUI/mL)	1,66	0,35 – 4,94
Serial Cortisol (morning) (ug/dL)	1,5	6,2 – 19,4
ACTH (pg/mL)	20,2	< 46
FSH (mUI/mL)	1,09	1,1 – 13,6
LH (mUI/mL)	0,47	1,1 – 8,8
Prolactin (ng/mL)	6,2	2,6 - 18,1
Total testosterone (ng/mL)	0,33	1,7 – 8,4

be in the origin of a severe hypo-osmolality hyponatremia, a fact related with the loss of the cortisol inhibitory loss on vasopressin secretion.[3]

The pituitary adenoma is the most prevalent cause of hypopituitarism.[4] It develops itself from the adenohypophysis cells and may secret hormones autonomously, to inhibit its secretion or being functionally silent, being diagnosed as a sellar mass. Such pituitary neoplasms have, in general, a slow growth rhythm.

Pituitary apoplexy (sudden intra-pituitary hemorrhage) is, usually an endocrinology emergency, expressing itself as an intense headache, often followed by vomit, ophthalmoplegia with diplopia, changes in the visual fields or change in awareness.[4]

CASE REPORT

Caucasian man, 68 years old, examined in the Emergency Service due to pollakiuria and hypogastric discomfort evolving for 2 days. He mentioned fever (38ºC) for 2 days, in the week preceding hospitalization, giving in to paracetamol, holocranial headache and food vomiting. Ha has never shown a change in awareness levels, or other neurologic changes, namely ophthalmoparesis, diplopia or change in visual fields.

This patient had a background of spine degenerative pathology, with excess of alcohol intake habits (a couple of years ago, he reduced alcohol consumption from 200 g/day to 40 g/day) and previous smoking habits (84 packs/year). Usually taking silimarine, domperidone and paracetamol. He has been under additional medication for a week with non steroid anti-inflammatory and muscular relaxant due to osteoarticular pains.

The objective exam he was aware, cooperating and oriented in time and space. Coherent with fluent speech. He was pink and hydrated. To highlight an obese habitus, scarce hair all over the body surface, namely in the face and axillary region. He presented a bilateral and symmetrical hypertrophic parotid, non palpable thyroid and gynecomastia. No signs of breathing distress. Apyrexia. Hypertensive (blood pressure: 183-86 mmHg), with radial and rhythmic pulse of 63 bpm and an oxygen saturation of 99%. Cardiopulmonary auscultation without changes. Round abdomen, soft and depressible, painless to palpation, non palpable liver. No peripheral edema. Normal neurologic exam.

Analytically, hyponatremia of 113 mEq/L and an inversion of the leukocyte formula, without a relevant increase on inflammatory markers were observed. The renal function has been kept and the urine quick test had no change.

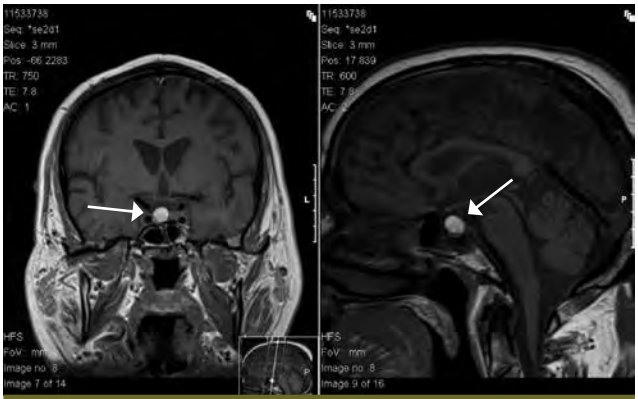
He was admitted in the Internal Medicine Service, with a diagnosis of severe hyponatremia.

He presented a good answer to a fluid therapy in place, with evidence of a slow and progressive natremia correction. Has never presented changes in the neurologic exam. Complaints initially presented by the patient (hypogastric pain and pollakiuria) have given in spontaneously in the first day of admission.

Serial hypo-osmolality (225 mOsm/Kg) with normal urinary osmolality and ionogram were recorded.

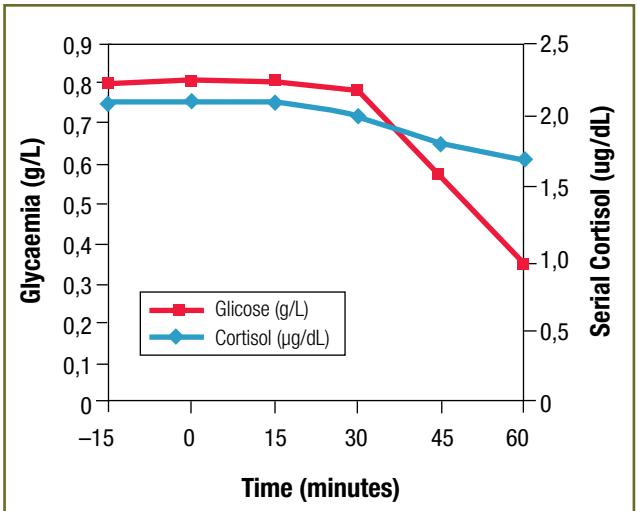
A abdominal pelvic ultrasound was carried out, revealing a liver of increased dimension and heterogeneous echo structure, without focal lesions, compatible with chronic hepatopathy; 55g prostate compatible with grade III adenomatous hypertrophy. The dosage of prostate specific antigen (PSA) was normal. Cranial encephalic and thoracic CT scan did not show relevant changes of tomodensitometry of the encephalic and pulmonary parenchyma, respectively.

