LESSON OF THE MONTH

Non-Hodgkin’s lymphoma presenting with spinal involvement

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Case report 1
The case concerns a 38 year old woman with a one year history of a low grade non-Hodgkin’s lymphoma stage 4 (disseminated involvement of one or more extralymphatic organs with or without lymph node involvement). At the time of diagnosis, nodal involvement was found in the supraclavicular and axillary regions and in the neck; the abdomen presented marked splenomegaly and sternal puncture revealed bone marrow involvement. Restaging after treatment with cyclofosfamide-vincristine-prednisone (CVP) and cyclofosfamide-epirubicine-vincristine-prednisone (CEOP) chemotherapy during 10 months showed the absence of pathological node with computed tomography (CT).

One year after diagnosis, the patient consulted the department of haematology with sudden onset of low back pain and sciatica in the right leg. The complaints resolved after treatment with non-steroidal anti-inflammatory drugs (NSAIDs). Three weeks later, she presented a relapse of the sciatica with dysaesthesia and sensory deficit of the right leg and progressive paresis of the right leg, however no systemic features at that time. According to the clinical stigmata, the diagnosis of acute sciatica was made and treatment with oral prednisolone 20 mg daily was started. Despite treatment, she was admitted urgently with acute paresis of the right leg.

Clinical examination revealed a paresis of the right quadriceps muscle and tibialis anterior muscle. This is compatible with involvement of the L4, L5 and S1-level. The sciatic nerve stretch test was positive at 30° (right side) and 50° (left side), and the patellar reflex at the right side was absent, with indifferent Babinsky sign, and sensory deficit at the right calf and heel. Percussion of the spine revealed pain from the fifth lumbar vertebra to the presacral region; anteflexion of the spine was limited by pain. Radiographic examination showed a normal lumbar spine; no herniation was seen on CT of the lumbar intervertebral discs and 99mTc total body bone scintigraphy was normal.

Electromyography of the lower legs revealed an acute denervation L4-L5-S1 at the right side and L3-S1 at the left side, compatible with polyradiculopathy in combination with an underlying polyneuropathy, most probably attributable to previous chemotherapy. A lumbar puncture showed malignant cells with high grade histology. At that moment, magnetic resonance imaging (MRI) of the spine revealed diffuse arachnoiditis from level D11-D12 to the lumber sacral region. MRI of the brain was normal. Treatment with high doses corticoids and spinal therapy (methotrexate, Ara-C) induced regression of the number of malignant cells, but failed to control the disease. The radiation therapy of the spine was interrupted because the patient developed a right peripheral paresis of the facial nerve. The patient died four months after the occurrence of the sciatica.

Case report 2
A 42 year old man was known to have a one year history of a high grade centroblastic B lymphoma stage 3B (involvement of lymph nodes on both sides of the diaphragm and B-symptoms pruritus, night sweats, weight loss) with a bulky pelvic mass. He had been treated with induction chemotherapy Adriablantine-cyclofosfamide-vindesine-bleomycine-prednisone (ACVBP) together with leucaemic meningitis prophylactics (methotrexate) and consolidation therapy (ifosfamide-etoposide-Ara-C). Restaging performed one month before revealed a non-gallium captivating pelvic mass and a nodular spleen. A CT guided biopsy of this pelvic mass only showed fibrotic tissue. The patient was scheduled to be splenectomised when he suddenly developed an ischiatic pain syndrome of the right leg.

Clinical examination showed a positive sciatic nerve stretch test at the right leg (50°) without paresis or sensory deficit. Plain radiographs of the lumbar spine showed signs of discopathy at the L5-S1 level. 99mTc total body bone scintigraphy demonstrated no abnormality. Treatment with NSAIDs and relaxation therapy during one week did not give full resolution of the complaints and epidural corticosteroid injection was performed. After one week, he developed a progressive paresis of the right leg with absence of Achilles tendon reflex. Lumbar puncture excluded lymphomatous meningitis. MRI of the spine showed a localised mass in the pelvis with epidural spinal infiltration at level L5-S1 and S1-S2 (fig 1 and fig 2). Involved field radiotherapy was started in combination with chemotherapy.
The sciatica and paresis resolved quickly. After four cycles of chemotherapy peripheral stem cell transplantation was performed, but four months later the lymphoma relapsed with involvement of the liver. To date, the patient remains free of sciatica but he is in bad general condition and his prognosis is very limited.

