

Tuberculosis of the spine masquerading as a spine lymphoma. A case report and discussion of diagnostic and therapeutic traps

Przypadek gruźlicy kręgosłupa naśladującej chłoniaka. Pułapki diagnostyczne i terapeutyczne

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Abstract

Back pain unrelated to trauma or intervertebral disc disease might be due to a primary or metastatic neoplasm or an infection. We report a case treated as an isolated vertebral lymphoma which turned out to be vertebral tuberculosis.

A 59-year-old man with girdle-like thoraco-lumbar pain and impaired function of lower extremities was diagnosed with an isolated vertebral lymphoma. He was put on complete bed rest and began to receive chemotherapy and local radiotherapy. The unexpected clinical improvement led to a reconsideration of the working diagnosis. The appropriate antimicrobial treatment combined with bed rest resulted in rapid recovery and a good functional outcome. The bed rest during the time he received the chemo- and radiotherapy helped considerably in the improvement of his tuberculosis.

A definitive diagnosis demands a histopathological examination which may require a biopsy.

Key words: vertebral lymphoma, tuberculosis of the spine, diagnostic traps.

Streszczenie

Nieurazowe i niezwiązane z chorobą krążka międzykręgowego bóle kręgosłupa są spowodowane zapaleniem, przezrzutami nowotworowymi lub – znacznie rzadziej – guzami pierwotnymi. Celem pracy było przedstawienie przypadku gruźlicy kręgosłupa na poziomie Th12-L1 leczonej przez wiele miesięcy jako chłoniak śródkostny.

Chory, lat 59, został przyjęty na oddział neurologiczny z powodu bólów kręgosłupa w odcinku piersiowo-lędźwiowym oraz niedowładu kończyn dolnych. Na podstawie badania cytologicznego płynu mózgowo-rdzeniowego i obrazu rezonansu magnetycznego (RM) rozpoznano chłoniaka śródkostnego z prognozowanym krótkim okresem przeżycia. Wdrożone leczenie polegało na chemio- i radioterapii z odciążeniem kręgosłupa w łóżku. Stabilny przebieg choroby z okresami poprawy zmusił onkologów i radiologów do ponownej analizy przypadku. Wynik kolejnego badania za pomocą RM zasugerował zmianę rozpoznania z chłoniaka kręgosłupa na gruźlicę zapalenie trzonów kręgowych Th12-L1. Leczenie przeciwprątkowe przeprowadzone na oddziale gruźlicy kostno-stawowej doprowadziło do szybkiego wyleczenia. Odciążenie kręgosłupa w łóżku w trakcie chemioterapii sprzyjało gojeniu się gruźlicy kręgosłupa.

Tylko badanie histopatologiczne materiału pobranego podczas biopsji decyduje o rozpoznaniu.

Słowa kluczowe: chłoniak kręgosłupa, gruźlica kręgosłupa, trudności diagnostyczne.

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Introduction

Back pain unrelated to trauma or intervertebral disc disease may be caused among others by primary and metastatic tumors, as well as by inflammation. Both acute and pathological fractures, including a high percentage of spine osteoporotic fractures, should be mentioned among other reasons. The large number of possible causes makes diagnosis difficult. Particular problems arise when the cause of pain is tuberculosis, as it can mimic divergent disorders.

Case report

A 59-year-old man, a very heavy smoker, began to complain of girdle-like thoraco-lumbar pain. He developed hyperthermia, loss of appetite and loss of body weight, and at 6 weeks from the onset of his symptoms he began to complain of leg weakness. Disability index on the Oswestry Scale was 98% (crippled). He was admitted to the neurosurgical division for investigation and treatment. His laboratory investigation revealed an increased erythrocyte sedimentation rate (ESR) of 90 mm after one hour. Examination of the cerebrospinal fluid (CSF) revealed a glucose level of 30 mg/dL, and increased protein concentration (5 g/L). Histological examination revealed a polymorphic image, i.e. large number of lymphocytes, single macrophages, eosinophils and neutrophils. The magnetic resonance imaging (MRI)

showed the involvement of the vertebra, the pedicles of T12 and the intervertebral disc between T12 and L1. There was also a large area of involvement of the surrounding soft tissues (Figs. 1 and 2). The oncologists diagnosed an isolated vertebral lymphoma with a very poor prognosis.

