Case 2361

Chondrosarcoma of the hyoid
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Section: Head & neck imaging
Imaging Technique: CT
Case Type: Clinical Cases
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Patient: 63 years, male

Clinical History:

A 63-year-old male patient presented with a painful mass in the neck. On doing a physical examination, a fixed, firm, rounded, and tender mass was felt along the patient's left thyroid cartilage.

Imaging Findings:

A 63-year-old male patient presented with a painful mass in the neck. On doing a physical examination, a fixed, firm, rounded, and tender mass was felt along the patient's left thyroid cartilage. The CT scan of the neck revealed the presence of a large, relatively rounded mass consisting of a soft tissue density arising from the left greater horn of the hyoid bone (Fig. 1). The mass contained numerous focal calcifications. The suspicious-looking tumor was resected. Grossly, the surgical specimen appeared to be firm and, when sectioned, revealed a lobulated chondroid-appearing cut surface with focal calcifications and an apparent bone. A histological evaluation showed findings that were consistent with a low grade chondrosarcoma (Figs. 2a,b).

Discussion:

Chondrosarcomas are known to be the second most commonly found primary bone tumors, occurring during the third through sixth decades of life. The prevalence of this cartilage-producing malignancy is twice as high in males. Chondrosarcomas frequently affect the pelvis, extremities, and ribs and infrequently occur in the head and the neck (10%). They can arise de novo or from a pre-existing lesion (1). In the neck, they tend to occur on the average one decade earlier than in patients with extremity involvement. Head and neck chondrosarcomas have a predilection for males and thus a significantly higher male to female ratio of 10:1. Very rarely, these tumors have been reported to arise from the hyoid bone. The usual presentation of a head and neck chondrosarcoma is dyspnea and hoarseness, depending on the location. Microscopically, chondrosarcomas can be divided into three grades on the basis of their nuclear size, cellularity, and mitotic rate. Grade I lesions are of a low grade, grade II lesions are of a medium grade, and grade III lesions are of a high grade. Histologically, low grade chondrosarcomas can resemble enchondromas. The radiographic appearance of the typical chondrosarcoma is that of a lucent lesion containing a chondroid matrix and calcifications that are typically crescentic or punctate or have a “ring and arc”-like appearance. Osseous expansion, endosteal scalloping, cortical destruction, and extension into adjacent soft tissues may be seen with chondrosarcomas. Radiographically, low grade chondrosarcomas can be difficult to distinguish from enchondromas. The hyoid chondrosarcoma is best imaged using correctional techniques such as CT or MR imaging. CT is usually the study of choice for the further initial evaluation of most neck masses. CT shows the soft tissue extent of the lesion, allows assessment of the lesion size and its effects on adjacent structures, allows the characterization of the internal calcifications (1), and shows the degree of osseous destruction. MR imaging findings have been described (2, 3) and are similar to the findings seen with extremity chondrosarcoma, which include inhomogeneous low T1 and high T2 signal intensities consistent with the chondroid matrix (3). Contrast administration may show a heterogeneous or peripheral enhancement. Calcifications are manifested as small focal hypointensities noted on all pulse sequences. MR imaging, with its multi-planar capability and a high soft tissue contrast is ideal for
demonstrating the soft tissue extent of the lesion and aid in pre-operative planning. The treatment involves complete
tumor resection with radiation treatment used for tumors that were not completely resected or for recurrent tumors
(4, 5). Recurrence is significantly higher in the head and the neck relative to the extremities. Prognosis and clinical
course can be predicted based on the histologic grade of the tumor and tumor extension as well as the initial
treatment. The five-year survival rates for grade 1, 2, and 3 tumors are 90%, 81%, and 43%, respectively.

**Differential Diagnosis List:** Chondrosarcoma of the hyoid.

**Final Diagnosis:** Chondrosarcoma of the hyoid.

**References:**

McNaney D, Lindberg RD, Ayala AG, Barkely HT, Hussey DH. Fifteen year radiotherapy experience with


**Description:** An axial CT image at the level of the hyoid bone showing a mass containing focal calcifications, some with a "ring and arc"-like morphology. The mass arises from the left greater horn of the hyoid bone. **Origin:**