Acta Scientific Neurology (ISSN: 2582-1121)

Volume 5 Issue 10 October 2022

Case Report

Primary Adrenal Small Cell Carcinoma Associated with Anti-Hu Positive Limbic Encephalitis: A Case Report

Roy El Koussa[1]*, Matilda Abu-Saba[1], Vijayta Geeta Bansal-Kapuria[2], William Graft[3], Vibhav Bansal[4]

[1]Mercyhealth Internal Medicine Residency, Javon Bea Hospital, Rockford, Illinois, USA

[2]Advocate Condell Medical Center, Libertyville, Illinois, USA

[3]University of Illinois College of Medicine Rockford, Rockford, Illinois, USA

[4]Mercyhealth Comprehensive Stroke Center, Javon Bea Hospital, Rockford, Illinois, USA

***Corresponding Author:** Roy El Koussa, Mercyhealth Internal Medicine Residency, Javon Bea Hospital, Rockford, Illinois, USA.

DOI: 10.31080/ASNE.2022.05.0537

Received: August 20,2022

Published: September15, 2022

Abstract

Background: Small cell carcinoma (SCC) is a neuroendocrine neoplasm most commonly arising from the lungs. Extrapulmonary SCC is a rare pathology that have been previously described in the literature, namely GI and GU tracts. The onconeural antibody anti-neuronal nuclear antibody type I (anti-Hu) is highly specific for SCC of the lung and, when found in the serum or CSF of a patient, warrants oncological workup to look for an occult malignancy.

Case Presentation: Here, we report the case of a 78-year-old female that presented with short-term memory loss, confusion, and altered mental status concerning for paraneoplastic neurologic syndrome. She underwent extensive diagnostic workup that revealed a positive paraneoplastic panel. Subsequent imaging studies led to the identification of a primary adrenal SCC.

Conclusion: To our knowledge, this is the first report of a primary adrenal SCC associated with anti-Hu antobodies and the development of limbic encephalitis. This case highlights the importance of a positive paraneoplastic panel in the diagnostic considerations and the potential ubiquity of the well characterized onconeural antibodies.

Keywords: Small Cell Carcinoma; Adrenal Carcinoma; Onconeural Antibodies; Anti-Hu; Limbic Encephalitis

Abbreviations

SCC: Small Cell Carcinoma; EPSCC: Extra-Pulmonary Small Cell Carcinoma; PNS: Paraneoplastic Neurologic Syndrome; LE: Limbic Encephalitis; COPD: Chronic Obstructive Pulmonary Disease; ICA: Internal Carotid Artery; BP: Blood Pressure; HR: Heart Rate; CTA: Computed Tomography Angiography; MRI: Magnetic Resonance Imaging; CT: Computed Tomography; FLAIR: Fluid-Attenuated Inversion Recovery; IHC: Immunohistochemistry; CK: Pancytokeratin; SYP: Synaptophysin; TTF-1: Thyroid Transcription Factor 1; ANNA-1: Anti-Neuronal Nuclear Antibody Type 1; CSF: Cerebrospinal Fluid; FDG-PET: Fluorodeoxyglucose-Positron Emission Tomography; IVIg: Intravenous Immunoglobulin; PLEX: Plasma Exchange

Introduction

Small cell carcinoma (SCC) is a poorly differentiated subtype of neuroendocrine neoplasms, most commonly arising from the lungs. However, extra-pulmonary SCC (EPSCC) has also been described.

SCC is commonly associated with paraneoplastic neurologic syndromes (PNS). The latter are often characterized by onconeural antibodies that are predominantly found in patients with specific cancers. Here we describe a case of primary adrenal SCC associated with anti-Hu positive limbic encephalitis (LE).

Case Presentation

A 78-year-old female presented to our hospital after being found at home with altered mental status and aphasia. Her past medical history was significant for COPD, hypothyroidism, and bilateral ICA stenosis. Moreover, for the past month, the patient has been complaining of memory loss, dizziness, nausea, and recurrent falls. On arrival to our hospital, the patient was back to her baseline, neurologically. Her vital signs were significant for hypotension with a BP of 91/69 and tachycardia with a HR of 108. Head and neck computed tomography angiography (CTA) redemonstrated bilateral ICA stenosis but no acute abnormalities. Further workup to elucidate an etiology of the patient's neurological symptomatology included a brain MRI with and without contrast and a chest-abdomen-pelvis CT scan. The MRI brain revealed areas of hyperintensity on FLAIR imaging in the right inferior frontal lobe (Figure 1a) and temporal lobe (Figure 1b) without associated enhancement (Figure 1c).

Figure 1: MRI brain without contrast showing hyperintensity in the right inferior frontal lobe (a) and temporal lobe (b) on T2/FLAIR (red arrows), as well as the lack of contrast enhancement in the same regions (c).

