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CASE REPORT PEER REVIEWED | OPEN ACCESS

Horner's syndrome as the initial manifestation of mediastinal Hodgkin lymphoma

Francisco Javier Ruiz Miyares, Franco Emanuel Appiani, Fiorella Karina Miraval Márquez, Silvia Ruiz De Gracia, Antonio Jesús Donaire

ABSTRACT

Introduction: Horner's syndrome (HS) is characterized by ptosis, miosis, and ipsilateral facial anhidrosis resulting from disruption of the oculosympathetic pathway. Its association with mediastinal Hodgkin lymphoma is exceptionally rare.

Case Report: A 33-year-old man with a history of severe facial trauma sustained in a motorcycle accident 18 months earlier presented with a one-month history of left-sided ptosis and miosis. Brain magnetic resonance imaging (MRI) was unremarkable. Angio-computed tomography (CT) and positron emission tomography (PET)-CT revealed a large anterior mediastinal mass with hypermetabolic supradiaphragmatic lymphadenopathy. Histopathological examination of a lymph node biopsy confirmed classical Hodgkin lymphoma, nodular sclerosis subtype. The patient initiated brentuximab-AVD following sperm cryopreservation. The patient was subsequently lost to follow-up; therefore, treatment response and clinical outcome could not be assessed.

Conclusion: Horner's syndrome may represent a sentinel sign of mediastinal Hodgkin lymphoma and should prompt a thorough diagnostic workup to facilitate early diagnosis and treatment.

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INTRODUCTION

Horner's syndrome (HS) results from interruption of the oculosympathetic pathway and manifests clinically as ptosis, miosis, and occasionally ipsilateral facial anhidrosis [1]. Reported etiologies include traumatic, vascular, neoplastic, infectious, inflammatory, and neurological disorders affecting the brainstem, spinal cord, or sympathetic chain [2, 3]. Its association with mediastinal lymphoma, particularly Hodgkin lymphoma, is extremely rare and has been documented in fewer than ten cases [4–8]. We report a case in which HS was the initial manifestation of mediastinal Hodgkin lymphoma.

CASE REPORT

A 33-year-old man with a history of severe facial trauma sustained in a motorcycle accident 18 months earlier presented with a one-month history of left-sided ptosis and miosis. He reported no pain or additional neurological or respiratory symptoms, including dyspnea, cough, or chest pain.

Neurological examination revealed left-sided ptosis and miosis with marked anisocoria and a

sluggish pupillary light response. The remainder of the neurological examination was normal.

Contrast-enhanced thoracic CT demonstrated a large left anterior mediastinal mass extending into the left pulmonary apex and thoracic inlet, producing mass effect with displacement of adjacent mediastinal structures (Figure 1B and C). Its cranial extension toward the thoracic inlet provided a plausible anatomical explanation for compression of the second-order oculosympathetic neuron responsible for the patient's Horner syndrome.

Brain MRI showed no abnormalities. Angio-CT of the supra-aortic trunks and intracranial vessels revealed a left anterior mediastinal mass with associated laterocervical and supraclavicular lymphadenopathy. Positron emission tomography-computed tomography demonstrated a heterogeneous hypermetabolic mediastinal mass measuring 10 × 6.8 × 7 cm (SUV_{max} 11.58) with areas of necrosis, along with multiple hypermetabolic supradiaphragmatic lymph nodes.

Core needle biopsy followed by excisional biopsy of a retroclavicular lymph node confirmed classical Hodgkin lymphoma, nodular sclerosis subtype. Histopathological examination revealed classic Reed–Sternberg cells within a polymorphous inflammatory background composed predominantly of small lymphocytes, eosinophils, plasma cells, and histiocytes. Immunohistochemistry demonstrated CD30 and CD15 positivity (Figure 2C–D), with weak expression of paired box protein 5 (PAX5), CD20 negativity, and negativity for Epstein–Barr virus-encoded small RNAs (EBER).

The patient was diagnosed with classical Hodgkin lymphoma and initiated treatment with the Brentuximab-AVD regimen after sperm cryopreservation.