The patient was put on complete bed rest and over the ensuing weeks received 6 chemotherapeutic interventions and two radiotherapy treatments in the Th 12/L1 area. The clinical condition of the patient showed a sudden and unexpected improvement and the weakness of his lower extremities disappeared. His girdle-like pain also disappeared and he began to walk. His ESR fell to 20 mm after one hour. A repeated lumbar puncture and examination of the CSF showed disappearance of the lymphocytes. New MRI showed a marked decrease of fluid in the disc and adjacent vertebral bodies. At the same time, there was an increase in the destruction of the pedicles and base of the lamina of T12 and L1. The decision was made to continue with the radiotherapy of T12 and L1. The condition of the patient deteriorated. His pain increased and he began to lose weight and he developed an allergic ring-like skin reaction over T12.

A third MRI showed a pathological fracture of T12 and L1 with collapse of the vertebrae and the formation of a typical kyphosis with a marked increase in the amount of pus in the soft tissues. These findings suggested a revision of the diagnosis and the attending doctors began to consider tuberculosis as a distinct possi-



Fig. 1. MRI shows proliferation process covering soft meninx in examined part of the spine (*leptomeningitis neoplastomatica*), vertebra and pedicles T12 and probably T12/L1 (arrows). September 2003

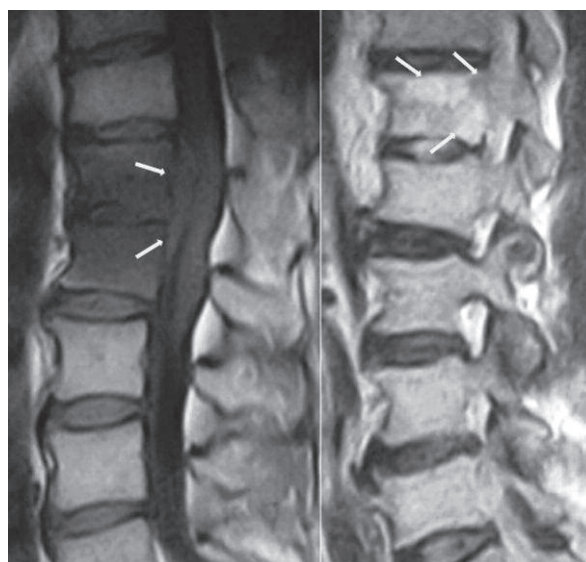


Fig. 2. Regression of proliferative changes in cord and meninx and progression in vertebrae and pedicles of T12-L1. Destruction of intervertebral disc and posterior part of vertebra is seen (arrows). February 2004



Fig. 3. MRI shows pathological compression fracture of T12 and L1 and arthrodesis between vertebrae T12 and L1, with significant lowering of their height and angled kyphotic bend



Fig. 4. Sagittal X-ray of thoracic-lumbar spine shows angular bend of vertebra and arthrodesis of T12-L1 vertebrae

bility (Fig. 3). At this point, the patient was transferred to the division of bone and joint tuberculosis of the orthopedic department. The diagnosis of tuberculosis of the spine with neurological compromise of the lower extremities was quite clear at this point. The new and appropriate treatment consisted of 10 weeks of complete bed rest and antimycobacterial drug therapy. Antimycobacterial drug therapy included: rifampicin (600 mg/daily for 12 months with ongoing control of liver function), hydrazide (300 mg daily for 12 months), pyrazinamide (1 tablet t.i.d. for 3 months with ongoing monitoring of liver function), and ethambutol (5 capsules daily for 6 months under ophthalmologist surveillance). Obviously, a definite diagnosis of tuberculosis of the spine can be risky, because a similar picture occurs in non-specific inflammation. Antimycobacterial drug therapy applied *ex juvantibus* and rapid improvement confirmed ongoing tuberculous infection. Within 4 weeks the patient's pain disappeared and his lower extremity function showed marked improvement. The patient was then given a Jewett brace and ambulated. A follow-up at 2 years revealed that he was pain-free and able to walk without limits. His disability score on the Oswestry scale was 16% (minimally disabled) and he scored 9 points on the Rolland-Morris scale. His skin rash had not retreated. An X-ray showed a spontaneous fusion of T12 and L1 (Fig. 4).

