MANAGEMENT OF SPINE TUMORS*

M. KUNT MD O. BULUT MD A. AKBAŞ MD
Ş. Ö. ŞAVK MD T. ÜNSALDI MD

ABSTRACT :

From March 1988 to April 1994 9 patients with spinal tumoral lesions have been operated in our clinic. 6 malignant (3 metastatic) and 3 benign tumors were localized on thoracal (5), lumbar (3 metastatic) and 3 benign tumors were localized on thoracal (5), lumbar (3) and sacral (1) regions. Primary malignant tumor group consist of 22.2% plasmacytomas (2 cases), 11.1% osteosarcoma (1 case), 33.3% of metastases (3 cases) were arisen from Lungs (1 case) 11.1%, from thyroid gland (1 case) 11.1%, from prostate (1 case) 11.1%. 3 Benign tumoral lesions of our cases consist of 22.2% osteoid osteoma (2 cases) and 11.1% aneurysmal bone cyst (1 case). Two patients were paraplegic and one patient was paraesthetic. The surgical procedure was resection in 33.3%, resection and stabilization with Alıcı Spinal System in 11.1%, resection and stabilization with bone cement and Anterior Alıcı System in 44.4%, laminectomy and posterior decompression in 11.1% of the cases The mean follow up was 18 months and deaths have been observed in this period.

All the patients who had a metastatic tumoral lesions and osteosarcoma were died within 6-12 months after surgical operations.

Key Words: *Metastatic Tumor, spine, instrumentation.*

INTRODUCTION

Within the skeletal system beside the bone tissue there are also the cartilage, fibrous, bone marrow, neuro-vascular and fat tissues. This is why tumors originating from diferent tissues and having malignant or benign character can be seen. The neoplastic diseases of the vertebrae expose several difficulties as far as their diagnosis and treatment are concerned. Despite of their low insidence their early symptoms, especially pain, can easily be mistaken for other non-tumoral clinical entities. The primary benign tumors of the vertebrae are very rare and usually affect the corpus vertebrae and the posterior part of the vertebrae. Those are usually asymtomatic until they cause pain and other neurological findings pressing upon the nerves in the area they are located.

Malignant tumors like multiple myeloma, chondrosarcoma and osteosarcoma are usually located on the vertebral body and are much more rare, but lead usually to serious problems causing the collapse of the vertebral body via its destruction and invading the surrounding neurological structures. The metastatic tumors of the vertebrae are more common when compared to the primary ones. The pathological fractures of the vertebral body due to tumor infiltration may lead to vertebral instability and pressure on the medulla spinalis in those patients. If there is a suspicion about tumor of the vertebrae, a good clinical examination, x-ray, CT and if needed MRI should be all used for the differential diagnosis, and then according to the type of the tumor appropriate treatment begun.

MATERIALS AND METHODS

In this work we present the 9 vertebral tumor cases we have treated within march 1988-April 1994 time period. From those cases 3 were primary benign, 3 primary malignant and the remaining 3 were metastatic tumors. One of the cases with the primary benign tumor was osteoblastoma, another one was osteoid osteoma. The osteoblastoma case was a 14 years old male patient who was treated one year long in several clinics for back pain, and the osteoid osteoma case was a 24 years old female patient whos chief complaint was a pain responding to aspirin treatment. The tumoral mass of the osteoblastoma patient was on the lamina of S_2, and the one of the 24 years old osteoid osteoma patient on the lamina of the L_1 vertebra. Both of those patients underwent surgical intervention where a mar-

* Cumhuriyet University, Faculty of Medicine, Department of Orthopaedics and Traumatology, Sivas.

ginal excision of the tumor was done. The histopathological investigation the diagnosis. The patient with the osteoblastoma was followed for one year, and the one with the osteoid osteoma for six years. Both of them were free of complaints as far as the vertebrae are concerned. The third case of those with primary benign tumors was a 12 years old male patient complaining since six months from a pain in the lumbar region. The investigations revealed an aneurysmal bone cyst on the spinous process of the L_3 vertebra. A marginal excision was done. The histo-pathological diagnosis was reported to be a "cavernous hemangioma". The patient is being followed within the last one year and there are no complaints.

