Case Report

Hypertrophic Osteoarthropathy Associated with Probable Smear-Negative Pulmonary Tuberculosis

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1. Introduction

Hypertrophic osteoarthropathy (HOA) is a clinicoradiological syndrome classically secondary to neoplastic diseases (paraneoplastic syndrome) [1]. It is most often secondary to pulmonary neoplasms (80% of cases) [2]. The association of HOA with pulmonary tuberculosis is classic but remains rare [3, 4]. Therefore, we report a case of HOA associated with probable smear-negative pulmonary tuberculosis (SNPT).

2. Case Presentation

A 36-year-old man was admitted to our department for bilateral symmetric polyarthritis touching large and small joints for two months. He also complained of bone pain in the forearm and legs, shortness of breath, and dry cough without dyspnea. He was not a smoker or alcoholic. His medical history was without specialties, including lung and liver diseases.

On physical examination, vital signs, including body mass index, were normal. A musculoskeletal examination revealed a digital clubbing with Schamroth’s sign (Figure 1), bilateral and symmetric swelling of the elbow, wrist, and ankles. Palpation of the bony reliefs of the forearms and legs is also painful. The rest of the somatic examinations were normal including the lungs, heart, liver, and skin.

Laboratory findings revealed elevated acute phase reactants with erythrocyte sedimentation rate (ESR) at 90 mm and C-reactive protein (CRP) at 98.1 mg/L. Immunological examinations were negative (antinuclear antibodies (ANAs), anticitrullinated protein antibodies (ACPAs), rheumatoid arthritis factors). A chest X-ray and computed tomography (CT) showed an apical pulmonary cavity. Plain X-ray and bone scintigraphy revealed periostosis of the tubular bones. Therefore, the diagnosis of HOA associated with probable SNPT was made. HOA symptoms had remitted after 3 months of antitubercular therapy. After 7 months of treatment, chest CT and bone scintigraphy showed a regression of the pulmonary cavity and disappearance of periostosis. The search for tuberculosis in front of any HOA seems to be justified in our epidemiological context.
HOA symptoms had remitted after three months of treatment. Chest CT performed two months after stopping treatment showed regression of the lung cavity (Figure 2(b)). Bone scintigraphy performed six months later showed improvement in scintigraphic abnormalities (Figure 3(b)).

Furthermore, the patient did not present any adverse and unanticipated events during the treatment period.

3. Discussion

HOA is a clinicoradiological syndrome, associating an acromelic syndrome (digital clubbing, swelling of extremities, and vasomotor disorders), bone syndrome (periostosis and acro-osteolysis), joint syndrome, and skin syndrome. There are two forms of HOA, the primary and the secondary form [1]. HOA is most often secondary to pulmonary neoplasms (80% of cases) [2]. The absence of similar cases in the family and the lack of skin syndrome in our patient do not argue in favor of a primary HOA, especially with the existence of pulmonary involvement, keeping in mind the genetic variability of primary HOA and the nonspecificity of skin syndrome [1]. The favorable clinical and scintigraphy evolution under antitubercular therapy reinforced us in the eventuality that the secondary HOA is more probable than the primary HOA.

Association of HOA and pulmonary tuberculosis is rarely reported, especially in Africa where the prevalence of tuberculosis is high [3, 5]. Our patient presented a HOA associated with SNPT.

The diagnosis of pulmonary tuberculosis is made with the help of chest X-rays, AFB smear microscopy, and sputum culture, but the diagnostic delay is more or less important [6]. Molecular diagnosis has significantly reduced tuberculosis diagnosis delays. However, molecular methods performed significantly worse in the case of negative microscopy. Therefore, the cost and unavailability of these methods in our country limit their use. For example, Xpert MTB/RIF is a multigeneration automated molecular assay that detects tuberculosis and rifampicin resistance within 2 hours [6, 7].

Although the SNPT accounts 30–65% of all pulmonary tuberculosis cases, its diagnosis is challenging in underdeveloped countries [8]. Diagnosis of SNPT is based on negative smears (at least two sputum samples), chest X-ray findings consistent with tuberculosis, and failure to respond to broad-spectrum antibiotics for several days [6]. If SNPT is suspected, the International Standard for Tuberculosis Care (3rd edition) recommends Xpert MTB/RIF testing and/or sputum culture [9]. Our patient cannot benefit from Xpert MTB/RIF due to unavailability.

Pulmonary tuberculosis associated with HOA is often radiologically extensive and cavitary. Cavitary pulmonary tuberculosis (45% of cases) has an elective apical localization [4].

In our patient, an apical segmentectomy with histopathological examination would have made it possible to make a diagnosis of certainty of tuberculosis or malignancy, but we did not opt for this invasive method because the patient had no neoplastic risk factors or alteration of the general condition.
In the past decade, only two clinical observations have described an association between HOA and tuberculosis. One case of hypertrophic osteoarthropathy associated with pulmonary tuberculosis was reported in 2011 [4]. Another case was reported in 2015, concerning a patient suffering from pulmonary tuberculosis complicated by HOA [10]. These two observations depict two different cases: the first is a HOA discovered concomitant with pulmonary tuberculosis and the second is known pulmonary tuberculosis placed on treatment, complicated by HOA. In our patient, the HOA revealed pulmonary tuberculosis.

Periostosis is the "signature" of HOA but remains neither necessary nor sufficient for the diagnosis. It can be detected by simple radiography and bone scintigraphy; the
latter method is more sensitive. In 1226 patients with lung cancer, 55 (4.5%) had periostosis on bone scintigraphy and only ten (0.8%) had clubbing and joint pain [11].

In addition to diagnostic interest, bone scintigraphy can also be used to evaluate therapy response, as periostosis can resolve after etiological treatment [12]. In our patient, the bone scintigraphy confirmed the relationship between SNPT and HOA, as the periostosis resolved after antitubercular treatment.

4. Conclusions

In conclusion, HOA associated with pulmonary tuberculosis is rare, in particular with SNMP, which is a difficult diagnosis. The search for tuberculosis in front of any HOA seems to be justified in our epidemiological context. Bone scintigraphy, by its sensitivity to detect periostosis, makes it possible to assess the response to etiological therapy of HOA.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References