

Hypertrophic osteoarthropathy secondary to lung cancer: A case report

Abstract

Hypertrophic osteoarthropathy is an uncommon clinical syndrome characterized by digital clubbing, periosteal proliferation, and arthralgias, most frequently occurring as a secondary manifestation of underlying intrathoracic disease.

We report the case of a 47-year-old woman who presented with a three-month history of constitutional symptoms, persistent cough, and general malaise, accompanied by elevated inflammatory markers. Chest imaging revealed irregular consolidation with necrosis, pleural effusion, and a mass in the right lower lobe with associated lymphadenopathy. During hospitalization, polyarthralgias were identified. Autoimmune evaluation was negative. Bronchoscopic biopsy confirmed advanced non-small cell lung carcinoma. The constellation of clinical, imaging, and pathological findings supported the diagnosis of secondary hypertrophic osteoarthropathy associated with primary lung cancer.

This case highlights the importance of recognizing digital clubbing as a potential sentinel sign of intrathoracic malignancy. Early identification of paraneoplastic manifestations may prompt timely diagnostic investigation, facilitate oncologic staging, and enable appropriate therapeutic planning.

Keywords: Hypertrophic osteoarthropathy; Digital clubbing; Lung carcinoma; Pulmonary neoplasm; Paraneoplastic syndrome; Secondary osteoarthropathy.

Introduction

Hypertrophic Osteoarthropathy (HOA) is an uncommon clinical syndrome characterized by abnormal proliferation of the skin and osseous tissue in the distal extremities. Its clinical manifestations include digital clubbing, periosteal proliferation of long bones, and synovial effusion, accompanied by arthritis or arthralgia.

Although a primary form of HOA exists, in most cases this syndrome represents a manifestation of an underlying inflammatory or neoplastic condition [1]. Among these conditions, intrathoracic diseases are particularly prominent, especially small-cell lung carcinoma [2].

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Knowledge of this condition is relevant for recognizing paraneoplastic clinical manifestations that may raise suspicion of an underlying disease and prompt timely investigation, diagnosis, and treatment.

Case presentation

We present the case of a 47-year-old woman with a history of hypothyroidism, hypertension, and osteoarthritis, who sought medical attention for a three-month history of constitutional symptoms characterized by weight loss, persistent clear cough, and general malaise. The initial studies showed a marked inflammatory response (CRP 156 mg/L), mild anemia, and thrombocytosis. Meanwhile chest computed tomography revealed a tree-in-bud pattern in multiple segments of the

right lung, irregular consolidation with necrosis, and loculated pleural effusion.

During hospitalization, marked digital clubbing and polyarthralgias were noted, raising the differential diagnosis between rheumatologic disease and paraneoplastic syndrome; however, the autoimmune panel was completely negative. Meanwhile, fiberoptic bronchoscopy revealed diffuse infiltration of the right bronchial mucosa with stenosis of segments distal to the bronchus intermedius. Eight endobronchial biopsies were obtained.

Pathology on 20/11/2025 revealed a malignant epithelial neoplasm consistent with non-small cell carcinoma with focal areas of signet-ring cells and a subsequent contrast-enhanced CT scan demonstrated a poorly defined necrotic mass measuring 65 × 86 × 86 mm in the right lower lobe, right hilar and paratracheal lymphadenopathy, a chest wall nodule, and a bone lesion suggestive of early metastatic involvement.

Clinical, imaging, and pathological findings confirmed advanced primary lung carcinoma, with probable secondary hypertrophic osteoarthropathy.

Urgent referral to a center with clinical oncology services was arranged, along with PET-CT for complete staging and therapeutic planning.

Discussion

The patient presented with marked digital clubbing and polyarthralgias in the context of a constitutional syndrome associated with an advanced lung tumor, a constellation of findings highly suggestive of secondary Hypertrophic Osteoarthropathy (HOA). HOA is a paraneoplastic syndrome characterized by the clinical triad of digital clubbing, periostosis, and arthralgias. Its most common presentation is the secondary form, which is closely associated with thoracic diseases—particularly non-small cell lung carcinoma, the most frequently reported etiology in the literature [1]. In this regard, the present case aligns with the widely documented epidemiological pattern, underscoring the importance of digital clubbing as a sentinel sign of pulmonary malignancy.

The pathophysiology of secondary HOA remains incompletely understood, although mechanisms involving arteriovenous shunting, release of vasodilatory mediators, and growth factors that reach the systemic circulation without adequate pulmonary metabolism have been proposed [1]. These pathophysiological processes explain the almost exclusive association between HOA and intrathoracic diseases and underscore the importance of considering lung tumors in cases of recently developed digital clubbing.

This case is also consistent with the report by Yang et al., who described a patient with squamous cell carcinoma of the lung whose initial manifestation was the development of digital clubbing and HOA, reinforcing its value as an early sign and, in some cases, the presenting complaint [2]. The patient described here exhibited evident clubbing at admission, which, together with her constitutional symptoms and tomographic findings, initially supported suspicion of a neoplastic process rather than a rheumatologic cause, particularly after the negative autoimmune panel.

It is important to consider in the differential diagnosis the primary or hereditary form, known as pachydermoperiostosis. Unlike secondary HOA, this entity has an insidious onset during adolescence, a chronic course, cutaneous involvement, and a clear familial pattern [3]. None of these features were present in this case, making the presentation fully consistent with HOA secondary to advanced pulmonary neoplasia.

Additionally, Vandemergel and Renneboog demonstrated that digital clubbing is a clinical finding frequently associated with severe disease, with pulmonary etiology being the most common within an internal medicine service [4]. This further reinforces the need for comprehensive evaluation when digital clubbing is identified in adults and explains its value as an early diagnostic clue in patients with chronic respiratory symptoms.

Overall, the clinical, imaging, and pathological findings in this patient are entirely consistent with secondary HOA in the context of advanced non-small cell lung carcinoma, in agreement with the available evidence. Early recognition enabled a diagnostic approach directed toward a neoplastic etiology, expedited biopsy procedures, and facilitated oncologic staging and specialized therapeutic assessment.

Conclusions

The clinical course of this patient illustrates how the combination of constitutional syndrome, complex pulmonary findings, and digital clubbing should raise a high suspicion for intrathoracic malignancy. Although infectious and rheumatologic diagnoses were initially considered, the absence of autoimmune markers and the clear bronchial infiltration with compatible imaging findings pointed toward a neoplastic process, later confirmed by endobronchial biopsy consistent with lung carcinoma.

This case highlights the value of digital clubbing as a clinical sign that may precede severe pulmonary diseases and underscores the importance of timely, multidisciplinary evaluation, given that targeted treatment of the tumor may lead to improvement of associated paraneoplastic manifestations.

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