SPINAL CHONDROSARCOMAS
(Report of Seven Cases with Moderate Term Follow-up)

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Seven cases of chondrosarcomas with spinal location that has been treated in our hospital were evaluated retrospectively. Average patient age at the time of diagnosis was 38.1 years. One of the cases was associated with multiple hereditary exostosis.

One tumor was located at the sacrum and the others at true vertebrae. Five lesions were histologically grade I, one was grade II and one was grade III. Their surgical stages were IA for one patient, IB for five patients and IIB for one patient. The surgical margins of resection were intra-lesional in four, marginal in two and contaminated wide in one patient.

Average follow-up period was 67 months, and only one patient is known to have died of disease at 24 months. One patient was lost to follow-up at six months and the other five were living ranging from eleven to one hundred and twenty months.

It was concluded that spinal chondrosarcomas are often low-grade lesions with good prognoses and appropriate treatment often yields long term survival rates.

Chondrosarcomas are malignant neoplasms of cartilaginous origin, which by definition produce cartilaginous matrix. Although they are not common tumors, they are second only to osteosar comain frequency of primary sarcomas of bone. The mean age at diagnosis is approximately 40 years with a very wide range.

The lesions are usually located at the trunk and proximal limb girdles but occasionally can be found to be originating from the spine. The frequency of spinal involvement is reported to be around with 634 patients, reported from the Mayo Clinic, contained 55 cases of spinal tumors. Of the 265 chondrosarcomas reported from the Memorial hospital, 30 involved the spinal column. In a series of 133 chondrosarcomas from the Rizzoli Institute, only three were located in the spinal column. A recent report consisting of our hospitals experience on the treatment of chondrosarcoma revealed an incidence of seven spinal chondrosarcomas within a total of 32 cases.

The distribution of the lesions within the spinal column appears to be uniform. Among the spinal chondrosarcomas of the Mayo Clinic Series, 9 were located in the cervical spine, 18 in the thoracic spine, 12 in the lumbar spine and 16 in the lumbar region. Camins and associates reported 19 spinal chondrosarcomas, six in the cervical spine, five in the thoracic, three in the lumbar and five in the sacrum.

The accepted treatment of chondrosarcoma is surgical removal. Tumors located in the spinal column has long been regarded unresectable and the prognosis seemed to be dismal. But with the recent advances in the imaging techniques and a better understanding of surgical principles, very satisfactory results are being reported in some of the recent series of spinal chondrosarcomas.

Chondrosarcomas is generally regarded as a radioresistant tumor tumor because of the slown rate of DNA replication. But recent laboratory data suggest that at least microscopic seeding of the tumor may be dealth with charged particle irradiation. Clinical findings in a recent report has supported this concept. It appears that there are no patient studies as yet that had demonstrated a benefit using chemotherapy for chondrosarcomas.

MATERIALS and METHODS :

The results of treatment of seven cases of chondrosarcomas located in the spinal column is presented. Four patients were males and three females. Average patient age at the time of diagnosis was 38.1 years (range 19-60). One patient was known to have multiple hereditary exostosis before the diagnosis of chon-

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drosarcoma, all others were primary lesions. One patient was paraparetic and one had brachial plexus involvement at the time of diagnosis.

One tumor was located at the sacrum, one at L5, Three in the thoracic spine and two in the lower cervical spine. The tumors were histologically graded retrospectively using Mankin's criteria and were staged according to the system of Musculoskeletal Tumor Society. All patients were found to have surgery for the tumor, two have recieved radiotherapy and one chemotherapy. The surgical margins of resection were intralesional in four, marginal in two and wide-contaminated in one patient.

Average follow-up was 67 months. One patient was lost to follow-up at sixth month and all others could be followed for periods ranging from eleven to one hundred and twenty months.

RESULTS :

Histological grading of the tumors revealed grade 1 lesions in five patients and grade 2 and 3 lesions in one patient each. One patient was found to be Stage IA, five patients stage IB and one patient Stage IIB. The only patient who had a grade 3 tumor, also have been staged IIB, had died of disease in the 24th month, her tumor being decided to be unresectable by then.

