ORIGINAL RESEARCH PAPER

Radio-Diagnosis

CROSS SECTIONAL RADIOLOGY REVIEW OF CLIVUS CORDOMA CASES AT TERTIARY CARE CANCER HOSPITAL

KEY WORDS: Clival chordoma, Clivus, Chordoma, MRI, CT scan, Cross sectional Radiology, Chondroid Cordoma

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ABSTRACT

Chordomas, rare malignant bone tumors, pose diagnostic challenges due to associated biopsy risks. Radiological evaluation, particularly CT and MRI, plays a crucial role in diagnosis and treatment planning. This study presents a cross-sectional review of clivus chordoma cases at a tertiary care cancer hospital. Six cases were analyzed. Histopathological examination identified chondroid chordoma in two cases, while radiological features aided in diagnosing two cases. Imaging revealed sellar region involvement, optic nerve compression, and spinal extension. CT and MRI are indispensable for accurate diagnosis and treatment planning.

INTRODUCTION:

Chordomas are rare malignant bone tumors that originate from the remnants of the notochord.

Histopathological examination remains the gold standard for diagnosis, with conventional chordoma being most common. In our study we also encountered two cases of chondroid cordoma. However, for decision regarding surgical or non surgical management and surgical planning radiologic features become important. Also biopsy of the lesion itself is associated with significant risk so some patients opt out from the biopsy procedure, as evidenced by two cases in our series therefore Radiological evaluation, including CT scanning and MRI, plays a crucial role in the diagnosis and evaluation of those lesions. In this article, We aim to elucidate radiological features with extension and involvement encountered in our cases.

Patient Characteristics:

The median age of the patients was 45 years, with a male-to-female ratio of 4:2. Common presenting symptoms included headache, facial pain, numbness, or paresthesias and diplopia. Other symptoms visual complaints, imbalance, extremity weakness.

Histopathology:

Four out of six were diagnosed in present institute with histopathology and two of them were presumptively diagnosed on bases of imaging features due to lost follow up. Histopathological examination revealed chondroid chordoma in two cases and chordoma in two cases

Radiological Features and discussion

Primary modality for evaluation of these cases were Cranial and cervical spinal MRI. Almost all of the patients shows irregular marginated expansile solid mass showing hypointensity on T1w, heterogeneous hyper intensity on T2W. Fat suppression and diffusion restriction findings were variable. All of the cases showed post contrast enhancement. Patients showed consistent involvement of the sellar region in five of the cases. Optic nerve abutment was observed in two cases with encasement in one case. Cavernous sinus and sphenoid sinus involvement was noted in all of cases where lesion involved sellar region. Most of the cases involving sellar region were causing mass effect on pituitary gland. Two of the cases where clival lesion was situated more caudally cervical vertebral involvement and extradural intraspinal extension was encountered. In those cases with intraspinal extension cervical spinal cord edema was observed. Also there lesion were extending in paravertebral space with one showing adjacent pharyngeal involvement. On CT scan images one case showed hyperostosis of surrounding bone and other cases shows lytic lesion involving clivus. More caudal lesions also showed cortical erosion of first and second cervical vertebrae.

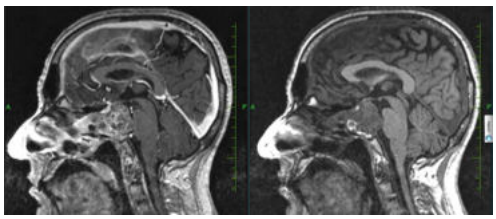

Figure 1 :T1W post and pre contrast sagittal images showing expansile solid mass arising from clivus and involving sellar region

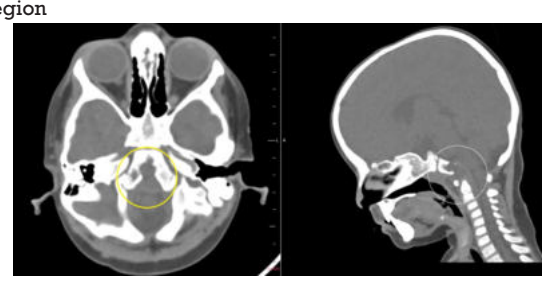

Figure 2 : CT scan axial and sagittal images showing lytic lesion involving clivus

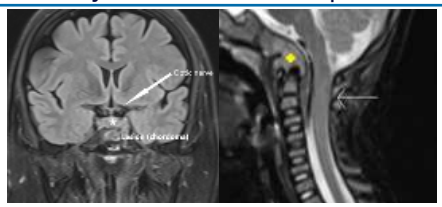

Figure 3 (right/First) : T2 FLAIR coronal MRI sequence image showing proximity to lesion with optic nerve without abutment or involvement

Figure 4 (left/Second) : T2W sagittal MRI image showing lower clivus lesion with spinal cord edema (yellow + : showing homogenous enhancing clivaus lesion , white arrow : subtle T2W hyper intensity suggestive of edema

Treatment and Outcomes:

Most of patients were treated variably involving primarily radiotherapy and than surgery or chemotherapy . Some of the patients opted out from intervention

CONCLUSION:

Chordomas can be diagnosed using specialized imaging like CT scans and MRIs. These techniques help determine the size, location, and extent of the tumor, aiding in treatment planning. While CT scans shows the tumor's presence, extent of bone involvement and some details, it is limiting to demonstrate involvement of spinal cord. However, MRI can reveal about tumor extent in spinal canal, pituarty and vascular involvement, optic nerve involvement and significant displacement of surrounding structures. This information is crucial for surgical planning.

REFERENCES:

1. Comprehensive Review of Intracranial Chordoma. Eren Erdem, Edgardo C. Angtuaco, Rudy Van Hemert, Jong S. Park, and Ossama Al-Mefty
2. RadioGraphics 2003 23:4, 995-1009
3. Https://rarediseases.org/rare-diseases/chordoma/
4. Persad ARL, Mechor B, Starreveld Y. Clival Chordoma With Brainstem Invasion. Canadian Journal of Neurological Sciences / Journal Canadien des Sciences Neurologiques. 2018;45(2):235-237. doi:10.1017/cjn.2017.279
5. Karele EN, Paze AN. Chordoma: To know means to recognize. Biochim Biophys Acta Rev Cancer. 2022 Sep;1877(5):188796. doi: 10.1016/j.bbcan.2022.188796. Epub 2022 Sep 9.
6. Conforti R, Sardaro A, Tecame M, Rossi C, Vargas O, Raucci A, Sica A. Cordoma: considerazioni diagnostiche e revisione della letteratura [Chordoma: diagnostic considerations and review of the literature]. Recenti Prog Med. 2013 Jul-Aug;104(7-8):322-7. Italian. doi: 10.1701/1315.14569. PMID: 24042401.
7. Padilla-Lichtenberger F, Plou P, Villaescusa M, Kornfeld S, Massa D, Ajler P. Tumor de clivus. Metástasis vs. cordoma [Clivus tumor. Metastasis vs. chordoma]. Medicina (B Aires). 2020;80(3):302. Spanish. PMID: 32442949.