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Spinal tuberculosis simulating metastatic malignancy: An unusual condition

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Vertebral lesions can refer to many conditions with different clinical and radiological features suggestive but inconclusive for a diagnosis. The differential diagnosis of vertebral lesions includes malignant primary tumors of the spine, metastatic tumors (carcinoma of the lung, kidney, prostate, thyroid, gastro-intestinal tract and breast, although less frequent in males, and occult cancer), haematological malignancies (plasmocytoma, Hodgkin and non-Hodgkin lymphoma or leukemia), sarcoidosis, bone tuberculosis or other spondylitis[1]. Although musculoskeletal tuberculosis is uncommon in our Country and accounts for only 1%-2% of all cases of tuberculosis and about 10%-15% of extrapulmonary tuberculosis in Western World[2], in the last years the number of cases is gradually increasing depending on immigration from endemic areas and on the increasing number of immunocompromised patients, partly due to AIDS diffusion. Spinal tuberculosis (Pott's disease or tubercular spondylitis) represents a rare but complicated kind of extrapulmonary tuberculosis. The most common bone tuberculosis site is the spine accounting for about 50% of cases, and, among spinal tuberculosis, 3% to 5% affects cervical tract[3,4]. Multiple vertebral involvement is rare accounting for about 7% of spinal tuberculosis cases[5,6]. The most frequent symptoms of cervical tubercular spondylitis are neck pain (90%), tetraplegia (40%), sensory deficits (40%), neck stiffness (30%), and urinary dysfunction (20%)[7]. Radiological findings generally do not show pathognomonic features supporting the diagnosis of tuberculosis. Biopsy is mandatory to obtain the final diagnosis. The treatment of bone tuberculosis essentially consists in the standard antitubercular drugs[8-10] and, if needed, surgery to obtain vertebras stabilization[11,12]. The following describes two patients with vertebral tuberculosis simulating primary or metastatic malignancy that needed a histological assessment to be discovered.

The first case was a 51-years-old man from Pakistan, living in Italy since few months, that was hospitalized with a history of cervical neck pain and severe muscular contracture; the cervical spine CT-scan showed an osteolytic lesion of the dens and anterior portion of C_2 vertebral body with fragmentation within the spinal canal, suggestive for metastatic site. Therefore the patient was admitted to our Clinical Oncology Unit to reach diagnosis. A ^{99m}Tc bone scan was performed and it showed focal radioisotope hyperaccumulations of the upper cervical vertebras, left sternum-clavicular and first rib-sternal joints; thorax-abdomen CT-scan revealed left clavicular mass with soft tissue swelling and Barety's cavity lymphadenopathy (Figure 1). In order to obtain a cervical spine stabilization the patient underwent neurosurgery. Due to the posterior surgical access a biopsy of the anterior vertebral lesion was not possible. So that a clavicular biopsy was performed and demonstrated epithelioid-granulomatous and necrotizing inflammation with multinucleated giant-cells, suggestive for tuberculosis. In the meanwhile, suspecting a tubercular infection, the patient underwent PPD test that was positive. Subsequently the patient was moved to the Infectious Disease Unit, to start antitubercular therapy with intravenously Rifampicin 600 mg/d, Isoniazid 250 mg/d, Ethambutol 500 mg thrice-daily and Ciprofloxacin 400 mg twice-daily. After 2 weeks IV therapy the patient was discharged from hospital and he was still receiving orally Rifampicin 600 mg/d, Isoniazid 200 mg twice-daily, Ethambutol 600 mg twice-daily and Ciprofloxacin 750 mg twice-daily, that should be continued for about 12-18 months.

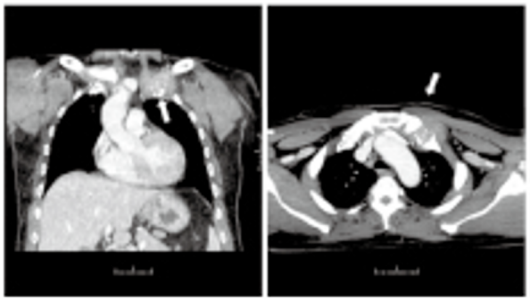

Figure 1. Case 1: CT imaging showing left clavicular lesion with swelling of soft tissues.

The second case was a Nigerian 45-years-old man, living in Italy since some years, that was admitted in