The patient with the grade 2 tumor, that was staged as being stage IB, was treated by the curettage of the lesion and decompressive laminectomy by the neurosurgeons. He later recieved radiotherapy and additional chemotherapy consisting of Iphosphamide and Vepeside and was free of disease 11 months after the surgery.

The other five low-grade lesions were also treated surgically. One patient with a huge tumor located at the cervical region have recieved additional radiotherapy because of suspected seeding of the tumor during removal. Apart from the patient that was lost to follow-up at six months, all patients were disease free for periods ranging from 78 months to 120 months.

The incomplete cord compression in one patient had completely resolved. The patient with brachial plexus involvement had only partial recovery of the functions of C5 and C6 roots.

DISCUSSION :

Seven cases of chondrosarcomas were found to be located in the spinal column from a total of thirty-two cases in the chondrosarcoma series of our clinic. This insidence of spinal involvement is higher than those reported in the literature, probably attributable to the selective referral of chondrosarcoma cases to our center.

Chondrosarcomas arising in their usual locations of proximal limb girdles are often difficult enough to treat. Spinal location of any malignant tumor, especially of sarcomas pose a serious challenge to spinal surgeons. Recent advences in the imaging technology have made the evaluation of these lesions easier, hence increasing the life expectancy of sarcoma patients. Amongst all sarcomas, chondrasarcoma appears to have the most favorable prognosis, especially with the advent of aggressive surgical techniques. Several recent reports have domonstrated a significant increase in the number of long tumor survivors.

The histologic interpretation of these tumors are often difficult and the grading criteria are not as good delineated as the other sarcomas. But a definite correlation is known to exist between the histologic grade of the tumor and the overall survival, independent of the staging criteria used. This fact is also demonstrated in our series. Four of our five grade 1 patients are long term survivors and are practically free of disease. The overall success of our series should be attributed to the frequency of low grade lesions.

Although adjuvant therapies were used in some of our patients, the limited number of cases presented here renders arriving a conclusion concerning their effectiveness impossible. But is should probably be emphasized that the two patients that had received adjuvant therapies were free of disease at their last follow-up visits.

The data presented in this series of seven patients represent the experience of our clinic on the treatment of spinal chondrosarcomas, over a period of twenty years. This explains the diversities in the evaluation and treatment some of our patients recieved. Nevertheless, the overall prognosis of spinal chondrosarcomas appear to be good and should be expected to be better still in the near future.

REFERENCES :

1. Acaroğlu E., Göğüş M.T., Teker K.; Retrospective analysis of the treatment results in chondrosarcoma. Presented at The Turkish-German Congres of Orthopaedics and Traumatology, Ankara, June 1992.
2. Berson A.M., Castro J.R., Petti P. et al.; Charger particle radiation of chordoma and chondrosarcoma of the base of the skull and cervical spine; The Lawrence Berkeley Laboratory experience. Int. J. Ratiation Oncology Biol. Phys. 15, 559-65, 1988.
3. Camins M.B., Duncan A.W., Smith J. et al.; Chondrosarcoma of the spine. Spine, 3, 202, 9, 1978.
4. Cammisa F.P., Glasser D.B., Lane J.M.; Chondrosarcoma of the spine; Memorial Sloan Kettering Cancer center experience.; Sundaresan N., Schmidek H.H., Schiller A.L., Rosenthal D.I. (Eds.); Tumors of the spine. W.B. Saunders Co. Philadelphia, 1990.
5. Campanacci M., Guernelli N., Leonessa C. et al.; Chondrosarcoma; A study of 133 cases, 80 with long term follow-up. Ital. J. Orthop. Traumatol, 1, 387-414, 1975.
6. Huvos, A.G.; Bone Tumors: Diagnosis, treatment and prognosis. W.B. Saunders Co., Philadelphia, 1979.
7. Shives T., McLeod R.A., Unni K.K. et al.; Chondrosarcoma of the spine. J.B.J.S., 17A, 1158-65, 1989.
8. Sim F.H., Frassica F.J., Wold L.E. et al.; Chondrosarcoma of the spine: The mayo Clinic experience.; Sundaresan N., Schmidek H.H., Schiller A.L., Rosenthal D.I. (Eds.); Tumors of the Spine, W.B. Saunders Co., Philadelphia, 1990.