Turkish Neurosurgery 2006, Vol: 16, No: 4, 204-207

Lumbosacral Plexopathy in a Patient with Metastasis of Cervix Carcinoma: A Case Report

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ABSTRACT

Neoplastic lumbosacral plexopathy is one of the most disabling complications in subjects with cancer. Its clinical presentation is characterized by pain, muscle weakness and sensory complaints in one or both limbs.There are only a few cases in the neurosurgical literature as it is mostly treated by pain therapy, radiotherapy and/or chemotherapy. However, surgical exploration may be necessary in some patients without a definitive diagnosis, or those who do not respond to medical therapy, even with narcotics.

A 50-year-old female with lumbosacral plexopathy 3 years after treatment of cervical carcinoma is reported. Her severe leg pain did not resolve even by narcotics, and there were weaknesses of knee flexion and foot dorsi- and plantar flexions. Her radiological examinations revealed a mass looking like an abscess at the entrance of the true pelvis, and her infection markers were high. Surgical exploration was performed because of suspicion of intrapelvic abscess. However, a metastatic lymph node compressing the plexus was found. Her pain clearly diminished after operation, and she did not require narcotics but the weakness was unchanged. She was treated by chemotherapy after the surgery and her pain was mild after three months.

KEY WORDS: lumbosacral plexopathy, metastatic plexopathy, neoplastic plexopathy, cervical cancer

INTRODUCTION

Lumbosacral plexopathy is one of the most disabling complications of pelvic tumors as leg weakness or incapacitating pain immobilizes the patient, leading to infection, venous thrombosis, and decubiti (1). Involvement of the lumbosacral plexus by cancer as opposed to lumbosacral spinal roots, the cauda equina or conus medullaris is uncommon, and only five large series (a total of 211 patients) have been reported (1, 3, 4, 6, 7). However, the clinical distinction of plexopathy from lesions of the spinal cord, cauda equina and nerve roots can be difficult. Lumbosacral plexopathy may be due to primary tumor, metastasis, or may be a complication of radiation therapy in cancer patients (3). The distinction between these pathologies is also difficult.

A patient with lumbosacral plexopathy due to lymph node metastasis following treatment for carcinoma of the cervix is reported. The differential diagnosis was difficult and she had incorrectly been treated for pelvic infection for a long time.

CASE REPORT

A 50-year-old female was admitted with complaints of severe pain, numbness and weakness on her right leg.

She had been treated by total hysterectomy for Stage II cervix

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carcinoma, followed by external radiotherapy 3 years ago. Right leg pain had developed one and half year after completing radiotherapy. Her pain had gradually increased and weakness had developed on her right leg and foot 6 months ago. Lumbosacral magnetic resonance imaging (MRI) examination at that time had not revealed pathologic findings and pelvic computed tomography (CT) had revealed an inflammatory lesion with central hypodensity looking like an abscess just anterior to the right ilium. Erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) levels had also been high. The lesion was therefore thought to be an abscess and she had been treated with antibiotics in another center for 6 weeks. However her complaints had not resolved.

The neurological examination revealed that the abnormal findings were confined to the right leg. There was weakness on right knee flexion with 4/5 muscle strength and on dorsiflexion and plantar flexion of the right foot with 0/5 muscle strength. She graded her pain as 10/10 according to the Visual Analogue Scale. ESR was 45 mm/h, and CRP was 2. The hemoglobin concentration was 10.9 g/dl and the hematocrit was 32.2%. Pelvic CT revealed that the lesion with a necrotic center had enlarged since the previous CT (Figure 1). Abdominal CT revealed Grade II hydronephrosis on the right side. Lumbosacral MRI revealed an inflammation extending along the medial border of the right psoas muscle from the ilium to the L3-4 intervertebral level (Figure 2). There were no extradural or vertebral metastases. Electromyography (EMG) revealed a total axonal lesion at the level of the right lower lumbosacral plexus.

Antibiotics started in the other center was discontinued. Analgesic therapy with pethidine and oxcarbazepine was initiated but the pain of the patient did not resolve. Rght lumbosacral plexus exploration by the transabdominal approach was therefore planned. There was extensive fibrosis at the entrance of the true pelvis. A fibrotic, infiltrative small mass, about 2x2 cm in size, compressed the right lumbosacral plexus on the right iliac wing at the level of S1-S2. There was no abscess formation. The mass was removed. Histologic examination revealed a lymph node with adenocarcinoma metastasis.

Figure 1: Pelvic CT revealed a lesion with necrotic center that resembled an abscess

Figure 2: Coronary lumbosacral MRI section revealed inflammation extending along the medial border of the right psoas muscle from the ilium to the L3-4 intervertebral level.

The patient's leg pain decreased to 3/10 from 10/10 according to the Visual Analogue Scale, and narcotic analgesics were no longer required but her weakness did not change. The patient was referred to the medical oncology clinic and treated by chemotherapy. Her leg pain was 2/10 according to the Visual Analogue Scale 3 months after surgery.

DISCUSSION

Jaeckle et al (1) reported that the frequency of neoplastic lumbosacral plexopathy in all cancer patients is 0.71%. This incidence is higher in patients with pelvic tumors. Saphner et al (4) reported that the incidence of lumbosacral plexopathy was 4% in 1219 patients with Stage I or greater cervical cancer.

