

Chordoma diagnosis

Radiographic features

MRI and CT scan have complementary roles in tumor evaluation. CT evaluation is needed to assess the degree of bone involvement and to detect patterns of calcification within the lesion. MRI provides excellent anatomical delineation of adjacent structures and is able to characterize the signal of the lesion usually allowing for a confident preoperative diagnosis. MRI is, however, limited in its ability to evaluate calcification and the precise involvement of skull base osteolysis less well than CT, especially for skull base foramina.

CT

centrally located well-circumscribed destructive lytic lesion, sometimes with marginal sclerosis expansile soft-tissue mass usually hyper-attenuating relative to adjacent brain; however, inhomogenous areas may be seen due to necrosis or hemorrhage soft-tissue mass is often disproportionately large relative to the bony destruction irregular intratumoral calcifications (thought to represent sequestra of normal bone rather than dystrophic calcifications) moderate to marked enhancement

MRI

T1

intermediate to low-signal intensity small foci of hyperintensity (intratumoral hemorrhage or a mucus pool)

T2

Most exhibit very high signal

T1 C+ (Gd)

Heterogeneous enhancement with a honeycomb appearance corresponding to low T1 signal areas within the tumor greater enhancement has been associated with a poorer prognosis.

28 cases were identified that had preoperative imaging available for review. Over half of the patients demonstrated either no/minimal (11/28, 39%) or mild enhancement (7/28, 25%). The remaining cases demonstrated moderate (4/28, 14%) and marked enhancement (6/28, 21%). The 4 lesions measuring less than 20 mm all had mild to minimal/no enhancement and lacked aggressive features on CT. The experience finds that over half (64%) of clival chordomas will demonstrate mild or no enhancement at all. These findings suggest that the lack of MRI contrast enhancement should not be synonymous with

a benign clival mass ¹⁾.

SWI/GE

Variable intralesional hemorrhage, suggested by the presence of blooming artefact

DWI/ADC

conventional chordoma: $1474 \pm 117 \times 10^{-6} \text{ mm}^2/\text{s}$

Dedifferentiated chordoma: $875 \pm 100 \times 10^{-6} \text{ mm}^2/\text{s}$

Bone scan

variable

<https://radiopaedia.org/articles/chordoma>

¹⁾

Mark IT, Van Gompel JJ, Inwards CY, Ball MK, Morris JM, Carr CM. MRI enhancement patterns in 28 cases of clival chordomas. J Clin Neurosci. 2022 Mar 9;99:117-122. doi: 10.1016/j.jocn.2022.02.037. Epub ahead of print. PMID: 35278932.

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