The CT scan revealed a large right adrenal mass measuring 7.7 x 7.6 x 7.5 cm in size, concerning for a neoplastic process (Figure 2a). The patient subsequently underwent a CT-guided biopsy of the adrenal mass. The biopsy revealed a high-grade, poorly differentiated tumor with neuroendocrine features. Immunohistochemistry (IHC) was positive for pancytokeratin (CK), synaptophysin (SYP), CD56, and thyroid transcription factor-1 (TTF-1). A paraneoplastic antibody panel was positive for anti-neuronal nuclear antibody type I (ANNA-1 or anti-Hu). A lumbar puncture was also performed and revealed oligoclonal bands and pleocytosis in the cerebrospinal fluid (CSF). The patient was stabilized, weaned off vasopressors, and discharged home with outpatient follow-up. Post-discharge, the patient underwent a whole-body FDG-PET scan. The scan redemonstrated the adrenal mass (Figure 2b), but no other lesions were evident.

Figure 2: Adrenal mass evident on CT scan (a, red arrow) and redemonstrated on PET scan (b, green arrow).

Discussion and Conclusion

SCC commonly arises from the lungs but it has been described in virtually every organ system [1]. SCC is usually positive for one or more neuroendocrine markers, namely SYP, chromogranin, CK, TTF-1, and CD56, among others [2]. The IHC staining pattern of the biopsy of our patient's adrenal mass was concordant with the expected profile of SCC. Although the adrenal gland as a primary site of SCC is a rare finding, and only a few cases have been reported in the literature, the absence of a primary lung lesion, along with the specific IHC profile, confirmed the diagnosis of primary adrenal SCC beyond any doubt.

Onconeural antibodies, a diverse group of antibodies that can be isolated from the serum or CSF, belong to one of two subgroups:

1) well characterized antibodies against intracellular antigens, that are strongly associated with specific underlying neoplasms, or 2) antibodies against surface antigens occurring in the absence of a malignancy. Anti-Hu is a well characterized onconeural antibody that is predominantly found in patient with underlying lung SCC [3]. However, despite extensive oncological workup, including a whole body FDG-PET scan, no lung lesions were identified in our patient. To our knowledge, this is the first report of a patient with an isolated primary adrenal SCC and seropositivity for ANNA-1.

Although onconeural antibodies may be found in the sera of patients without PNS [4], in our case, the MRI findings of increased T2/FLAIR hyperintensity in the right inferior frontal lobe and temporal lobe, along with anti-Hu seropositivity and the presenting neurological symptoms make the diagnosis of LE definite according to the recommended diagnostic criteria outlined by Graus., *et al*. [5].

Primary adrenal SCC is an exceedingly rare pathology. It is a "silent" malignancy causing close to no symptoms. The lack of signs and symptoms leads to delayed diagnosis and metastatic disease at presentation. A complete work-up including a whole-body FDG PET, biopsy with IHC, and thorough history and physical are key in establishing the diagnosis. To our knowledge, this is the first case of primary adrenal SCC associated with anti-Hu positive LE. Given the rarity of primary adrenal SCC, let alone anti-Hu positive adrenal SCC, clinicians should thoroughly look for a primary lung lesion before making the diagnosis. In terms of treatment, no guidelines currently exist. For LE, anecdotal evidence of high dose corticosteroids, IVIg and PLEX have been described [6]. Further studies are needed to establish a standard of care for patients with adrenal SCC and LE.

Declarations

Ethics Approval

Not applicable.

Consent to Publish

Written informed consent was obtained from the patient for publication of the details of their medical case and any accompanying images. CARE guidelines were followed when drafting this manuscript

Data Availability

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

Conflicts of Interest

The authors have no conflict of interest to declare.

Acknowledgements

None.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Author Contributions

REK and VB contributed equally to this work. REK, MAB, VGBK, WG and VB reviewed the medical records, drafted, revised, and edited the manuscript, and approved the final version of the manuscript.

Bibliography

1. Berniker Abigail V., *et al.* "Extrapulmonary small cell carcinoma: imaging features with radiologic-pathologic correlation". *Radiographics : A Review Publication of the Radiological Society of North America, Inc* 35.1 (2015): 152-163.

2. Frazier Shellaine R., *et al*. "The pathology of extrapulmonary small cell carcinoma". *Seminars in Oncology* 34.1 (2007): 30-38.

3. Budhram Adrian., *et al*. "Diagnosing autoimmune limbic encephalitis". *CMAJ : Canadian Medical Association Journal = Journal De L'association Medicale Canadienne* 191.19 (2019): E529-E534.

4. Monstad Sissel Evy., *et al.* "Onconeural antibodies in sera from patients with various types of tumours". *Cancer Immunology, Immunotherapy : CII* 58.11 (2009): 1795-800.

5. Graus, Francesc., *et al*. "A clinical approach to diagnosis of autoimmune encephalitis". *The Lancet. Neurology* 15.4 (2016): 391-404.

6. Asztely F and E Kumlien. "The diagnosis and treatment of limbic encephalitis". *Acta Neurologica Scandinavica* 126.6 (2012): 365-375.