

Occult Prostate Cancer: Condylar Mandibular Metastasis Like Unique Manifestation. Rare case report, First Described in Italian Literature

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Abstract

Prostate cancer is the most frequently diagnosed cancer in men and the second leading cause of cancer death among men in the United States. The most common site of prostate cancer metastasis is the bone, with skeletal metastases identified at autopsy in up to 90% of patients dying from prostate cancer. The route of metastasis to bone is thought the prostatic venous plexus draining with the vertebral veins. In this report jaw bones metastases occur before the patient has been diagnosed a primary tumour; in a smaller rate their diagnoses coincides with the diagnosis of the primary tumour. Data reported in literature a low incidence of jaw bones metastases; they are even less recurrent in mandibular condyles owing to their low red bone marrow (hematopoietic active) content in adulthood. Just in a few exceptional cases, like this case, bone metastases is the first clinical evidence of an occult or initial cancer, a site occurs above all in prostate, bladder and lung cancer. Our case are exceptional because the mandibular condyle metastasis was the first clinical sign of an occult primary prostate carcinoma, whose early diagnosis made the treatment of both (primary tumour and sigle metastasis) more effective.

Keywords: Prostate cancer; Mandibular condyle metastasis; Jaw metastasis

Introduction

Prostate cancer (PCa) is the most frequently diagnosed cancer in men and the second leading cause of cancer death among men in the United States. The most common site of PCa metastasis is the bone, with skeletal metastases identified at autopsy in up to 90% of patients dying from PCa. Skeletal metastases are a significant cause of morbidity and mortality and overall greatly affect the quality of life of prostate cancer patients. Prostate cancer most commonly metastasizes not only to the bones but also to lymph nodes, and may invade rectum, bladder and lower ureters after local progression. The route of metastasis to bone is the draining of prostatic venous plexus into vertebral veins [1,2].

However, bone metastasis in prostate cancer is underestimated since antitlastic treatments, which extend our patients' survival, further improve the chances for the recurrence of lesions.

The mainly are metastases due to carcinomas, which are defined osteotrope or osteophile due to their specific bone affinity. Among them, the most recurrent are: breast carcinoma (bone metastases in 78% of cases), prostatic adenocarcinoma (bone metastases in 54-73% of cases), lung carcinoma (bone metastases in 30% of cases), thyroid carcinoma (bone metastases in 30-40% of cases), hypernephroma (bone metastases in 30% of cases), adrenal carcinomas and hepatocellular carcinoma (HCC) [3] in a smaller rate.

The physiochemical properties of bone, and signaling molecules including specific chemokines and their receptors, are distinct in nature and function, yet play intricate and significant roles in prostate cancer bone metastasis.

Case Report

A.S., aged 60, was referred to the Department of Oral and Maxillo Facial Surgery in October 2006 for swelling in left parotid region due to 2x3 cm, associated with pain. There were any satellite

lymphadenopathies and no disorders involving the 5th and 7th pair of left cranial nerves.

He underwent an Orthopantomografia (OPT), neck US (that highlighted a few reactive parotid lymph nodes large almost 16mm) and a Computerized Tomography (CT) that showed an osteolytic lesion in the left mandibular condyle and its pathological fracture (Figure 1). The functional assessment of TMJ joints proved an increase slight translation in the right condyle as against the left condyle one.

The bioptic examination of the condyle lesion tell us that it was a metastasis from an occult prostatic adenocarcinoma with a cribriform and micropappillary pattern (Figure 2,3). The patient underwent to an urologist. From the prostate US we find: prostate size was 4.7 x 4.5 x 4.5 cm with a 1cm lesion in the left side of central gland. No other lesion in bladder e seminal vesicles.

The histological examination was performed by a prostate needle aspiration biopsy under ultrasound guidance on a poorly vascularised extra capsular 1.1 cm-mass. It was hypoechogenic, and showed a conventional acinar adenocarcinoma of the prostate on the istological examination, whose overall Gleason scores were 7 with Gleason pattern 5 (Gleason score modified according to IUSP 2005) as well a perineural invasion (Figure 4). The patient underwent also to a Technetium99-skeletal scintigraphy which highlighted a strong pathological increase in the uptake of the radioactive tracer only on the left mandibular

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Received November 22, 2011; **Accepted** December 03, 2011; **Published** December 05, 2011

Citation: Cristofaro MG, Giudice A, Colangeli W, Giofrè E, Riccelli U, et al. (2011) Occult Prostate Cancer: Condylar Mandibular Metastasis Like Unique Manifestation. Rare case report, First Described in Italian Literature. J Cancer Sci Ther S1. doi:[10.4172/1948-5956.S1-009](https://doi.org/10.4172/1948-5956.S1-009)

