CLINICAL REPORT

Shoulder arthritis as a lung metastatic carcinoma revealer. A case report

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Summary
Joint metastasis is very rare. It usually presents as a monoarthritis. It is generally located in the knee and secondary to lung cancer. Prognosis is poor, with a mean survival term of less than six months. We report the case of a right shoulder joint metastasis from a bronchopulmonary squamous cell carcinoma in a 55-year-old male smoker. The patient presented with an atypical chronic post-traumatic arthritis, not improved by symptomatic treatment. The diagnosis was based on synovial biopsy performed during open surgery. The primitive lung cancer was confirmed by chest CT scan and bronchial biopsy.

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Introduction

Joint metastasis is very rare. In the few reported cases [1,2], the primitive cancer was most frequently lung adenocarcinoma.

The primitive cancer is usually diagnosed before the joint metastasis, but metastatic carcinomatous arthritis may sometimes reveal it. Diagnosis is generally based on joint fluid cytology or more rarely on biopsy material.

We here report a new case.

Case report

A 55-year-old male smoker (40 packets per year) had received a direct shock to the right shoulder by a heavy object in a work accident, causing painful right upper limb impotence. Shoulder contusion was diagnosed, and managed by symptomatic treatment associated to rehabilitation.

Evolution showed persistent painful stiffness with swelling of the shoulder. X-ray assessment found subchondral cysts in the proximal part of the humerus and inferior subluxation of the humeral head (Fig. 1).

The presence of an infectious syndrome (SR 62/95, CRP 23 mg/ml, WC 16,500 elts/mm3), shoulder skin scarification and intra- and extra-articular effusion on ultrasound suggested septic osteoarthritis.

Surgical drainage of the shoulder joint found only extra-articular effusion in the form of an infected hematoma. The shoulder joint contained a very small quantity of liquid. The cartilage was healthy and the synovial membrane slightly hyperemic. Several biopsies were taken from the capsule and synovial membrane.

Serendipitously, chest X-ray revealed a left parahilar opacity with an irregular contour, strongly suspected to be malignant (Fig. 2).
Peroperative findings and the sterility of the joint liquid ruled out infectious origin of the arthritis. A thoracoabdominal CT scan, to explore the suspicious lung image, found a 4 cm-diameter parenchymal mass of the lingula, suggestive of bronchial cancer. The liver and adrenal glands were of normal aspect.

Histologically, synovial biopsies showed massive infiltration of the synovial membrane by a carcinomatous proliferation with distinct squamous cell differentiation (Fig. 3), confirming the metastatic origin of the joint pathology.

Currently, the patient was undergoing chemo- and radiotherapy, with no local improvement and deterioration of his general condition.

**Discussion**

Metastatic carcinomatous arthritis is rare but can reveal an overlooked primitive cancer [1—4]. Symptomatology varies, mimicking rheumatoid, inflammatory or even septic arthritis, as in the present case [5]. However, in the absence of history of oncology, exploration secondary to trauma may incidentally reveal hitherto asymptomatic metastasis [2].

Joint metastases are mainly located in the knee, the shoulder being involved in only one case in ten [1].

The primitive carcinoma should be sought first in the lungs and then in the gastro-intestinal tract. Exceptionally, the primitive cancer may be located in the kidneys, pancreas or breast [6]. The present case is histologically original: squamous cell carcinoma, unlike adenocarcinoma, rarely gives rise to bone metastases [7].

Bone involvement in carcinomatous arthritis is usual, but the mechanism of synovial invasion remains controversial. Unlike other richly vascularized tissue, the synovial membrane is, paradoxically, an extremely rare location for metastasis. In 1996, Thompson et al. [1] reported 30 cases described as synovial metastases, although many of them had concomitant periarticular bone metastases. In 1997, Hatem et al. [8] found, in addition to their personal observation, only three reported cases of true synovial metastasis. The synovium is exceptionally affected in the absence of periarticular involvement, in particular preexisting subchondral bone metastasis [1,3], although the order of events cannot be determined [1,3,6,8]. In the present case, the lytic humeral head lesion was probably related to subchondral metastasis accompanying synovial invasion.

The diagnosis is based on cytologic examination of synovial fluid [9] or, better, on histological analysis of a fine needle biopsy [4], samples being taken during arthroscopy or arthrotomy [2]. The absence of neoplastic cells in cytological or histological material does not rule out localized synovial invasion. The synovial fluid tends to
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be hemorrhagic, but can be inflammatory or even purulent [2,7,9]; some authors advise assaying tumor markers such as carcinoembryonic antigen (CEA) in the synovial fluid [2,4].

CT scan and MRI may be useful for diagnosis. They reveal, respectively, infra-radiological bone lesions and incipient synovial invasion [6,8].

Arthroscopy is of particular diagnostic interest when there is no joint effusion, and can guide the choice of biopsy site in localized involvement [2,6,10].

With its whole-body mode and the use of qualitative methods, fluoro-2-dexoy-β-glucose (FDG) positron emission tomography (PET) can contribute not only to diagnosis but also to the assessment of both local and general extension [11].

These lesions are managed by treating the primitive tumor. Local treatment is rarely recommended, given the advanced stage of the cancer and the low life-expectancy, of less than six months [1,6].

Conclusion

However rare, carcinomatous arthritis should be considered, even in the absence of any history of cancer, when the clinical history is long, symptomatology is atypical, response to treatment is lacking and X-ray suggests a destructive process.

Conflicts of interests

None.

References