

SYNDROME OF INAPPROPRIATE ANTIDIURETIC HORMONE SECRETION ASSOCIATED WITH SMALL CELLS LUNG CANCER WITH BONE METASTASIS

C. Buzduga¹, I. Raileanu², C. Stefanescu², V. Mogos¹, E. Zbranca¹

1. Department of Endocrinology,

2. Department of Nuclear Medicine

“Gr.T Popa” University of Medicine and Pharmacy Iasi, Romania

SYNDROME OF INAPPROPRIATE ANTIDIURETIC HORMONE SECRETION ASSOCIATED WITH SMALL CELLS LUNG CANCER WITH BONE METASTASIS (ABSTRACT): A patient with a bone metastasis developed a asymptomatic hyponatremia, with all features of the Syndrome of Inappropriate Antidiuretic Hormone Secretion (SIADH). The event was interpreted as a consequence of ADH release due to primary cancer located in the lungs. Based on this rare occurrence, a review of the aetiology, clinical findings, diagnosis, prognosis and treatment of SIADH in general is presented.

KEY WORDS: HYPONATREMIA, INAPPROPRIATE ADH SYNDROME, , SMALL-CELL-LUNG CARCINOMA, TUMOUR LYSIS SYNDROME.

Correspondence to: Dr. Cătălin Mihai Buzdugă, Department of Endocrinology, St Spiridon University Hospital Iasi, Bulevardul Independenței no 1, 700111, Iași, Romania. e-mail: catalinbuz@yahoo.com*.

INTRODUCTION

The Syndrome of Inappropriate Secretion Of Antidiuretic Hormone (SIADH) was first reported by Schwartz et al. in 1957 [1] and was reviewed by Bartter and Schwartz in 1967 [2]. They described two patients with lung cancer, who developed unexplained hyponatremia due to renal sodium loss, and thought that production by the tumour of an ADH-like substance might be the responsible mechanism.

Criteria for the definition of SIADH secretion are:

- 1) hyponatremia with a serum sodium lower than 130 mEq/l;
- 2) plasma osmolality lower than 275 mOsm/kg;
- 3) urine osmolality higher than the plasma osmolality and above 500 mOsm/kg;
- 4) absence of clinical evidence of volume depletion;
- 5) normal renal and adrenal function;
- 6) normal thyroid function.

The tumour most frequently associated with SIADH is small-cell lung cancer (SCLC), but the syndrome may also occur in a variety of other carcinomas arising in the brain, prostate, bladder, pancreas, adrenal cortex, duodenum, head and neck, in mesothelioma, thymoma or sarcoma, and in Hodgkin's disease [3].

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We report a case of hyponatremia associated with a bone fracture (caused by a bone metastasis) that who was ultimately diagnosed as having lung cancer (small cell carcinoma) with the association of SIADH (a component of para-neoplastic syndrome)

CASE REPORT

A 72 years old male patient, admitted at Clinical of Endocrinology University Hospital St Spiridon Iasi with marked asthenia and severe osteoarticular pain and 20 kg weight loss. There was no history of haemoptysis or chest pain. He was a smoker who consumed one and a half pack per day for more than 20 years.

On examination the following points were noted:

- the skin pale,
- hyperpigmented the swelling of the fourth finger of the left hand.
- respiratory rate – 28 per min,
- cyanosis absent,
- accessory muscles of respiration- working.
- AP diameter of thorax increased.
- bilateral hyperresonant note on percussion.
- breath sound - vesicular with prolonged expiration, bilateral rhonchi present, crepitation present.

The lab exam revealed: haemoglobin - 13 mg %, TLC - 8950/mm³, ESR – 87 mm/hr, PPBS - 120mg%, urea – 29 mg /dl, creatinine -.0.81 mg/dl. Plasma sodium level was 125 mEq/L, potassium was 4.52 mEq/L. The thyroid and adrenal function were normal: ACTH = 34.6 pg/mL (7.9-66.1), cortisol = 210 mg/dL (50-220), TSH = 1.2uIU/mL (0.4-7). The blood glucose level was normal.

The diagnosis of SIADH was confirmed by an elevated urine osmolality (590 mOsm/kg), a decreased serum osmolality (882 mOsm/kg) and high levels of urinary sodium.

Hand X ray showed loss of bone mass of the finger fourth, left hand (Fig. 1). Chest X Ray showed a nodular opacity in the right lower lobe of the lung (Fig 2). He was transferred to Orthopaedics Clinic to investigate and treat. The finger was amputated. The histologic exam revealed bone metastasis with starting point from the lung.



Fig. 1 X Ray of the left Hand - loss of bone mass of the finger fourth



Fig. 2 Chest X Ray - nodular opacity in the right lower lobe of the lung

DISCUSSION

SIADH is one of the most common causes of hyponatremia in hospitalised patients. It may occur in a variety of conditions. Also, the occurrence of hyponatremia due to SIADH at initial diagnosis is a well known paraneoplastic feature of small lung cancer.

In different studies, there is an occurrence of SIADH in SCLC of about 10% with a range of 1.3%-69%. On the other hand, SCLC accounts for about 75% of the malignancies associated with SIADH [3-7].

Bronchogenic carcinoma is the commonest cause of male death from primary malignant diseases [8]. Clinical manifestations vary from change in character of cough, haemoptysis, chest pain, breathlessness etc. with or without features of metastasis in different tissues. Very rarely, lung cancer of small cell type may manifest with only features of SIADH (Syndrome of inappropriate secretion of ADH) [9].

A broad spectrum of other malignant tumours have also been reported to cause this syndrome: primary brain tumours, haematological malignancies, intrathoracic non-pulmonary cancers, non-small-cell lung cancer, skin tumours, gastro-intestinal cancers, gynaecological cancers, breast cancer, prostate and bladder cancer, head and neck cancer, sarcomas [7].

Several non-malignant intrathoracic disorders, such as pulmonary infections and conditions associated with changes in intrathoracic pressure can be accompanied by SIADH. The hallmarks of SIADH are hyponatremia, low plasma osmolality and a less than maximally diluted urine in the absence of volume depletion (criteria of Bartter and Schwartz) [1]. Plasma ADH levels are usually elevated. Renal, adrenal and thyroid function are normal. The prognosis of SIADH depends on the underlying cause. In SIADH due to malignancies, the correlation with the prognosis of the disease is not always clear and the results are controversial [6-10].

CONCLUSIONS

SIADH is the most common cause of hyponatremia in hospitalised cancer patients. The criteria for diagnosis of SIADH should be used and the correct cause identified from the numerous possible differential diagnoses. The case report emphasizes the importance of early recognition of SIADH which may be the only manifestation in the initial part of lung cancer.

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