A Rare Case of Chondrosarcoma Affecting the Distal and Middle Phalanx of the Toe

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STATEMENT OF PURPOSE

1. Primary purpose: To present a case of a rare malignancy, affecting the tubular bones of the foot.
2. Secondary purpose: To highlight the importance of thorough work-up with respect to bone tumors.

BACKGROUND & LITERATURE REVIEW

Chondrosarcoma is part of a group of bone tumors that produce chondroid matrix. It is the third most common primary malignancy of bone, composing 20–27% of malignant osseous neoplasms.1 In a review of 11,087 bone tumors, Unni noted a total of 774 chondrosarcomas. Of this number, only 14 (1.8%) were found in the foot.2 Cases involving the tubular bones of the foot and hand are exceedingly rare. In a similar retrospective study, Toepfer et al. assessed 266 cases of bone tumors affecting the foot and ankle. The authors noted 4 cases of chondrosarcoma affecting the forefront (1.5%).2 Chondrosarcomas are classified based on a system that was developed by the World Health Organization (WHO).4

Grade I
- Moderately cellular; hyaline cartilage matrix; absent mitoses; no metastatic potential

Grade II
- Less chondroid matrix; present mitoses; chondrocytes with enlarged nuclei; intermediate metastatic potential

Grade III
- Minimal-absent chondroid matrix; highly cellular with prominent mitoses; high metastatic potential; 10-year survival rate: 29-55%

Chondrosarcomas are often quite difficult to differentiate from their similar benign counterpart, enchondromas. In a retrospective review by Gajewski et al. where the two tumors were clinically and radiographically compared, a statistically significant difference was noted only in the mean size of the two tumors. Radiographic examiners only agreed on the diagnosis of chondrosarcoma vs. enchondroma 78% of the time, and when they agreed, they were only accurate 83% of the time.5

CASE STUDY

When this malignant tumor affects phalanges of the hand or foot, the treatment of choice is amputation. In a systematic review of 414 cases by Fayad et al., recurrence of chondrosarcoma was reported as 5.7% in those cases where only local resection or curettage was performed.6 Sato et al. described a case report of chondrosarcoma affecting the 5th metatarsal, and recommended resection of a 2 cm margin around the tumor.7

Imaging:
- Osseous expansion affecting the distal & middle phalanges of the second toe
- Mixed radiolucent and sclerotic appearance
- Rings and arcs pattern
- Cortical thickening with no evidence of periosteal reaction
- Underlying proximal phalanx unaffected
- Associated digital contracture at PIPJ

CASE STUDY (CONTINUED)

Given patient age and anatomic location allowing for ease of a definitive procedure, partial amputation of the second toe with resection of proximal margin at the proximal phalanx was performed.

ANALYSIS & DISCUSSION

Chondrosarcoma is an osseous malignancy that rarely affects the foot. Given its rarity, its diagnosis can be often be overlooked. This can lead to a devastating outcome for the patient. Here, a case of chondrosarcoma affecting the phalanges of the second toe is presented. Recurrence rates for intermediate-grade chondrosarcomas vary based on whether wide resection vs. local curettage was performed.8 When recurrence occurs, it is usually a higher grade than the original presentation.8 In this case, a partial amputation was performed as a definitive procedure for wide resection of the tumor. The patient was then referred promptly to an oncologist for further assessment. This case highlights the importance of early management of osseous tumors as well as taking into account a malignant etiology despite a benign presentation.

REFERENCES