A 36 years old male patient who was on treatment in a PTR clinic developed a progressing paraplagia and was refered to our clinic. The th10 emergency radiological evaluation revealed a pathological fracture. An emergency CT was performed and revealed that the vertebral canal was invaded by broken fragments and tumoral tissue. With an emergent anterior inervention corpectomy and decompression of the spinal canal were performed, and the stability was supplied with methyl metacrylate and Alıcı anterior spinal system. The histopathological diagnosis was reported to be a plasmocytoma. The histopathological diagnosis was reported to be a plasmocytoma. The patient was treated with ratio and chemotherapy in the oncology clinic. He is being followed for two years and despite the lack of neurologic improvement there are no complaints cocerning the vertebrae, and his life continues on a wheelchair.

The Th10 examination of the 65 years old patient with back pain and kyphosis chyposis since 6 years revealed compression by a pathological fracture. On CT examination the vertebra was invaded by a tumoral mass of soft tissue density. Anterior corpectomy, anterior fusion and anterior Alıcı system were all performed. The histopathological report was plamocytoma. The patient was refered to the oncology clinic where a chemotherapy course was conducted. He's being followed for the last 1.5 year, has no vertebral complaints and performs his normal daily activities.

A patient with a history of back pain was evaluated in a neurological clinic in 1986, the diagnosis was osteogenic sarcoma, and a posterior intervention followed by partial laminectomy, curetage, radio- and chemotherapy were performed. Now, four years later, the 48 years old patient applied to our clinic complaining of extreme back pain, progressing parasthesia and partial paralysis. The investigations revealed a tumor originating from L2, 3, 4 vertebral bodies and showing an expantion to the posterior elements, the vertebral canal and retroperitoneally to the intraabdominal organs. Our palliative treatment was a subtotal resection of the tumor via an anterior intervention, and followed by the anterior accepting stabilizing system. The surgical intervention revealed that the L3 and L4 posterior spinal nerves were infiltrated by the tumoral tissue and were cleaned from it within the course of the operation. The histopathological examination revealed a diagnosis of pereosteolosteogenic sarcoma. In the early postoperative period the patient showed a fast neurological improvement, but the retroperitoneally located cavity left after the excision of the tumoral mass has lead to a postoperative infection. After controlling this infection we refered the patient to his previous radiotherapy and chemotherapy center, where there was found to be no need for further therapy. In the sixth postoperative month the patient reapplied to our clinic complaining of footdrop and back pain. The CT examination revealed that the spinal canal was infiltrated by tumoral tissue, and nearly two months later the patient was lost.

A 40 years old female patient applied to our clinic with the complaints of intensive back pain and paraplegia, after having been treated for six months by several physicians for mechanical back pain. A laminectomy and curetage were performed on the Th10 vertebra of the patient after a posterior intervention. Within the anamnesis of the patient there was a surgery due to thyroid Carcinoma, seven years ago. The investigations revealed metastasis to the lung and liver. The lack of neurological improvement in the postoperative period was due to the metastasis of the thyroid Ca. The patient was proposed to be fixated by a posterir accepting spinal system and stabilized by anterior corpectomy, methylmetacrylate and anterior acceping spinal system but she didn't accept it. One month postoperatively she was released without being mobilized and did not come for the follow-up.

A 67 years old hospitalized for lung Carcinoma patient from the internal medicine service was consulted with the orthopaedic department for extensive back pain and paresthesia. The investigations revealed metastatic infiltrations of the bodies of the Th5-6-8-9 vertebrae. The patient was lost during the surgical intervention which intended resection of the infiltration via an anterior intervention.

