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Hyponatremia in a Patient with a Sellar Mass

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A 59-year-old man with confused mental status was admitted to our hospital. Laboratory reports showed him to have severe hyponatremia, and additional studies revealed panhypopituitarism. Brain magnetic resonance imaging showed a sellar cystic lesion, which consisted of a Rathke cleft cyst. Thus, the mass effect of the Rathke cleft cyst resulted in panhypopituitarism and finally induced euvolemic hyponatremia. On the basis of these results, supplementation with thyroid hormone and glucocorticoid was started, and the patient's serum sodium level was gradually corrected and maintained within the normal range. Here, we report this case of euvolemic hyponatremia caused by a Rathke cleft cyst.

Key Words: *Rathke cleft cyst; Hyponatremia; Panhypopituitarism*

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MAKE YOUR DIAGNOSIS: EUVOLEMIC HYPONATREMIA

A 59-year-old man with confused mental status was admitted to our hospital with symptoms that had occurred 4 days previously. He had been treated for schizophrenia for 30 years, which was well controlled by medication consisting of amisulpride, quetiapine, and propranolol.

The laboratory report showed him to have severe hyponatremia with a serum sodium level of 106 mEq/L. Of note, serum and urine osmolality were 225 mOsmol/kg and 641 mOsmol/kg, respectively. He was not dehydrated and did not have ascites or edema. To evaluate pituitary function and the cause of the euvolemic hyponatremia, a series of tests were performed, and the results obtained are listed in Table 1. Brain magnetic resonance imaging (MRI) showed a sellar cystic lesion; there was no evidence of acute infarction, hemorrhage, or space-occupying lesion (Fig. 1).

PANHYPOPITUITARISM ASSOCIATED WITH A RATHKE CLEFT CYST

Hormonal evaluation revealed decreased levels of T3 and free T4; thyroid-stimulating hormone (TSH) was in the normal range. The basal level of cortisol was decreased and cortisol responses to the initial challenge of 250 μg adrenocorticotropic hormone (ACTH) were inadequate (maximum serum cortisol level after ACTH challenge was 8.8 μg/dl). Basal plasma luteinizing hormone, follicle-stimulating hormone, and testosterone levels were low. These data suggested the presence of hypothyroidism, hypoadrenalism, and hypogonadism. The normal TSH level and adequate aldosterone response to ACTH suggested hypopituitary origin hormonal dysfunction. Although confirmative tests were not performed during the hospital course, it is reasonable to conclude that the patient presented with panhypopituitarism. Accordingly, his electrolyte abnormality, hyponatremia, was mainly due to secondary hypothyroidism and hypoadrenalism that was associated with panhypopituitarism.

Brain MRI showed 1.2×1.5 cm sized well-marginated sellar mass, which had homogeneous high signal intensity relative to the brain parenchyma, consistent with a Rathke cleft cyst. Rathke cleft cysts are benign epithelium-lined intrasellar cysts containing mucoid material arising from the remnants of Rathke's pouch. Usually, these cysts rarely produce symptoms and are an incidental autopsy finding.[1] Symptomatic Rathke cleft cysts are rarely reported,[2] but according to some reported cases, these cysts can cause serious medical problems.[3-5] Endocrinological and neurological symptoms with Rathke cleft cysts are generally associated with compression of the pituitary gland, pituitary stalk, optic nerve, or hypothalamus. The endocrinological symptoms include hypopituitarism, diabetes

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TABLE 1. Results of endocrinological examinations

Thyroid function test			
T3, ng/ml	0.15 (0.6-1.6)		
Free T4, ng/dl	0.48 (0.8-1.54)		
TSH, μIU/ml	2.64 (0.35-5.5)		
ACTH stimulation test	0 min	30 min	60 min
Cortisol, μg/dl	0.8	6.0	8.8
Aldosterone, pg/ml	21.45	187.32	228.65
Fasting blood hormone level at 9:00			
LH, mIU/ml	0.7 (1.5-9.3)		
FSH, mIU/ml	1.44 (1.4-18.1)		
Testosterone, ng/ml	0.03 (1.88-8.96)		

T3: triiodothyronine, Free T4: free thyroxine, TSH: thyroid-stimulating hormone, ACTH: adrenocorticotropic hormone, LH: luteinizing hormone, FSH: follicle stimulating hormone.

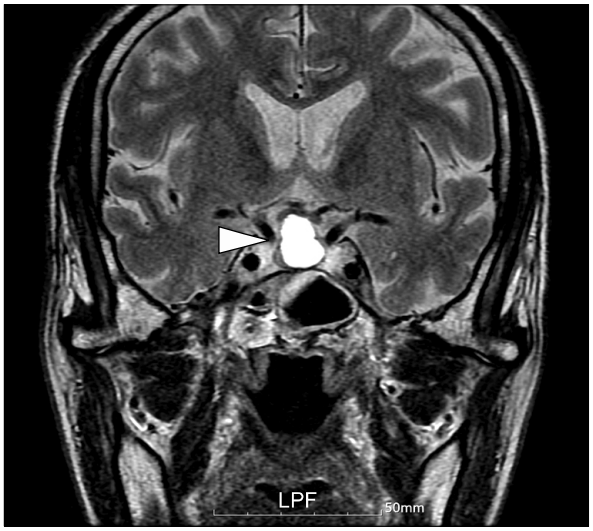

FIG. 1. MRI delineation a dumbell-shaped intrasella and suprasella cyst.

insipidus, amenorrhea, and galactorrhea, and the neurological symptoms include headache, impairment of visual acuity, and visual field defects. In this case, the mass effect of the Rathke cleft cyst resulted in panhypopituitarism and finally induced euvolemic hyponatremia (Fig. 2).

On the basis of these findings, supplementation with thyroid hormone and glucocorticoid was started and the patient's serum sodium level was gradually corrected and maintained within the normal range. On July 20, 2011, he was referred to neurosurgery for transsphenoidal pituitary surgery.

In summary, we have presented a case of euvolemic hyponatremia caused by panhypopituitarism. Hormonal and imaging study suggested panhypopituitarism caused by a

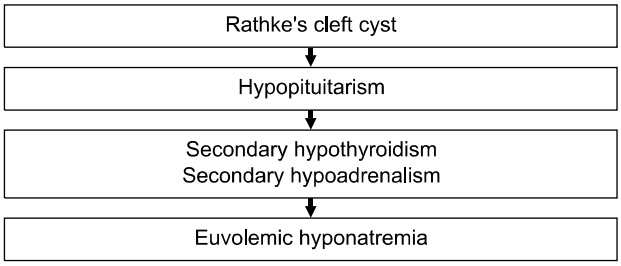

FIG. 2. The cause of hyponatremia.

Rathke cyst resulting in euvolemic hyponatremia. This case suggests that physicians should remember the potential influence of a Rathke cleft cyst on the secretion of pituitary hormones when hyponatremia, hypothyroidism, and hypoadrenalism are encountered.

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