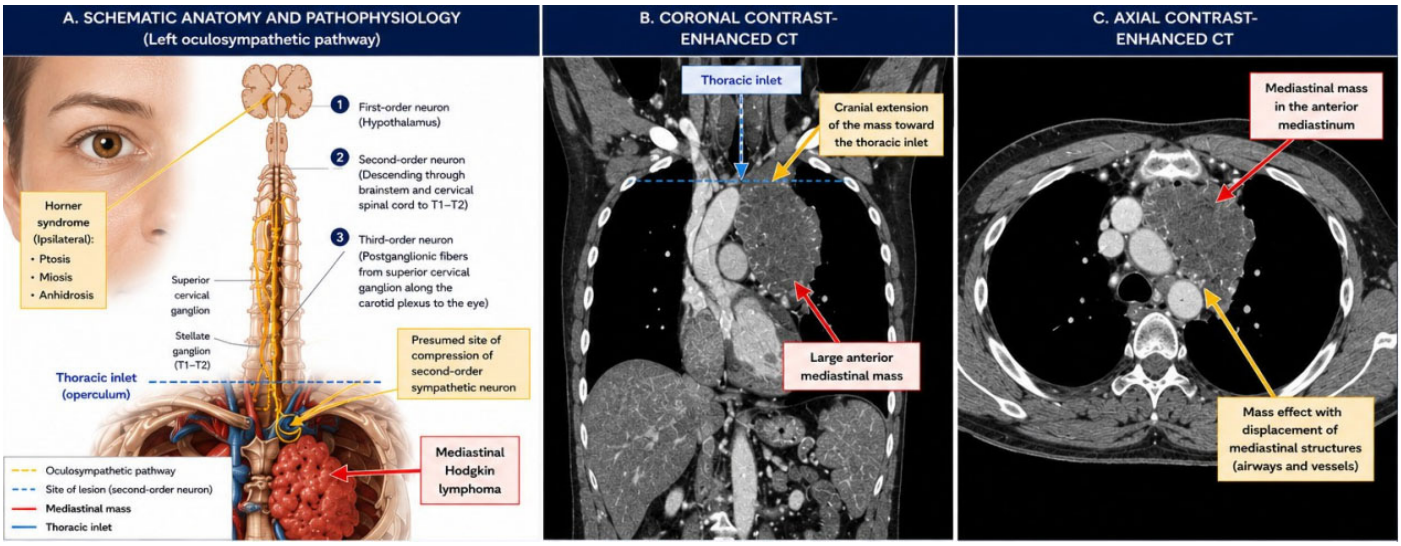


Figure 1: Horner syndrome as the initial manifestation of mediastinal Hodgkin lymphoma. (A) Schematic representation of the left oculosympathetic pathway illustrating the presumed site of compression of the preganglionic oculosympathetic neuron by the mediastinal mass extending toward the thoracic inlet, consistent with compression of the second-order oculosympathetic neuron responsible for the patient's Horner syndrome. (B) Coronal contrast-enhanced computed tomography (CT) demonstrating a large left anterior mediastinal mass extending toward the thoracic inlet and pulmonary apex. (C) Axial contrast-enhanced CT showing the anterior mediastinal mass producing mass effect with displacement of adjacent mediastinal structures, including the airways and great vessels.

DISCUSSION

Horner's syndrome secondary to mediastinal lymphoma is a very rare mode of presentation [4–8]. The proposed mechanism involves compression or infiltration of the cervical or thoracic sympathetic chain [3]. In our patient, the extension of the mediastinal mass toward the thoracic inlet and pulmonary apex suggests involvement of the second-order oculosympathetic neuron, providing an anatomical explanation for the development of Horner syndrome (Figure 1A–C).

The differential diagnosis of Horner's syndrome is broad and includes traumatic lesions, carotid artery dissection, brainstem stroke, demyelinating disease, infectious and inflammatory disorders, Pancoast tumors, mediastinal malignancies, and other lesions affecting the sympathetic pathway [1–3]. Consequently, a systematic diagnostic approach and targeted imaging studies are essential to identify potentially serious underlying etiologies.

In this patient, the history of facial trauma may initially have suggested a traumatic cause; however, persistence of HS prompted further investigation and ultimately led to the diagnosis of mediastinal Hodgkin lymphoma.

Published cases most frequently describe classical Hodgkin lymphoma, nodular sclerosis subtype, occurring in young patients with bulky mediastinal masses [5–9]. The absence of B symptoms does not preclude the presence of extensive mediastinal Hodgkin lymphoma [9, 10].

