

## C A S E R E P O R T

# The Schmidt syndrome

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**Summary.** Addison's disease (AD) is a rare endocrine condition related to adrenal insufficiency. Autoimmune adrenalitis is commonly associated with autoimmune diseases. Autoimmune Addison's Disease (AAD) describes Autoimmune Polyendocrine Syndrome (APS) in 60% of patients with an important immunitary pathogenesis imprinting. We describes a case of Autoimmune Polyendocrine Syndrome characterize by adrenal insufficiency and thyroid disease (Schmidt Syndrome). In this case report, Addison's disease had a slow onset in absence of the typical weight loss. In our considerations this is due to the concomitant hypothyroidism that masked some typical signs and also limited acute presentation. ([www.actabiomedica.it](http://www.actabiomedica.it))

**Key words:** autoimmune polyendocrine syndrome, autoimmune Addison's disease, Schmidt syndrome

## Introduction

Addison's disease (AD) is a rare endocrine condition related to adrenal insufficiency.

Autoimmune adrenalitis is commonly associated with autoimmune diseases (1). Autoimmune Addison's Disease (AAD) describes Autoimmune Polyendocrine Syndrome (APS) in 60% of patients (2) with an important immunitary pathogenesis imprinting. The main specific characteristic of AAD is the presence of serum antibodies directed to steroidogenic enzymes, more often antibodies directed to 21-hydroxylase (3). Their role is controversial and seems that T-lymphocyte adrenocortical cell destruction represents the most important feature (4).

We report a typical APS-2 case characterized by adrenal insufficiency and thyroid disease (Schmidt Syndrome).

## Case presentation

We describe the case of a 69 years old woman admitted to our department for hyponatremia and ab-

dominal pain. Blood test showed severe hyponatremia (111 mEq/L), only low increase in serum potassium concentration and no emodynamic alterations such as hypotension or arrhythmia. Abdominal echography and acutely performed X-Ray were unremarkable.

In her history-taking a previous hospitalization for abdominal pain and syncope in which a slight dys-electrolytemia was just present.

A complete laboratory blood investigation panel was performed at the admission to our ward (Table 1). Of particular interest a remarkable hyponatremia (106 mEq/L) and hyperkalemia (6,6 mEq/L) and only a minimum alteration of major laboratory parameters of kidney disease were displayed (Creatinine 1 mg/dl; Bun 36 mg/dl, eGFR 57 mL/min/1.73m<sup>2</sup>).

An abdominal Magnetic Resonance, acutely performed in the suspicion of dangerous abdominal conditions, showed small adrenal glands and no other relevant alterations. In the suspicion of Addison Diseases, a specific laboratory screening was performed to investigate pituitary state (Table 2). The results showed TSH and ACTH severe increase consistent with Addison and thyroid disease associations (Table 2). At 1-month encephalic magnetic resonance re-

**Table 1.** Blood tests to admission to our ward

| Blood tests         | Patient values           | Normal values   |
|---------------------|--------------------------|-----------------|
| WBC                 | 7890/mm <sup>3</sup>     | 4000-10 000     |
| RBC                 | 4680 000/mm <sup>3</sup> | 3900000-5200000 |
| HB                  | 14 g/dl                  | 12-16           |
| HT                  | 38.6 %                   | 36-46           |
| PLT                 | 313 000/mm <sup>3</sup>  | 150-400         |
| PT-INR              | 1.09                     | 0.86-1.14       |
| Glucose             | 82 mg/dl                 | 60-100          |
| BUN                 | 36 mg/dl                 | 10-50           |
| Creatinine          | 1 mg/dl                  | 0.5-1.4         |
| Sodium              | 106 mEq/L                | 135-148         |
| Potassium           | 6.6 mEq/L                | 3.5-5.3         |
| CPK                 | 1797 ng/mL               | 0.0-4.0         |
| Troponin            | 0.10 ng/mL               | 0.01-0.06       |
| Transaminases (GPT) | 42 U/L                   | 0-40            |
| Transaminases (GOT) | 106 U/L                  | 0-40            |
| LDH                 | 917 U/L                  | 250-500         |

**Table 2.** Blood tests to our ward

| Blood tests | Patient values | Normal values |
|-------------|----------------|---------------|
| TSH         | 14,659 uU/mL   | 0,4-4         |
| FT4         | 0,49 ng/dL     | 0,60-1,1      |
| LH          | 14 mUI/mL      | 10.9-58,6     |
| FSH         | 19.1mUI/mL     | 17-114        |
| Prolattina  | 22,4 ng/mL     | 2,7-20        |
| HGH         | < 0.100 uUI/mL | 0,06-14       |
| ACTH        | 6325 pg/mL     | 5-49          |

vealed a pituitary adenoma in adrenal insufficiency and thyroid disease consistent with "Schmidt Syndrome". Considering the patient clinical conditions we immediately started substitutive corticosteroid therapy with normalization of electrolytic parameters. The next autoimmune serum dosage was unremarkable. However we believe that this condition was the normal consequence of early start of the specific therapy.

## Discussion

APS-2 has a prevalence of 1 in 20.000, occurs more frequently in women with a 1:3 male:female ratio and has a peak incidence at ages 20–60 years (5), while is rare in children (6).

APS-2 has well-identified genetic imprinting, including HLA genes, the cytotoxic T lymphocyte

antigen gene and the protein tyrosine phosphatase non-receptor type 22 gene on chromosomes 6, 2 and 1, respectively (7). These genes are known to increase the risk of autoimmune disorders. Of the HLA genes, DR3 and DR4 antigens are associated with APS-2 (8).

Patients with chronic hypoadrenocorticism mainly presents fatigue, muscle weakness, weight loss, vomiting, abdominal pain and hyperpigmented skin, particularly in sun-exposed areas, axillae, palmar creases and mucous membranes. The acute presentation includes hypotension, hyponatremia and hypokaliemia progressing to shock, coma and death, if no immediately treated (9-10). Acute adrenal insufficiency may be induced by a serious infection, acute stress, bilateral adrenal infarction or hemorrhage.

In this case report, AD had a slow onset in absence of the typical weight loss. In our considerations this is due to the concomitant hypothyroidism that masked some typical signs and also limited acute presentation.

Pituitary ACTH cell hyperplasia or adenoma may occur in patients who suffer from AD but have not been treated for a long time (11-12) to indicate that insufficient feedback suppression of ACTH-producing cells induce the development of a pituitary adenoma.

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