Discussion
Low back pain and radicular pain are frequent complaints, with the most common cause herniated intervertebral disc. Other causes include overgrowth of bone intruding into the spinal canal, spinal stenosis, fracture-dislocation of the spine, infections and neoplasms. The two patients reported in this paper, who were admitted with the clinical signs of a lumbar herniated disc, suffered from a malignant epidural non-Hodgkin’s lymphoma.

Lymphomas are a heterogeneous group of malignancies of B cells or T cells that usually originate in the lymph nodes but may originate in any organ of the body. Extramedullary disease is an adverse prognostic factor, particularly involvement of the central nervous system (CNS). Between 5% and 10% of patients with nodal presentation of lymphoma may develop CNS involvement. The intermediate or high histological type of non-Hodgkin’s lymphoma and the presence of an underlying immune deficiency are the most significant risk factors for secondary CNS involvement. CNS presentations may include spinal cord compression, leptomeningeal spread, or intracerebral mass lesions. In addition, other mechanisms of neuropathy should be considered, such as the effects of chemotherapy.

Spinal cord compression is a rare presentation of non-Hodgkin’s lymphoma, occurring in 0.1% to 3.3% of patients. It is commonly caused by extradural disease, either because of an isolated deposit within the spinal canal or by the extension from an adjacent nodal mass or bone involvement. Less commonly, non-Hodgkin’s lymphoma may arise subdurally or within the spinal cord. Spinal cord compression typically presents with back pain, leg numbness and tingling, radicular pain followed by extremity weakness, paresis and paralysis, but can also be asymptomatic at presentation.

The patient, described in the second case, presented with extradural spinal cord compression caused by a bulky retroperitoneal disease attributable to the previously diagnosed non-Hodgkin’s lymphoma. The presentation of the patient in the first case is much less common as an intradural spinal lesion, and what is especially of interest is the multi-root presentation. As in the reported patients, spinal cord compression caused by non-Hodgkin’s lymphoma can be diagnosed by CT or MRI, or both. Vertebral bone changes are only seen in 30% of the patients with symptoms of spinal cord compression. In patients who continue to experience sciatica despite conservative treatment, further diagnostic tests are indicated to record the underlying cause. Especially in patients with a history of lymphoma and neurological signs in absence of abnormalities on the conventional radiographs, the performance of a MRI of the spine is strictly indicated. Chemosensitivity and resolution of epidural spinal cord disease seem to parallel the systemic response to chemotherapy. Consequently, surveillance imaging of the spine in patients in remission is not currently performed, but it is indicated at the time of systemic relapse or upon the appearance of new neurological symptoms. MRI is a good technique to view the spinal cord and is useful to evaluate mechanical disorders of the lumbosacral spine but also to delineate the extent of extradural tumoral invasion of the spinal canal and compression or displacement of the spinal cord. However, this technique is not commonly available in Belgium, which results in the existence of long waiting lists. For this reason, the first patient underwent MRI examination only three weeks after CT.
This report demonstrates that despite the availability of new techniques for early diagnosis, it can be difficult to differentiate initially a “benign” acute sciatica from serious conditions as an isolated tumoral involvement of the CNS in the absence of a widespread disease.

**The lesson**

- Performance of a $^{99m}$Tc total bone scintigraphy is not always useful as a method in patients with radicular pain and suspicion of lymphoma, because epidural spinal cord disease cannot be identified by bone scans or CT. If the clinical suspicion of malignancy remains high, further investigation should be considered if the bone scan is negative.

- Although CNS involvement is most frequently described in intermediate and high grade non-Hodgkin’s lymphoma, patients with a medical history of low grade lymphoma can casually develop this kind of involvement. In patients with a history of lymphoma and neurological signs, MRI of the spine must be performed and is the technique of choice as it is able to identify spinal cord lesions not visible by other radiographic techniques.

- Although spinal epidural involvement is a rare presentation of non-Hodgkin’s lymphoma, it can be the only symptom of lymphoma and must be considered in each patient with clinical presentation of acute sciatica not resolving with conventional treatment.