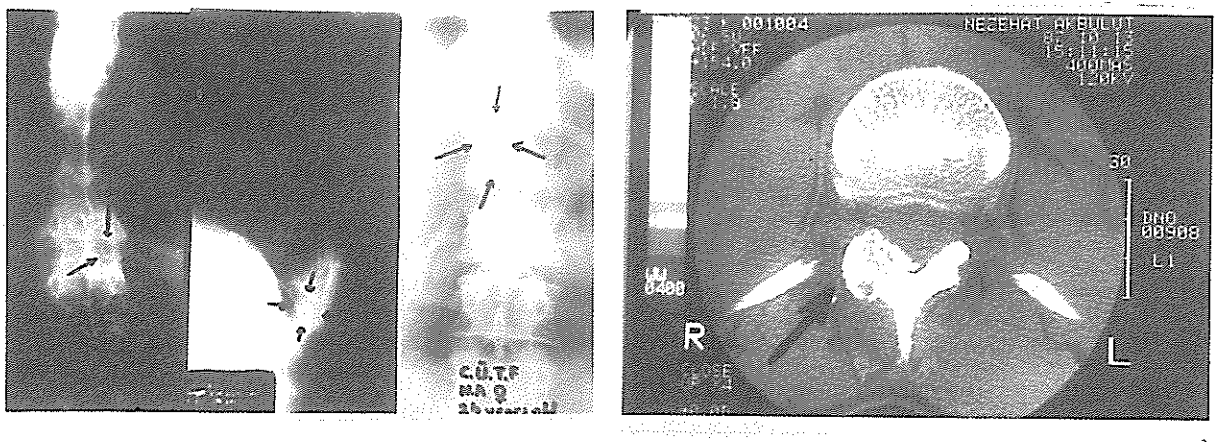


Figure 1. 24 years old patient L1 Osteoid osteoma

