

Original Research

Retrospective Evaluation of CT findings of Chondrosarcoma

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ABSTRACT

Background: Chondrosarcoma is the commonest primary sarcoma of bone in adults, with a male predominance. Chondrosarcomas characteristically produce coalescent cartilage lobules of various sizes. Hence; the present study was undertaken for assessing of CT findings of patients with chondrosarcoma. **Materials & methods:** A total of 65 cases were screened during the study period. Complete clinical and histopathologic details of all the cases were obtained. Only those cases were included in which confirmed histopathologic diagnosis of Chondrosarcoma was made. A separate chart was prepared for recording the Computed tomography (CT) findings of all the patients. All the results were recorded and were analyzed by SPSS software. **Results:** Cortical destruction, Pathologic fractures, Intra-osseous matrix mineralization and Soft tissue mass containing chondroid areas were predominant CT findings observed, found to be present in 80 percent, 38.46 percent, 30.77 percent and 18.46 percent of the patients respectively. **Conclusion:** Radiologists and orthopedic surgeons should be alert of the various types of chondrosarcomas as they are the commonest malignancies involving bone in adults.

Key words: Chondrosarcoma, Computed tomography

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INTRODUCTION

Chondrosarcoma is the commonest primary sarcoma of bone in adults, with a male predominance.¹ Patients are usually between 30 and 70 years old. Clinical symptoms are pain and tenderness with or without a mass, the average duration of symptoms being 1–2 years, but growth may be very slow, especially for pelvic tumours. Chondrosarcomas characteristically produce coalescent cartilage lobules of various sizes.²⁻⁴ The center often becomes necrotic or cystic.⁵ Hence; the present study was undertaken for assessing of CT findings of patients with chondrosarcoma.

MATERIALS & METHODS

The present study was commenced in the department of radio-diagnosis and orthopedics of the medical institute. It included assessment of CT findings of patients with chondrosarcoma. The present study involved retrospective evaluation of data records of all the patients diagnosed with chondrosarcoma who were reported in the past 10 years. A total of 65 cases were

screened during the study period. Complete clinical and histopathologic details of all the cases were obtained. Only those cases were included in which confirmed histopathologic diagnosis of Chondrosarcoma was made. A separate chart was prepared for recording the Computed tomography (CT) findings of all the patients. All the results were recorded and were analyzed by SPSS software. Chi-square test was used for assessment of level of significance. P-value of less than 0.05 was taken as significant.

RESULTS

In the present study, a total of 65 patients diagnosed with chondrosarcoma were analyzed. Mean age of the patients of the present study was 49.5 years. 47.69 percent of the patients of the present study belonged to the age group of 30 to 50 years. 30.77 percent of the patients belonged to the age group of more than 50 years and the remaining 21.54 percent of the patients belonged to the age group of less than 30 years. 58.46 percent of the patients of the

present study were males while the remaining 41.54 percent of the patients were females. In the present study, cortical destruction, Pathologic fractures, Intra-osseous matric mineralization and Soft

tissue mass containing chondroid areas were predominant CT findings observed, found to be present in 80 percent, 38.46 percent, 30.77 percent and 18.46 percent of the patients respectively.

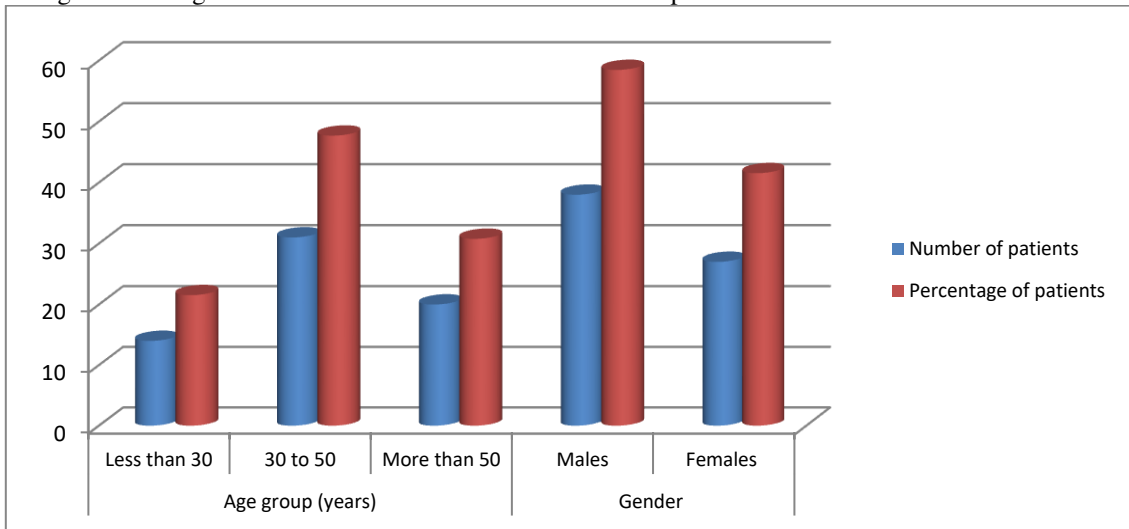
Table 1: Age-wise and gender-wise distribution of chondrosarcoma patients

Parameter		Number of patients	Percentage of patients
Age group (years)	Less than 30	14	21.54
	30 to 50	31	47.69
	More than 50	20	30.77
Gender	Males	38	58.46
	Females	27	41.54