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condyle and part of the ascending ramus of mandible (Figure 5). After this examination we planned a left subtotal hemimandibulectomy followed by a reconstruction with a titanium replacement plate with no microvascularized free flap for his peripheral vascular disease led us not to use free microvascularized flaps (Figure 6,7). The postoperative course was satisfactory and without any motor or sensory deficit. Clinical follow-ups were carried out after 1, 3, 6 and 12 months; 6

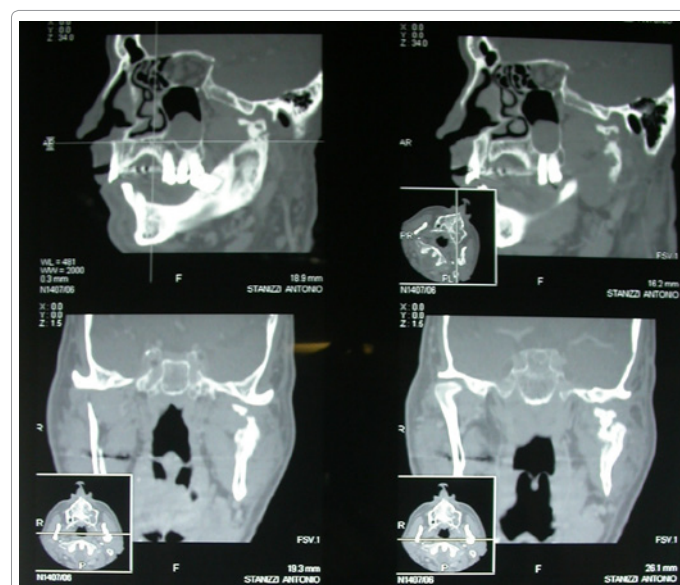


Figure 1: Preoperative CT revealing an osteolytic lesion with mandibular-condyle pathologic fracture.

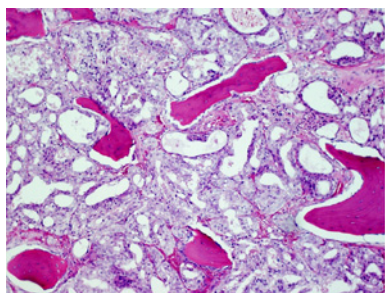


Figure 2: Microscopic appearance of prostatic carcinoma. Adenocarcinoma composed of small glands, the individual glands having a irregular round configuration and cribriform pattern.

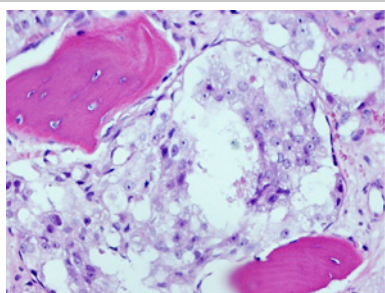


Figure 3: Both of these architectural patterns are accompanied by cytological abnormalities in the form of nuclear enlargement, hyperchromasia, and prominent nucleoli.

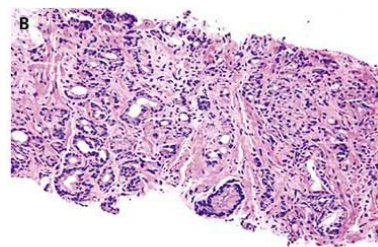


Figure 4: Microscopic appearance of prostatic carcinoma. Gleason Score 7 with pattern 5.

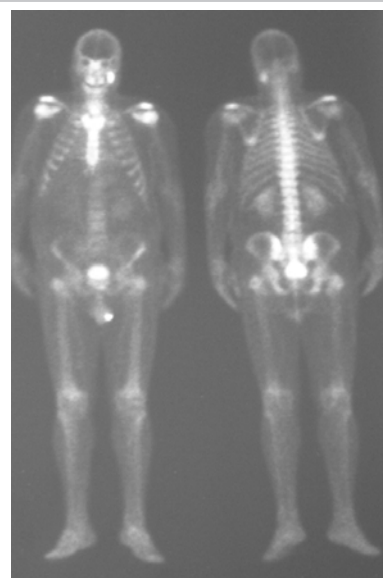


Figure 5: Total body scintigraphy that shows a strong pathological incensement of the tracer on the condyle mandibular left and part of mandible ascending ramus.



