Primary osteosarcoma of the L2 lamina presenting as “silent” paraplegia: case report and review of the literature

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Summary. Primary osteosarcomas of the vertebral column are not common, and to our knowledge a total of 78 cases, mostly located in the vertebral body, have been previously reported. We report a primary osteosarcoma of the spine with an extremely rare location – the lamina of the second lumbar vertebra. The patient, a 38-year-old woman, was admitted with paraplegia of a short duration without pain. Preoperatively, the patient underwent CT scanning for staging (Enneking IIB) followed by a needle biopsy and local preoperative arterial embolization. An emergency decompressive laminectomy was performed, and stabilization was carried out using methylacrylate. The patient showed a complete neurologic recovery. Combined chemotherapy and local irradiation did not prevent tumor recurrences, which occurred 12 and 19 months after the initial intervention and were associated with recurrent neurologic impairment. The patient died 19 months after the initial presentation, while in paraplegia, from lung metastases. Based on our unique observation, it seems that in primary osteosarcomas located in the posterior elements of the spine, the symptoms are not specific, and the disease may only become manifest when the tumor is no longer resectable. When the tumor is associated with neurologic impairment, spinal canal decompression should be performed even though it does not radically resect the tumor because it significantly improves the quality of the patient’s life.

Key words: Lumbar spine – Lamina – Osteosarcoma – Paraplegia

Primary osteogenic osteosarcoma arising in the vertebral column is seen infrequently. In large series of osteogenic sarcomas, its incidence varies from 0.85 to 2% [2-7, 9, 12-18]. Patients with such osteosarcomas have a poor prognosis. Surgery on osteosarcomas involving the spine is technically demanding since resection of the whole tumor is not possible without damaging the neural elements. Irradiation in combination with chemotherapy has not been successful in the treatment of spine osteosarcomas [1]. We report on a rare case of a patient with a primary osteosarcoma involving the lamina of the L2 vertebra, who was admitted with a “silent” incomplete paraplegia.

Case report

A 38-year-old woman was admitted to our hospital with a history of low back discomfort of about 1 month’s duration and increasing motor and sensory impairment of the lower extremities that started 4 days prior to admission. On admission, neurological examination revealed a paraparesis Frankel B (at the L2 neurotome level). Roentgenograms of the chest as well as the thoracic and lumbar spine and pelvis disclosed no pathologic findings (Fig. 1). A CT scan of the lumbar spine revealed an extradural compressive mass emerging from the lamina and the basis of the spinous process of L2, invading the paravertebral muscles at the right side (Fig. 2A). The tumor was classified [4] as IIB (high grade, extracompartimental). A frozen section, obtained by CT-guided needle biopsy, showed a tumor with high malignancy.

Based on the biopsy, X-rays, and CT scan we suspected a primary bone tumor. In order to prevent excess intraoperative bleeding, local arterial embolization of the tumor was successfully carried out. The tumor was operated on using a posterior approach on the day of admission. The tumor had infiltrated the paravertebral muscles, the lamina, and the spinous process of the L2 vertebra and had extended into the epidural space (Fig. 2A). A wide decompression (laminae L1 and L2, transverse process, and intervertebral joints), after meticulous excision of the infiltrated muscles, was therefore performed. No significant instability was found intraoperatively at the widely decompressed area (Fig. 3). Therefore, keeping in mind the intraoperative appearance of high malignancy (stage IIB), the associated poor prognosis, and the expected short survival, a temporary posterior spinal stabilization from the spinous processes of T12–L3 was performed using methylacrylate and Kirschner wire. The histologic examination showed a well-differentiated primary osteosarcoma (Fig. 2B). Postoperatively, a CT scan showed no visible tumor remnants, and a sufficiently decompressed spinal canal (Fig. 4). A chemotherapy protocol, including methotrexate, cisplatinum, and doxorubicin hydrochloride was given with supplementary radiotherapy. The patient was mobilized in a custom-made plastic jacket, and 3 weeks after the operation she was pain-free without residual neurologic impairment. Twelve months later she developed a drop foot on the right side due to recurrence of the tumor (Fig. 5). During the second intervention, a local recur-