Discussion

Primary lymphoma of bone represents about 0.5% of all tumors. About 5.8% of all types of lymphomas involve the vertebral column [1]. Lymphoma affects

lymph nodes in 90% of cases, and in the other 10% of patients it is localized in various parts of the skeleton. Isolated lymphoma of the vertebral body is very rare [2-4]. Lymphoma affects younger people between the second and fourth decade of life [5]. Lymphoma within the spine appears in different forms such as a deposit outside the disc, within the vertebra, or within the spinal canal. The radiological appearance of a lymphoma is variable from purely lytic, to sclerotic or mixed lesions. It may also appear as a collapsed vertebra (*vertebra plana*) [6]. The bone marrow is either normal or hypointense on T1-weighted MR images, and on T2-weighted images it is hyperintense in comparison to the surrounding muscles [7]. The histological appearance is one of collections of small round malignant Reed-Sternberg cells. The clinical, radiological and histopathological appearance can mimic other diseases, including tuberculosis. Differential diagnosis of a solitary lymphoma of the vertebra, because of its rare occurrence, should include firstly tuberculosis. Our experience indicates that the commonest location of spinal tuberculosis is within the vertebra. It is confirmed by Sandher *et al.* [8] who reported 79 cases of tuberculosis of the bones and joints with the diagnosis based on bacteriological and histopathological studies. In 44%, the tuberculosis involved the spine alone.

Inflammatory markers, such as CRP and ESR, are increased both in tuberculosis and lymphoma. In one case of a 7-year-old boy who had a primary lymphoma

of the L1 in the vertebra and lamina, the CRP was 27.5 mg/L and ESR reached 90 mm after an hour [9].

Tuberculosis of the spine appears most often between the fifth and seventh decade of life and is most often found in association with a primary focus in the kidneys or digestive tract. The radiological appearance is very characteristic. There is the characteristic destruction of the end-plates of two adjacent involved vertebrae and involvement of the disc space itself associated with a collection of pus. The early MRI picture is hypointense on T1-weighted images and hyperintense on T2-weighted images, according to Brant-Zawadzki [6]. Thus, during the early phase the appearance shares some features with lymphoma.

The patient reported here went through several unanticipated occurrences. He was admitted to the oncological division despite his infection, back pain and loss of function of his lower extremities. The analysis of his CSF revealed the presence of large lymphoid-like cells which were judged to represent the typical appearance of a lymphoma. Every cytological study, such as that of the CSF, must be supported with a histopathological examination of the tissues. A biopsy is a must [9-12]. Sucu *et al.* [12] reported on 229 percutaneous biopsies in 201 patients. These needle biopsies were done with computed tomography guidance using various approaches, including transthoracic. The needle biopsies allowed a clear definition of entities such as metastases, infections, tuberculosis, etc. Lymphoma was diagnosed in 8 cases.

Unfortunately, in our case the initial studies did not make use of a computed tomography-guided needle biopsy, although this examination is necessary [12]. Citow *et al.* [4] described a case of a 54-year-old woman with back pain and compression of her spinal cord who was diagnosed as having tuberculosis [4]. When medical antimicrobial treatment failed they resorted to new biopsy and diagnosed correctly a lymphoma. Our oncologists were taken aback by the survival of our patient who was anticipated to have a quick demise. The survival and clinical improvement did not fit and the second MRI did not show the expected progress of the disease. On the contrary, it put in doubt the accuracy of the interpretation of the first MRI. One should be extremely cautious about diagnosis of cancer based on MRI image. The diagnosis must be confirmed by histopathological examination. Bed rest for 6 weeks coupled with appropriate antimicrobial treatment resulted in a rapid improvement. The patient could come off morphine as his pain abated. Nine months later the disease was arrest-

ed and the tuberculosis focus was healed with the classical appearance of interbody fusion of the involved vertebra and the classic angular deformity [13].

In the literature, removal of inflammatory changes with decompression of spinal canal, reconstruction of vertebral body with implants and transpedicular stabilization to prevent spinal deformity is described [14,15]. This surgical method is appropriate in comminuted, burst and dislocated fractures of vertebrae with neurological disorders and in a single tumor metastasis. This operation could not be done in our case because of the radiant inflammation with persistent active fistula at the T12-L1 levels. The authors are critical of this type of operation, since there is an increased risk of recurrence of infection. The authors described the process of reactivation of tuberculosis after total hip replacement 58 years after primary infection [16].

In the literature, descriptions of tuberculosis of the spine are rare. In the *Polish Journal of Neurology and Neurosurgery*, only two cases of tuberculosis of the spine have been described. One involved tuberculosis of the central nervous system [17] and one reported tuberculosis of the spinal canal [18].