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hospital for ataxia, progressive lower limbs weakness and a rinopharyngeal mass with right painful laterocervical lymphadenopathy. He underwent endoscopy that revealed a smooth, mamillated neoformation covered by integral mucosa, rinopharyngeal biopsy showing adenoiditis and fine-needle aspiration cytology of the right laterocervical lymphnode that was not diagnostic. Neck, thorax and abdomen CT scan showed a soft tissue mass with a low-density colliquative aspects involving rinopharynx, osteolytic lesions of the C_2 vertebral body and posterior arch of the atlas, prevertebral soft tissue swelling with a wide osteolytic involvement of dorsal D_4-D_5 and a paravertebral mass involving lumbar muscles, the arch and vertebral body of L_3. Spinal MRI showed a right parapharyngeal mass extended to C_1-C_2, a wide lesion involving D_4-D_5 and two further lesions at L_2 and L_5 level with soft tissue involvement (Figure 2). These findings were strongly doubtful for bone metastasis from a rinopharyngeal primary. So that the patient moved to our Clinical Oncology Unit. The neurological conditions quickly worsened to a medullary syndrome characterized by paraparesis with hypotonia and reduced deep tendon reflexes at lower limbs level, despite steroid therapy. A 99mTc bone scan showed focal hyperaccumulations at C1-C_2, C_7, D_3-D_4 vertebral body and the sternum. Another rinopharynx biopsy was performed and it resulted negative for malignant cells, so that a lumbar L_2 biopsy was carried out. In the meanwhile the patient had a negative PPD test and a positive Quantiferon test (to quantify-interferon serum levels after PPD stimulation). Histological assessment revealed an epitheloid-granulomatous and necrotizing flogistic process. Paravertebral specimen cultures confirmed a Mycobacterium tuberculosis infection. HIV-test was negative. Subsequently the patient moved to the Infectious Disease Unit, where he started antitubercular therapy with intravenously Rifampicin 600 mg/d, Isoniazid 250 mg/d, Ethambutol 500 mg thrice-daily and orally Ciprofloxacin 750 mg twice-daily, that was replaced with intravenously Levofloxacin 500 mg twice-daily after few days because of fever and worsening of clinical conditions. Rinopharynx, neck, thorax and superior-abdomen CT scan showed disease progression with a lung thickening, mediastineal lymphnode swelling and colliquation of many right rinopharyngeal lymphnodes, that subsequently were partially drained (typical "caseum" aspect). Two weeks after the patient died for disease's complications (only about 60 d from diagnosis). In both reported cases radiological imaging demonstrated a "closed form" of disease, so that a preventive treatment for people that had a contact with the patients was not needed. Moreover the present experience demonstrates that bone tuberculosis has to be suspected in case of isolated multiple contiguous vertebras involvement, especially in patients coming from tuberculosis endemic areas or in immunocompromised patients because of its increasing frequency. In the end, we would like to underline the importance of a deepened evaluation of isolated bone lesions. Many times patients are admitted to Oncology Units by the radiological suspicion of bone metastasis and therefore physicians are often used to evaluate neoplastic genesis as the only possible without an adequate examination of other possible causes. This behavior could be confusing and could determine a serious delay in reaching the correct diagnosis with severe consequences on patients' treatment and prognosis. We would like to stress the need of histopathological confirmation of any suspected metastatic site in absence of a primary tumor before starting any oncological treatment.

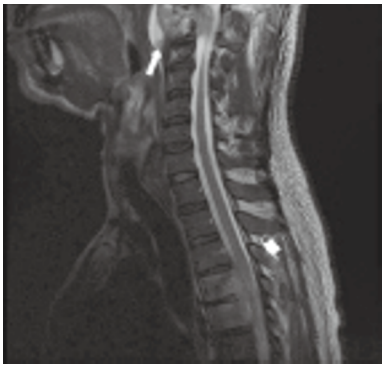

Figure 2. Case 2: MR imaging showing a right parapharyngeal mass extended to C_1-C_2 level and a second wide lesion involving D_4-D_5, also extended into the medullary canal with presence of extra-dural mass.

Conflict of interest statement

We declare that we have no conflict of interest.

References

[1] Theodorou DJ, Theodorou SJ, Sartoris DJ. An imaging overview of primary tumors of the spine: Part 2. Malignant tumors. *Clin Imaging* 2008; **32**: 204-211.

[2] Shah BA, Splain S. Multifocal osteoarticular tuberculosis. *Orthopedics* 2005; **28**: 329-332.

[3] Almeida A. Tuberculosis of the spine and spinal cord. *Eur J Radiol* 2005; **55**: 193-201.

[4] Talbot JC, Bismil Q, Saralaya D, Newton DA, Frizzel RM, Shaw DL. Musculoskeletal tuberculosis in Bradford - a 6-year review. *Ann R Coll Surg Engl* 2007; **89**: 405-409.

[5] Khattry N, Thulkar S, Das A, Khan SA, Bakhshi S. Spinal tuberculosis mimicking malignancy: atypical imaging features. *Indian J Pediatr* 2007; **74**: 297-298.

[6] Mohindra S, Gupta SK, Mohindra S, Gupta R. Unusual presentations of craniovertebral junction tuberculosis: a report of 2 cases and literature review. *Surg Neurol* 2006; **66**: 94-99.

[7] Kotil K, Dalbayrak S, Alan S. Craniovertebral junction Pott's disease. *Br J Neurosurg* 2004; **18**: 49-55.

[8] Shukla D, Mongia S, Devi BI, Chandramouli BA, Das BS. Management of craniovertebral junction tuberculosis. *Surg Neurol* 2005; **63**: 101-106.

[9] Wang Z, Shi J, Geng G, Qiu H. Ultra-short-course chemotherapy for spinal tuberculosis: five years of observation. *Eur Spine J* 2012. doi: 10.1007/s00586-012-2536-0.

[10] Tuli SM. Historical aspects of Pott's disease (spinal tuberculosis) management. *Eur Spine J* 2012. doi: 10.1007/s00586-012-2388-7.

[11] Gupta SK, Mohindra S, Sharma BS, Gupta R, Chhabra R, Mukherjee KK, et al. Tuberculosis of the craniovertebral junction: is surgery necessary? *Neurosurgery* 2006; **58**: 1144-1150.

[12] Zhang HQ, Li JS, Zhao SS, Shao YX, Liu SH, Gao Q, et al. Surgical management for thoracic spinal tuberculosis in the elderly: posterior only versus combined posterior and anterior approaches. *Arch Orthop Trauma Surg* 2012. doi: 10.1007/s00402-012-1618-0.