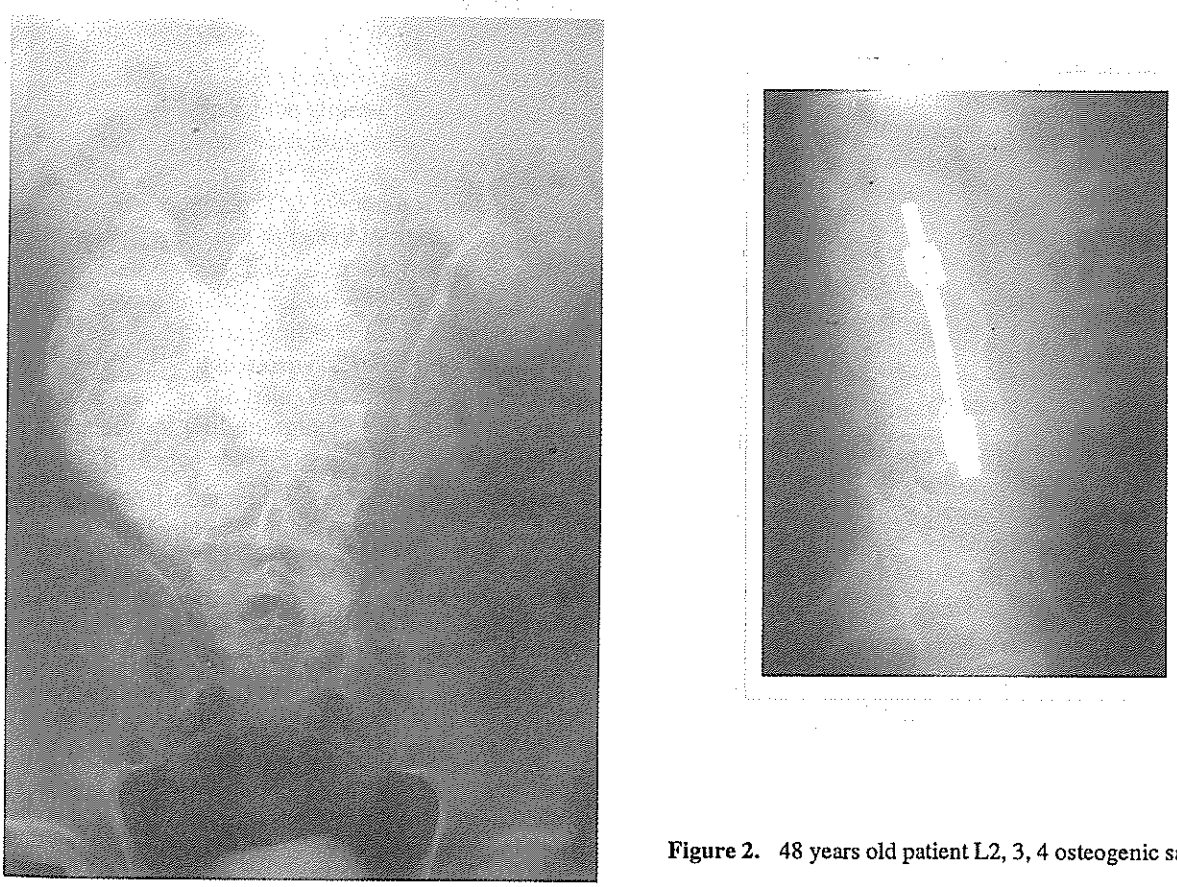
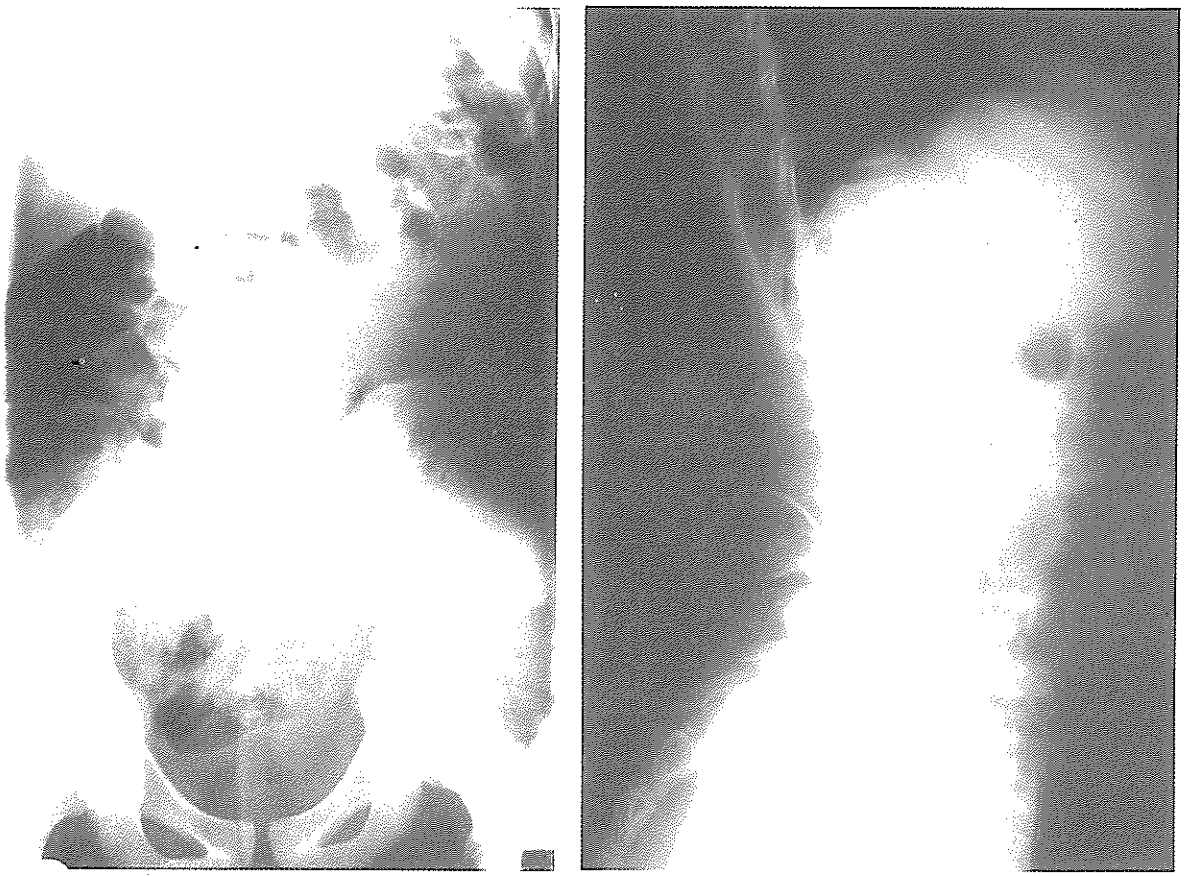