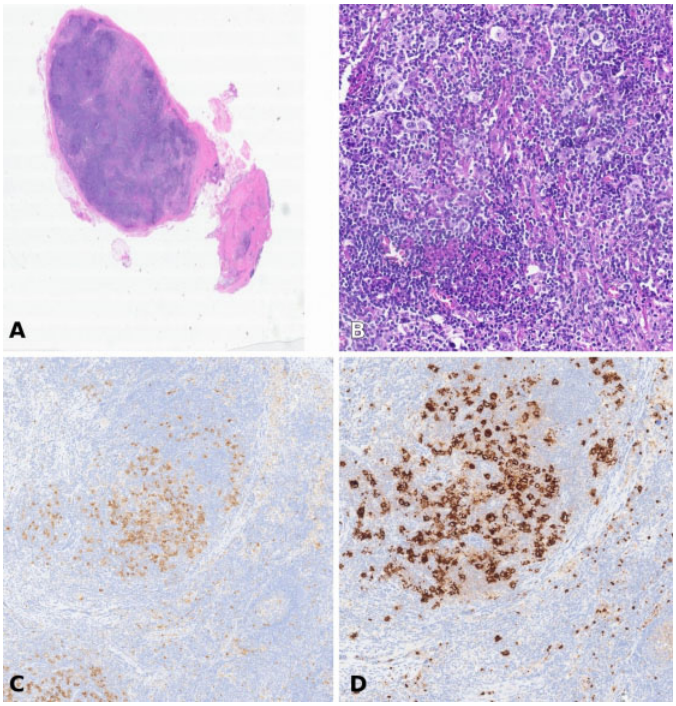


Figure 2: Histopathological findings of classical Hodgkin lymphoma. (A) Low-power haematoxylin and eosin (H&E) staining showing lymph node involvement (×4). (B) High-power H&E staining demonstrating atypical large cells within a mixed inflammatory background (×40). (C) Immunohistochemical staining showing CD30 expression in the neoplastic cells (×40). (D) Immunohistochemical staining demonstrating CD15 positivity in the neoplastic cells (×40).

This case highlights the importance of excluding mediastinal lesions in any patient with HS not explained by carotid or primary neurological pathology [1, 2], even in the presence of a traumatic history. Positron emission tomography-computed tomography is particularly valuable for staging and therapeutic planning [10].

CONCLUSION

Horner's syndrome may represent a sentinel sign of mediastinal Hodgkin lymphoma. Persistence of symptoms warrants comprehensive imaging of the neck and chest to ensure early diagnosis and timely treatment.

LEARNING POINTS

- Horner's syndrome may be the first manifestation of serious underlying pathology.
- Persistent Horner syndrome warrants imaging of the neck and chest even in patients with a history of trauma.
- Mediastinal masses extending toward the thoracic inlet may compromise the oculosympathetic pathway and cause Horner's syndrome.
- Hodgkin lymphoma should be included in the differential diagnosis of Horner syndrome, particularly when mediastinal pathology is present or suspected.

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Author Contributions

Francisco Javier Ruiz Miyares – Acquisition of data, Analysis of data, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Franco Emanuel Appiani – Conception of the work, Design of the work, Analysis of data, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy

or integrity of any part of the work are appropriately investigated and resolved

Fiorella Karina Miraval Márquez – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Silvia Ruiz De Gracia – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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Guarantor of Submission

Francisco Javier Ruiz Miyares, MD, is the guarantor of this submission and accepts full responsibility for the integrity and accuracy of the work.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

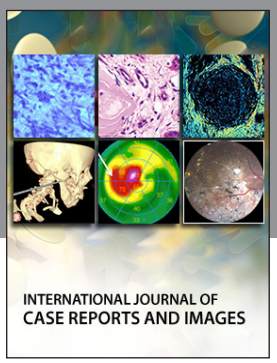
All relevant data are within the paper and its Supporting Information files.

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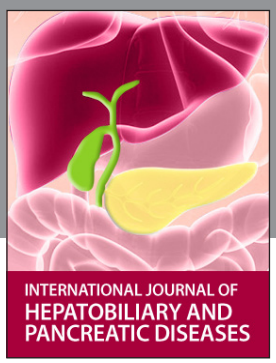
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