The lumbosacral plexus lies in the retroperitoneal space just lateral to the cervix or prostate and on top of the iliopsoas muscle. It is close to bony and soft tissues that are frequently involved by tumors, and may therefore be invaded directly by tumors or compressed against the rigid bony pelvis (1). It is anatomically divided into lumbar (L1-L4) and sacral (L5-S1) portions at the border of the true pelvis. These portions are connected by the lumbosacral truck (L4-L5), which courses over the sacral ala at the pelvic brim.

The clinical findings are associated with this anatomical division. Three clinical syndromes of lumbosacral plexopathy are identified (1, 2): upper (L1-5), lower (L5-S3) and pan plexopathy. Rigid knee extension for ambulation and difficulty arising from sitting are observed in upper plexopathy while footdrop, pelvic tilt and pelvic lordosis are noted in lower plexopathy. In the lumbosacral trunk syndrome, numbness over the dorsomedial foot and sole, and weakness of knee flexion, ankle dorsiflexion and inversion are present as in our patient. However the most prominent symptom for all locations is severe, burning and continuous leg pain (3). It is minimally responsive to narcotics.

The diagnosis can be made by CT, MRI, EMG and, in some patients, other techniques such as positron emission tomography (PET) or bone scintigraphy. In metastatic plexopathies, the CT scan is usually positive for a soft tissue mass with or without enlarged lymph nodes that may erode the sacrum on the side of involvement (1), but patients with radiation-induced plexopathies have unremarkable CT scans (3). Taylor et al (5) have reported that the most diagnostic procedure for lumbosacral plexopathy in cancer patients is MRI. In normal subjects, a high-signal fat plane occurs between vessels, muscle and the plexus on T1-weighted imaging. Lesions and particularly neoplastic masses can be seen as an obliteration of these normal fat planes as well as of marrow fat (5). CT does not provide such striking contrast resolution.

The findings of EMG and nerve conduction studies are variable. In some cases, there are only minimal findings, such as a depressed sural sensory response, while total axonal loss findings may be present in other cases (3). Evidence of active or chronic denervation is found in the EMG's of most patients (1). EMG often reveals more extensive denervation than would have been predicted clinically (2).

Diagnostic difficulties occur when a cancer patient with lumbosacral plexopathy has a normal CT or MRI. Some clinical characteristics may be useful. In cases with metastatic plexopathy, the initial manifestation is weakness, numbness or paresthesias of the legs (6), and the pain may be relieved to a certain degree by either lying on one side with the knees flexed or flexing the affected extremity at the hip in bed. However, pain is usually not relieved with positioning in patients with plexopathies due to radiotherapy (3). Neurologic findings are usually unilateral in tumor patients, and bilateral in radiation-induced cases (6). Autonomic involvement and sphincter disturbance is unusual (<10%), and generally is associated with massive intrapelvic tumors (1). Another finding in plexopathies due to metastatic or tumoral compression is a positive reverse straight leg raising test. The presumed mechanism of this finding is compression of the plexus between the iliopsoas muscle and neoplastic disease resulting in distortion of its normal anatomy (3). Pettigrew et al (3) recommend a test with an iv bolus injection of 100 mg dexamethasone. This injection causes a definite decrease of pain in patients with metastatic plexopathies. This response is not seen in the radiation-induced plexopathies. The exact mechanism of this response is not known, but there are two major possibilities: either the swelling of the nerves in the plexus ıs reduced or the injection is, to a certain extent, oncolytic (3). Differentiation of plexopathies due to tumoral or metastatic compression from radiation-induced ones is important as there is no known treatment for radiation-induced case while irradiation and/or systemic chemotherapy may provide substantial relief of pain and an improvement in neurological deficits for those patients with plexopathy secondary to tumor (3).

Neither the dexamethasone test, nor the radiotherapy test were performed in our patient due

to the CT and MRI findings and the severe increases of infection markers indicated_an intrapelvic abscess as the cause of the plexopathy. However, antibiotic treatment did not provide improvement, and surgical exploration revealed a metastatic lymph node instead of an abscess.

Objectives of treatment of metastatic plexopathy are to provide adequate pain control, maximize remaining neurological function, and prevent complications of immobility produced by the neuromuscular dysfunction (2). Treatment is palliative and includes radiotherapy to the tumor mass, chemotherapy, and symptomatic treatment. Saphner et al (4) reported that 35% of patients noted diminished pain, whereas 38% of patients noted no improvement or progression of their pain 1 month after radiotherapy for plexopathy. The prognosis is poor. Thomas et al (6) reported 86% mortality within 3_ years of the onset of neurologic symptoms. Jaeckle et al (1) reported that 40 of 85 patients died within an average of 5.5 months. Saphner et al (4) also reported a survival time of less than six months for all patients with lumbosacral plexopathy due to cervical cancer. The pain is usually very severe and may not be relieved even with narcotics. Subtotal surgical resection of the tumor may therefore be warranted in selected cases (2, 6). In addition, surgical exploration may be necessary (6) in some patients without a definitive diagnosis, as in our patient.

CONCLUSION

Differential diagnosis of lumbosacral plexopathy in pelvic cancer patients is difficult. Although the prognosis is poor, and treatment is palliative, surgical exploration and decompression may be required for pain control.

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