Figure 2. 48 years old patient L2, 3, 4 osteogenic sarcoma



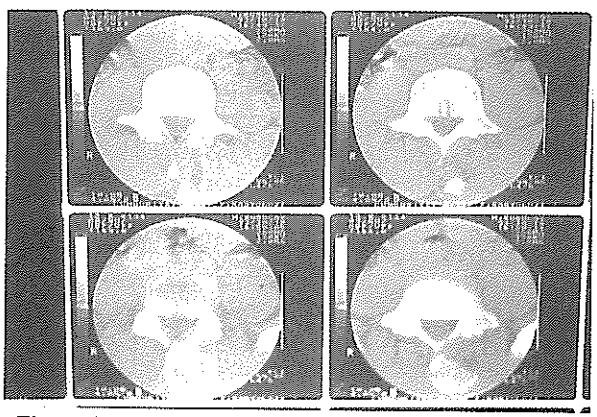


Figure 3. 12 years old patient L3 cavernous hemangioma

The examination of a 72 years old patient who applied to our clinic with the complaints of extreme back pain revealed a compression fracture of the Th12 vertebral body. On CT investigation the vertebral body was fund to be infiltrated by a tumoral mass. The past medical history of the patient revealed an operation due to prostatic Carcinoma five years ago. An anterior intervention followed by corpectomy were performed and stabilization was achieved by anterior accepting spinal system. The urology consultation in the postoperative period revealed the prostatic Ca to has recurred and to has reached an inoperable stage. The patient was mobilized and was released from the hospital in the 12th postoperative day without having any neurological deficits. He was lost in the nith month postoperatively.

DISCUSSION

The incidnce of the vertebral tumors is quite loow (17, 19). And because the clinical picture is very similar to the rest of the vertebral diseases, the diagnosis usually comes late (18). Some tumors are especially seen on the vertebrae. The literature reports reveal that the bone tumors such as osteoblastoma, osteoid osteoma and aneurysmal bone cyst are frequently seen (6, 9, 10, 13). Our small series with one osteoblastoma, one osteoid osteoma and one aneurysmal bone cyst confirms those statistics. The most important finding in those cases is the pain, which is not present at rest. The treatment with marginal excision gives good results (11, 12, 15).

The most commonly seen primary malignant tumor of the vertebra is multiple myeloma which affects the vertebral bodies in a diffuse or solitary fascion (11, 12, 15). For the treatment of the solitary lesions radiotherapy is usually enough but if vertebral destruction and instability are present tumoral resection and vertebral stabilization are recommended (12). In one of our cases the late diagnosis was the reason for the lack of a neurological improvement, and in both of the cases tumoral resection and vertebral stabilization were achieved. In addition with the post operative radiotherapy and chemotherapy there is no reccurence up to now.

From the primary vertebral malignant tumors the next in incidense is the osteogenic sarcoma. Here the radiotherapy and chemotherapy are of importance for the survival length of the patients (5, 14). The treatment of osteogenic sarcoma present some development. The anterior intervention followed by a radical tumoral resection and chemotherapy protocols in rare cases may increase the survival to five years (16). But the mean survival varies between six months and one year (16). In our case we performed an intervention because of the progression, but because it was too late, despite of the partial improvement, we think we were unsuccessful and lost the patient.

The metastatic tumors of the vertebrae are more common compared to the primary ones (2, 3, 7). The metastatic tumors cause vertebral instability due to the pathological fractures. The survival rate of these patients may be increased via chemotherapy and radiotherapy, but because of the vertebral instability the care for those patients is a problem for their relative and for themselves. The aim of the orthopaedic treatment in those patients is to control the pain caused by the instability to prevent spinal cord compression and if present, to relieve it. In this way the daily life activities of the patient are improved and the patient can spent the rest of his life in more confort. In addition, in those cases there not enough time to wait for the fusion and that's why instead of a bone-graft it's more logical to apply methylmetacrylate (1, 4, 8). Our cases all were at an inoperable state as far as the primary tumors were concerned. In one of the cases an eight month mobile and comfortable life was achieved.