Regarding the hormonal study, a decrease on the cortisol level, adrenocorticotropic hormone (ACTH),



Pituitary nuclear magnetic resonance, showing a well defined lesion, of heterogenous signal, suggesting an intra-adenoma hemorrhage.

FIG. 1



Insulinic hypoglycemia test: change of serial cortisol with glycaemia.

FIG. 2

luteinizing hormone (LH), follicle stimulating hormone (FSH) and testosterone were observed; normal prolactin levels; thyroid function indicating an incipient hypothyroidism [triiodothyronine (T_3) and thyroid stimulating hormone (TSH), with a decrease on thyroxin levels (T_4) free] (*Table I*). The thyroid ultrasound has shown a "poorly individualized thyroid, small dimensions, a general hypoechoic texture, heterogenous, suggestive of thyroiditis." In the sequence of the hormonal changes found, pituitary nuclear magnetic resonance (NMR), revealing that in the right median/paramedian parts of the sella turcica, a lesion of heteregenous signal with round and well defined contours, measuring around 10.2 mm as the wider diameter, leading to a posterior left deviation of the pituitary stalk, this might translate an hemorrhagic lesion, more probably intra-adenomatous (*Fig. 1*).

The pituitary function was further and thoroughly studied through two tests: the insulin hypoglycemic test and the thyrotropin releasing hormone (TRH) test and gonadotropin releasing hormone (LHRH).[4,5] Regarding the first test, the expected increase on cortisol levels and growing hormone (GH) before an induced hypoglycemia (*Fig. 2*) was not verified. Regarding the second test carried out, prolactin has shown a normal reaction to TRH administration (an increase twice the base level, in 30 minutes) and the TSH has demonstrated some reaction to TRH administration, confirming the presence of some thyrotropic reserve, however insufficient to keep a normal production of the thyroid hormone. On the other hand, LHRH administration did not cause any response at LH and FSH serial levels (*Fig. 3*).

The patient was observed by Neurosurgery and once he did not show any immediate indication for surgery was referred to the outpatients clinic.

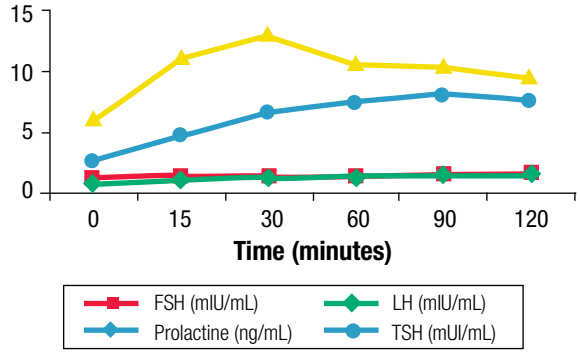
He was discharged and referred to the outpatients appointment of Internal Medicine and Endocrinology, medicated with hydrocortisone 20 mg/day (10mg + 5mg + 5mg) and levothyroxine 0.050 mg /day.

He was reassessed 2, 6 and 12 months afterwards, presenting an asymptomatic condition, recovering his hair scarcity and normal ionogram.

DISCUSSION

Before a severe hyponatremia, one would be expecting the patient to present a change of awareness. The good tolerance shown by the patient, points to an insidious setting in of the disease, enabling a progressive cellular adaptation (namely of cerebral cells) to these electrolytic changes.[5] Such data are corroborated by changes on his physiognomy, suggesting a dysfunction with a certain degree of chronicity.

Besides, the personal background, as well as the patient's physical condition (hair rarefaction, parotid hypertrophy and gynecomastia) are main confusion factors, who induced initially to consider, as a main problem, a chronic hepatopathy and, consequently, an



LHRH and TRH tests: changes on FSH, LH and TSH, Prolactine levels.

FIG. 3

etiology investigation of the hyponatremia focalized in such dysfunction.

Primary adrenal insufficiency (Addisonian crisis) usually presents secondary clinical manifestations to cortisol deficit, as well as, derived of the aldosterone deficit. Therefore, apart of hyponatraemia, such patients present hypokalaemia and hypovolemia. Besides, these patients show a skin and mucosa hyperpigmentation, secondary to the increased synthesis of melatonin.1 As a matter of fact, this case expresses an euvolemic hyponatremic condition, with normal potassium and aldosterone levels, without changes in the skin pigmentation, and leading to the suspicion of a central hormonal dysfunction.

Due to the study carried out, we came to the conclusion of dealing with a pituitary apoplexy, in the context of an hypophysis adenoma, what would be conditioning a progressive condition of hypopituitarism (with established hypoadrenalism, hypogonadism and hyposomatotropism; as well as a hypothyroidism incipient onset).[4]

The condition of fever, headaches and vomiting, probably has coincided with the hemorrhagic phenomena, occurred in the adenomatous hypophysis, in spite of having been undervalued by the patient.[4]

CONCLUSION

Being hyponatremia a rather frequent electrolytic unbalance, sometimes, its etiology is not investigated, as most times is corrected with fluid therapy. The overwhelming prevalence of elderly patients, with several comorbidities, polymedicated and with multiple hospital admissions can contribute for such fact.[5]

In the described case, hyponatremia was due to a pituitary adenoma, which is a less frequent cause of presentation of such electrolytic dysfunction with a treatment based on hormone supplementation with hydrocortisone and levothyroxine.

It is necessary a high level of clinical suspicion to recognize the underlying dysfunction of a severe hyponatremia, without apparent cause. ■

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