Figure 6: Intraoperative views.

months later the patient underwent a skull CT and 12 months later a OPT (Figure 8) and skeletal scintigraphy (Figure 9); the final follow-up was performed two years after the surgery and it did not show any recurrence. The patient also underwent chemotherapy immediately in order to treat his primary tumour and radiotherapy of his mandibular condyle metastasis during the preoperative stage.

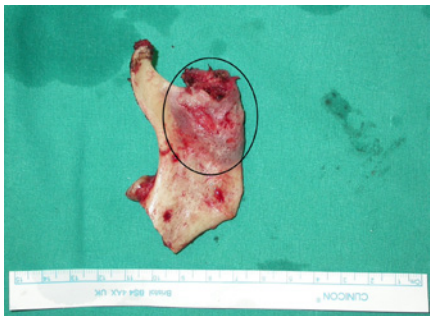


Figure 7: Intraoperative views.



Figure 8: XR control: OPT after 12 months since surgery.

Discussion

The literature suggests that jaws are not a common site of prostatic metastasis (1 per- cent of all metastatic bone lesions. This low rate is linked to low active bone marrow content in jaw bones of adult patients [4-6]; just 40 cases had been reported in international literature [7].

In the majority of patients that present an oral metastasis, the primary tumor has generally been well diagnosed and treated. However in a small number of patients the oral metastasis represents the initial finding which ultimately leads to the detection of a hidden malignant lesion. The frequency of metastatic oral lesions is low and is one of the reasons why it can present as a difficult diagnostic challenge [8]. Actually, it is rather difficult to diagnose metastases in jaw bones and namely in the mandible: and indeed, they often are diagnosed late [9].

The spread out of metastases may occur through blood or the lymphatic system as well as owing to contiguity. In this case (in the maxilla), cancer cells alter the balance between osteoclast/osteoblast activity; in most cases osteoclast activity can be observed by x-ray studies, showing the presence of an osteolytic area. More rarely we can notice an increase in osteoblast activity leading to a marked new bone formation; but these aspects are common in prostate, lung and bladder cancer. The gardening of the bone, which looks dense or slightly porous, could be consistent with a simple osteosclerosis. Their fast development causes some pathologic fractures, as in our report.