CONCLUSION

The secret of the success in the treatment of the vertebral tumors is in the early diagnosis. With today's diagnostic and treatment methods the treatment of the primary benign tumors is definite and for the primary malignant ones a prolongation of the survival is possible. In the cases of metastatic lesions to the vertebrae the vertebral stabilization and the relief of the neurological deficits do not prolong the survival, but comprise for a more comfortable life for the patient.

REFERENCES

1. Alıcı E: The surgical therapy for the tumoral lesions of spine. VIII. Milli Türk Ort. ve Trav. Kongre Kitabı, Emel Matbaacılık, Ankara S. 116, 1984.
2. Cohen D: Apparently solitary tumors of the vertebral column. Proc. Mayo Clin. 39: 508. 1964.
3. Constans JP: Spinal metastases with neurological manisfestations. J. Neurosurg. 59: 111, 1983.

4. Dunn EJ: The role of methylmehacrylate in stabilizations and replacement of tumors the cervical spine. Spine, 2, 15, 1977.
5. Fielding J.W., Pyle R.N., Fietti V.G.: Anterior cervical vertebral body resection and bone-grafting for benign and malignant tumors. J. Bone Joint Surg. 61-A: 251-253, 1979.
6. Gelberman R.H., Olson C.O.: Benign osteoblastoma of the atlas. J. Bone Joint Surg. 56-A. 808-810, 1974.
7. Harrington K.D.: Orthopaedic management of metastatic bone disease, Toronto, C.V. Mosby Company, 1988.
8. Harrington KD: The use of methylmetacrylate for vertebral body replacement and anterior stabilization of pathological fracture dislocations of the spine due to metastatic malignant disease. J. Bone joint surg. 63A. 36, 1981.
9. Heiman ML., Cooley C.F., Bradford D.S.: Osteoid-osteoma of the vertebral body. Clin. Orthop. Rel. Res. 118: 159-163, 1976.
10. Jaffe H.L.: Tumors and tumorous conditions of the bones and joints. Lea and Febiger Co. Philadelphia, 1986.
11. Kaplan H.: Primary malign tumors, Vertebra, Omurga, Ed. Ege. R., 1047-1058, Ankara, Türk hava kurumu basım evi 1992.
12. Kempin S, Sundaresan N: Disorder of the spine related to plasma cell dyscrasias in tumors of the spine. W.B. Saunders Comp. Philadelphia pp. 214-225, 1990.
13. Lundeen M.A., Herring J.A: Osteoid-osteoma of the spine sclerosis in two levels. J. Bone Joint Surg. 62-A: 476-478, 1980.
14. Martin N.S., Williamson J.: The role of surgery in the treatment of malignant tumours of the spine. J. Bone Joint Surg. 52-B: 227-237, 1970.
15. Osserman E.F.: Plasma cell dyscrasias: Multiple Myeloma and related conditions. In radiology, pathology and immunology of Bone and Joints. A review of current concepts. Edited by: Feldman, F. pp: 189-200. Appelton-century crafts New York, 1978.
16. Shives T.C. Dahlin D.C., Sim F.H. Pritchard D.J. Earle J: Osteosarcoma of the spine. J. Bone and Joint Surg. 68-A: 660-668, 1986.
17. Thommesen P, Poulsen J.O.: Primary tumours in the spine and pelvic in addescents. Acta Ort. Scan. 47: 170-174, 1976.
18. Tümer Y, Ege R, Mergen E.: Primary spinal tumors. VIII. Milli Türk Ortopedi ve Travmatoloji Kongre Kitabı. Emel Matbaacılık, Ankara, 110-113, 1984.
19. Yücetürk G: Primary bone tumors. Vertebra, Ed. Ege R, Ankara, Türk Hava Kurumu Basımevi, 1043-1058, 1992.