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Case report

Incidental Hyponatremia Unmasking Lung Adenocarcinoma in a Patient with Lumbar Disc Disease: A Case Report

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Abstract
A 60-year-old man with lumbar disc herniation was found to have asymptomatic hyponatremia during his pre-operative workup. This led to the discovery of an underlying bronchogenic adenocarcinoma. The case highlights the importance of thorough pre-operative evaluation and the need for vigilance in investigating abnormal findings, which may be the first sign of a serious, unrelated condition.
Keywords. Hyponatremia, Inappropriate ADH Syndrome, Lung Neoplasms.

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Introduction

Malignancy-related hyponatremia is a common electrolyte imbalance in cancer patients, with its incidence varying widely depending on the type and stage of the malignancy [1,2]. The most frequent cause is the Syndrome of Inappropriate Antidiuretic Hormone (SIADH), where tumor cells ectopically produce or stimulate the release of arginine vasopressin (AVP), leading to excess water retention and dilutional hyponatremia [3,4].

This case report details the presentation of a 60-year-old male with chronic lower back pain due to a lumbar disc herniation. The primary significance of this case lies in the discovery of an unrelated, life-threatening malignancy during a routine pre-operative workup. The patient's otherwise asymptomatic hyponatremia served as the sole clue, leading to the diagnosis of bronchogenic adenocarcinoma.

Case report

A 60-year-old male presented with a chief complaint of lower back pain of three months' duration. The pain was described as dull, aching, and aggravated by prolonged standing or sitting. There was no history of trauma or radiating pain into the lower extremities.

Physical examination revealed localized tenderness in the lumbar region with restricted range of motion. Neurological examination was unremarkable.

Routine blood tests were performed as part of the pre-operative workup for the planned lumbar discectomy. An incidentally low sodium level was noted. Subsequent investigations confirmed the diagnosis of hyponatremia. A lumbar magnetic resonance imaging (MRI) confirmed a L4-L5 disc prolapse.

Due to the incidental finding of hyponatremia, further investigations were initiated. A chest X-ray revealed a suspicious right hilar mass. A subsequent computed tomography (CT) scan of the chest confirmed a mass in the right lung (Figure 1). A bronchoscopy with biopsy was performed, which revealed an adenocarcinoma (Figure 2).

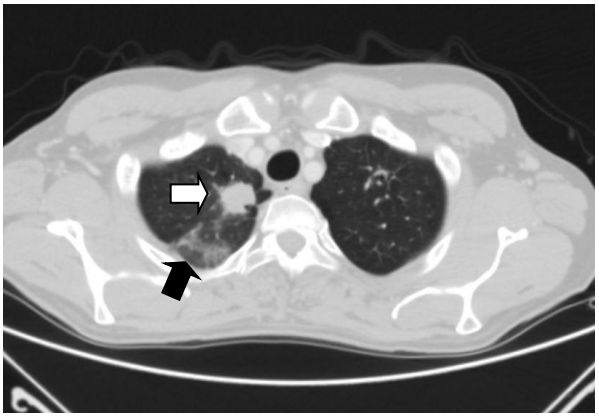

Figure (1): Chest CT scan showing a spiculated, irregularly shaped mass in the right upper lobe (white arrow) with an area of subtle ground-glass opacity, which can represent a tumor growth, inflammation, or hemorrhage (black arrow).

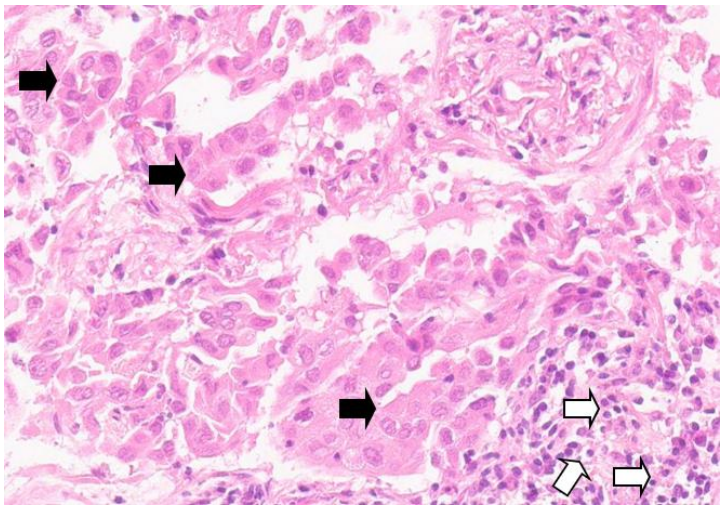

Figure (2): A core lung biopsy showing features consistent with adenocarcinoma. Key findings include malignant glandular structures with atypical, pleomorphic cells arranged in papillary and acinar patterns (black arrows), with inflammatory inflitrates (white arrows).

The patient's back pain was managed conservatively, as the focus of care shifted to the newly diagnosed lung adenocarcinoma. He was referred to an oncologist for treatment planning, but unfortunately, he succumbed to his illness four months after the diagnosis.

Discussion

This case underscores the importance of comprehensive pre-operative evaluation, even in seemingly straightforward cases. The incidental finding of hyponatremia led to the diagnosis of a lung adenocarcinoma, a potentially life-threatening condition [5].

Hyponatremia is a common electrolyte imbalance with a wide range of differential diagnoses. While often attributed to diuretic use, renal failure, or liver disease, it can also be the first manifestation of malignancy, particularly small cell lung cancer.

The pathophysiology often involves the Syndrome of Inappropriate Antidiuretic Hormone (SIADH), where the tumor produces or stimulates the release of antidiuretic hormone (ADH), leading to water retention and dilutional hyponatremia [6]. The absence of other common symptoms of lung cancer, such as cough, hemoptysis, or weight loss, makes this case particularly notable [7].

Other mechanisms contributing to hyponatremia in cancer patients include [6,8,9]

1. Hypovolemia: Due to fluid losses from vomiting, diarrhea, or third spacing.
2. Renal salt-wasting: Caused by direct tumor invasion of the kidneys or by the effects of certain chemotherapeutic agents.
3. Pseudohyponatremia: In which hyperglycemia or hyperproteinemia artificially lower the sodium concentration.

The coexistence of lumbar disc herniation and lung cancer in this patient is likely coincidental. However, it emphasizes the need for vigilance and thorough evaluation in all patients, regardless of the presenting complaint. In addition, the unique aspect of this case is the presentation of hyponatremia as the sole clinical manifestation of adenocarcinoma. While hyponatremia is a recognized paraneoplastic syndrome, its occurrence in adenocarcinoma presenting without any other symptoms is less common compared to its association with SCLC [10] This rarity makes the case an important example for medical education and a reminder that clinical presentations can be atypical.

The patient's journey was a profound shock. His initial concern was solely his back pain, and the finding of hyponatremia seemed minor. The cancer diagnosis was devastating, turning his focus from physical discomfort to the terminal nature of his illness. He expressed gratitude for the medical team's thoroughness, which allowed for the diagnosis, even though the outcome was tragic. This allowed him to cherish his final months with family and find some solace in having had closure. His story highlights the human impact of a sudden, life-altering diagnosis.

Conclusion

This case report underscores the importance of a comprehensive pre-operative workup, even in seemingly straightforward cases. Incidental findings, such as hyponatremia, should prompt further investigation. The association between malignancy and hyponatremia highlights the need for a high index of suspicion in patients presenting with unexplained electrolyte disturbances.

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