In this report jaw bones metastases occur before the patient has been

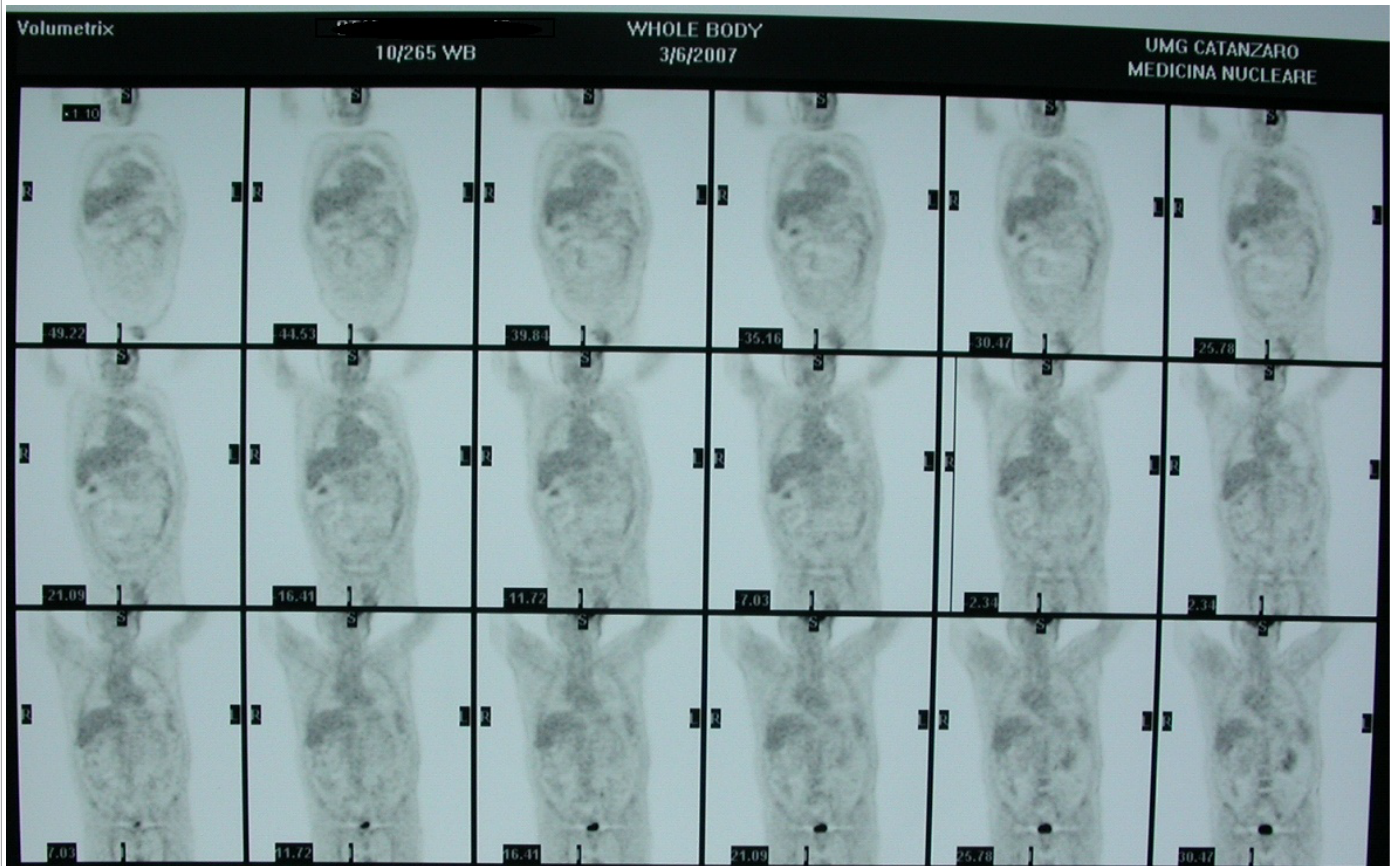


Figure 9: Total body scintigraphy after 12 months since surgery.

diagnosed a primary tumour; in a smaller rate diagnosis coincides with the primary tumour. Just in a few exceptional cases bone metastases is the first clinical evidence of an occult or initial cancer, as it occurs above all in prostate, bladder and lung cancer [10,11].

In a review of the literature, Hirshberg et al. [6] also reported that the breast and lung were the most common primary sites in women and men, respectively [12].

At the metastatic bone site, growth of PCa promotes localized bone remodeling that results in primarily osteosclerotic lesions (also known as osteoblastic lesions characterized by increased production of mineralized bone matrix resulting in increased bone mineral density) with underlying osteolytic lesions (i.e., osteoclast mediated resorption of mineralized bone matrix resulting in low bone mineral density;). Although mechanisms contributing to the osteopenic component of PCa-mediated bone lesions have been elucidated, the mechanisms responsible for the osteoblastic component of PCa bone lesions are not well defined, although a variety of factors such as bone morphogenetic proteins (BMP), endothelin-1 (ET-1), vascular endothelial growth factor (VEGF) [9] have been implicated as contributing to osteoblastic metastasis. Understanding the mechanisms that promote PCa-induced osteosclerosis may help identify targets to diminish the progression of these lesions [13].

Strumental researches are important for diagnosis: OPT is the first examination that a patient had to do; it can reveal the presence of one or more radiopaque or mixed areas in jaw bones, in case of metastases deriving from prostate cancer, or lower rate of radiolucent areas. CT scan shows bone better than and pathological fracture as in our cases; MRI of jaw bones gave further details on the extent and infiltration of soft tissues; skeletal scintigraphy is an important test to assess the presence of metastases in other parts of the skeleton; biopsy of the lesion provided us the diagnosis.

The critical element to make diagnosis is provided by biopsy of specimens taken from a lesion. This Diagnosis was rather difficult because we dealt with a bone metastasis deriving from an occult primary carcinoma and the site of its recurrence was almost rare [14].

Treating these metastases is not easy since they are often diagnosed late and frequently we deal with patients suffering from any advanced – stage cancer, in which surgery would not improve the quality of their lives.

Radical surgery is indicated in single metastasis; it must be coupled with chemo-radiotherapy of the metastatic region. About 10% of precociously diagnosed cases shows a 4-year survival rate.

Conclusion

Data reported in literature highlight a low incidence of jaw bones metastases especially from prostatic cancer; owing to their low red bone marrow (hematopoietic active) content in adulthood.

Jaw bone metastasis and namely mandibular condyle metastasis, is endorsed by the hypothesis suggested by Batson [2], who identified a direct way for neoplastic cells from prostatic veins to the internal vertebral venous plexus, which has no valves, and reach the cranial

bones, avoiding systemic circulation. The review of the literature shows the rarity of the mandibular condyle metastases that becomes exceptional, as in the case described by the authors, in which bone metastases is the first clinical evidence of an occult prostate cancer, which indicates that early diagnosis made more effective treatment (primitive and metastases lesion).

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