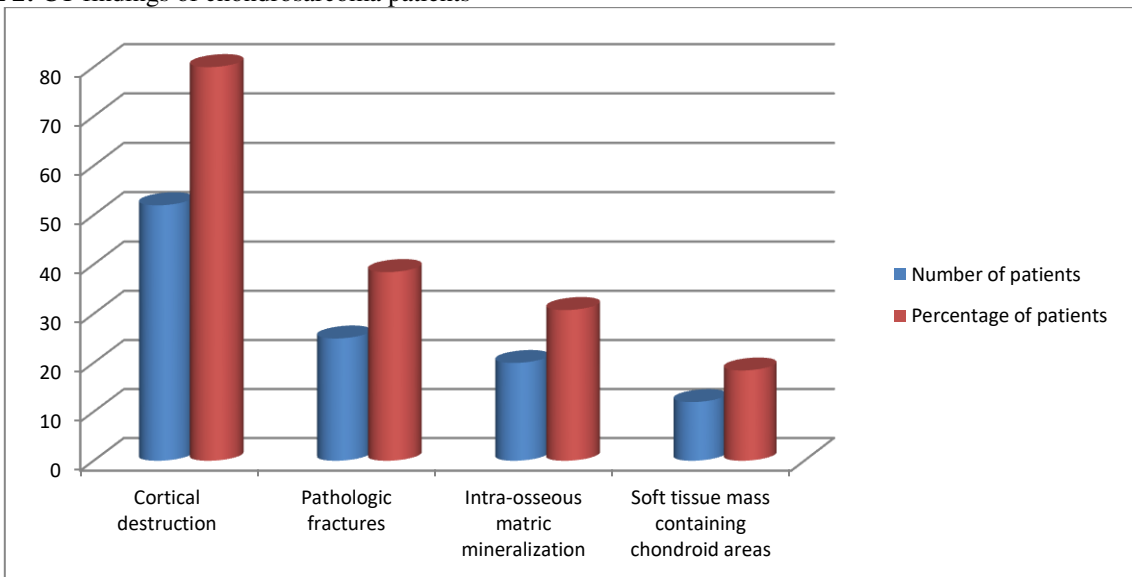
Table 2: Spectrum of CT findings in chondrosarcoma patients

CT findings	Number of patients	Percentage of patients
Cortical destruction	52	80
Pathologic fractures	25	38.46
Intra-osseous matric mineralization	20	30.77
Soft tissue mass containing chondroid areas	12	18.46

Graph 1: Age-wise and gender-wise distribution of chondrosarcoma patients



Graph 2: CT findings of chondrosarcoma patients



DISCUSSION

Primary chondrosarcoma is the third most frequent primary malignancy of bone after myeloma and osteosarcoma. It is ranging from slow growing non metastasising lesions to highly aggressive lesions.^{5,6}

In the present study, a total of 65 patients diagnosed with chondrosarcoma were analyzed. Mean age of the patients of the present study was 49.5 years. 47.69 percent of the patients of the present study belonged to the age group of 30 to 50 years. 30.77 percent of the patients belonged to the age group of more than 50 years and the remaining 21.54 percent of the patients belonged to the age group of less than 30 years. 58.46 percent of the patients of the present study were males while the remaining 41.54 percent of the patients were females. Kenney PJ performed computed tomography (CT) prior to surgery on six patients with osteochondroma and six with chondrosarcoma. Criteria for distinguishing these two types of cartilage tumors were developed from classical radiological descriptions and known pathological characteristics. Application of these criteria to CT images permitted accurate diagnosis of eleven of the tumors and provided anatomical information important for surgical planning. Review of six previously published cases of cartilage tumors supported the findings. CT appears to be effective in the preoperative differentiation of osteochondroma and chondrosarcoma, including cases where this distinction cannot be made with conventional radiographs.⁷

Periosteal chondrosarcoma, also known as juxtacortical chondrosarcoma, is a rare malignant cartilaginous tumor arising from the external surface of bone. On CT, the lesion is juxtacortical; has a round or ovoid shape; and is associated with an intact, thickened, or eroded cortex. The tumor has low attenuation and can contain calcific densities characteristic of cartilage tumors. Matrix mineralization is better appreciated on CT scans. After contrast injection, slight peripheral enhancement is often seen.⁸⁻¹⁰ A case of a large low-grade mixed clear-cell and conventional chondrosarcoma of the larynx involving the paraglottic space, the cricoid and thyroid cartilage and characterized by an unusual long clinical course over 22 years was reported by Obenauer S. Computed tomography suggests diagnosis by detecting calcifications and adequately demonstrates the extension of the tumor. Innersurface and surface-rendering images document the airway stenosis in all directions. The unusual feature of this case consists in the peculiar histopathological differentiation of the observed chondrosarcoma showing a large clear-cell component.¹¹

In the present study, cortical destruction, Pathologic fractures, Intra-osseous matrix mineralization and Soft tissue mass containing chondroid areas were predominant CT findings observed, found to be present in 80 percent, 38.46 percent, 30.77 percent and 18.46 percent of the patients respectively. In cases of dedifferentiated chondrosarcoma, A huge soft-tissue mass without calcifications, seen on CT or MRI is also indicative for this diagnosis. Imaging helps to direct biopsy of the lytic area in order to improve the histological diagnosis. The

treatment involves surgery and adjuvant chemotherapy or radiotherapy. The prognosis is very poor, with an overall 5-year survival rate of only 8.5–13%. The metastases appear in the lungs but also in unusual sites such as the adrenal gland, brain and liver.¹⁰⁻¹² The most important factor affecting survival, as suggested by Mitchell et al, is an accurate preoperative diagnosis. Because the non cartilaginous component determines the rate of growth and metastasis and, thus, the prognosis of this neoplasm, it is critical that the possibility of dedifferentiation be explored prior to biopsy to facilitate sampling of the dedifferentiated component.¹²

CONCLUSION

Under the above results, the authors concluded that Radiologists and orthopedic surgeons should be alert of the various types of chondrosarcomas as they are the commonest malignances involving bone in adults. The prognosis can be greatly improved if detected at an early stage.

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