Tuberculosis must always figure in the differential diagnosis of such disparate diseases as angina pectoris and gall stones. In such cases, a good history and physical examination coupled with a good diagnostic X-ray of the spine and first of all histopathology examination is all that is necessary to make the correct diagnosis. The described case could be an illustration of how not to proceed in similar cases.

In conclusion, bed rest during the period of chemotherapy and radiation helped the healing of the tuberculosis. A good clinical examination is the foundation of a clinical diagnosis. Supportive laboratory and imaging studies should be carried out in a logical sequence. The final diagnosis can only be made on the basis of a good biopsy and careful examination of the histological findings. One must never forget that tuberculosis can masquerade as a number of different disease processes.

Disclosure

Authors report no conflict of interest.

References

1. Correale J., Monteverde D.A., Bueri J.A., et al. Peripheral nervous system and spinal cord involvement in lymphoma. *Acta Neurol Scand* 1991; 83: 45-51.

2. Çağavi F, Kalayci M, Tekin İÖ, et al. Case report. Primary spinal extranodal Hodgkin's disease at two levels. *Clin Neurol Neurosurg* 2006; 108: 168-173.
3. Chandra D., Ewton A., Baker K. Hodgkin's disease presenting with osseous involvement. *Am J Hematol* 2006; 81: 550-551.
4. Citow J.S., Rini B., Wollmann R., et al. Isolated primary extranodal Hodgkin's disease of the spine: case report. *Neurosurgery* 2001; 49: 453-456.
5. Stoller D.W., Tirman P.T.J., Bredella M. Pocket radiologist. Musculoskeletal top 100 diagnoses. *Elsevier India Ltd., Philadelphia* 2002, pp. 200-202.
6. Saltzman K.L. Lymphoma. In: Brant-Zawadzki M., Chen M.Z., Moore K.R., et al. [eds.]. Pocket radiologist. Spine top 100 diagnoses. *Amirsys Sanders Com* 2002, pp. 188-190.
7. Greenspan A. Orthopedic imaging. A practical approach. 4th ed. *Lippincott Williams & Wilkins, Philadelphia* 2004, pp. 731-734.
8. Sandher D.S., Al-Jibury M., Paton R.W., et al. Bone and joint tuberculosis. Cases in Blackburn between 1988 and 2005. *J Bone Joint Surg Br* 2007; 89: 1379-1381.
9. Langley C.R., Garrett S.J.W., Urand J., et al. Primary multifocal osseous Hodgkin's lymphoma. *World J Surg Oncol* 2008; 6: 34-39.
10. Lis E., Bilsky M.H., Pisinski L., et al. Percutaneous CT-guided biopsy of osseous lesions of the spine in patients with known or suspected malignancy. *AJNR* 2004; 25: 1583-1588.
11. Malawski S. Gruźlica kręgosłupa. In: Marciniak W., Szulc A. [eds.]. Wiktora Degi ortopedia i rehabilitacja. *PZWL, Warszawa* 2004, pp. 250-252.
12. Sucu H.K., Çiçek C., Rezanko T., et al. Percutaneous computed-tomography-guided biopsy of the spine: 229 procedures. *Joint Bone Spine* 2006; 73: 532-537.
13. Łukawski S., Francuz I., Węglarz J., et al. Gruźlica kręgosłupa – rozpoznawanie i leczenie. *Chir Narz Ruch Ortop Pol* 1998; 63: 309-315.
14. Jain, A.K., Dhammi I.K., Prashad B., et al. Simultaneous anterior decompression and posterior instrumentation of the tuberculous spine using an anterolateral extrapleural approach. *J Bone Joint Surg Br* 2008; 90: 1477-1481.
15. Jain A.K., Maheshwari A.V., Jena S. Kyphus correction in spinal tuberculosis. *Clin Orthop Relat Res* 2007; 460: 117-123.
16. Walczak P., Rapała K., Nowak-Misiak M., et al. Recurrence of tuberculosis after hip replacement 58 years after primary infection. *Ortop Traumat Rehab* 2012; 14: 189-196.
17. Sethi N.K., Sethi P.K., Torgovnick J., et al. Central nervous system tuberculosis masquerading as primary dementia: a case report. *Neurol Neurochir Pol* 2011; 45: 510-513.
18. Mathew J., Tripathy P., Grewal S. Epidural tuberculosis involving the entire spine: a case report. *Neurol Neurochir Pol* 2009; 43: 470-474.