World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(CASE REPORT)

Intracranial Dural Chondroma: Case Report and Review of Literature

Napoleao IMBUNHE [1, 2, *], Yao Christian Hugues DOKPONOU [1, 2], Fresnel Lutece Ontsi OBAME [1, 2], Moussa Elmi SAAD [1, 2], Salma Jebli [2, 3], Salami MOHCINE [1, 2], Abad Cherif EL ASRI [1, 2] and Miloud GAZZAZ [1, 2]

[1] *Department of Neurosurgery, Mohammed V Military Teaching Hospital, Rabat, Morocco.*
[2] *Faculty of Medicine and Pharmacy, Mohammed V University Rabat-Morocco.*
[3] *Department of Pathological Anatomy, Military Teaching Hospital Mohammed V of Rabat Morocco.*

World Journal of Advanced Research and Reviews, 2023, 19(02), 1521–1525

Publication history: Received on 29 June 2023; revised on 18 August 2023; accepted on 20 August 2023

Article DOI: https://doi.org/10.30574/wjarr.2023.19.2.1601

Abstract

Intracranial chondromas are slow-growing benign tumors originating from embryonic rests at the sphenoethmoidal region and sometimes can originate from the falx, convexity but rarely from the dura. We present the case of a 38-year-old patient with moderate to severe headaches, doing well after total removal of the lesion. Complete surgical removal of dural chondroma had shown to improve the patient's neurologic status.

Keywords: Intracranial Chondroma; Dural Tumor; Management; Case Report

1. Introduction

Intracranial dural chondromas are extremely rare, benign slow-growing cartilaginous tumors mostly originating from embryonic rests at the sphenoethmoidal region and sometimes can originate from the falx [1]. They occur intracranially in rare cases with an estimated incidence of 0.2% to 0.5% of all intracranial neoplasms [2]. On the contrary, Connelly et al [3] described less than 30 reported cases in 2018 and found that these lesions can rarely be seen in the parasellar region, at the falx, or arousing from the dura convexity [4].

The tumors showed calcification in 88.2% of cases on CT-Scans and hypointense on T1WI (78.9%), mixed intense on T2WI (55.6%), and inhomogeneous enhancement without dural tail sign after administration of gadolinium (95.2%). They were almost all misdiagnosed for meningiomas preoperatively [5].

We report the case of a 38-year-old man successfully treated for intracranial dural chondroma and discussed the differential diagnosis, management, and outcome of this uncommon pathology with the review of existing literature.

2. Case Presentation

2.1. Patient information

A 38-year-old man was admitted to our department for progressive headaches of moderate to severe intensity, for the past five months, without other associated signs. His past medical history was unremarkable.

2.2. Clinical findings

The patient was conscious with a Glasgow Coma Scale of 15, without sensory-motor deficits, no fever, and neither seizure was found. Other clinical signs were unremarkable.

* Corresponding author: Napoleao IMBUNHE

2.3. Diagnostic assessment

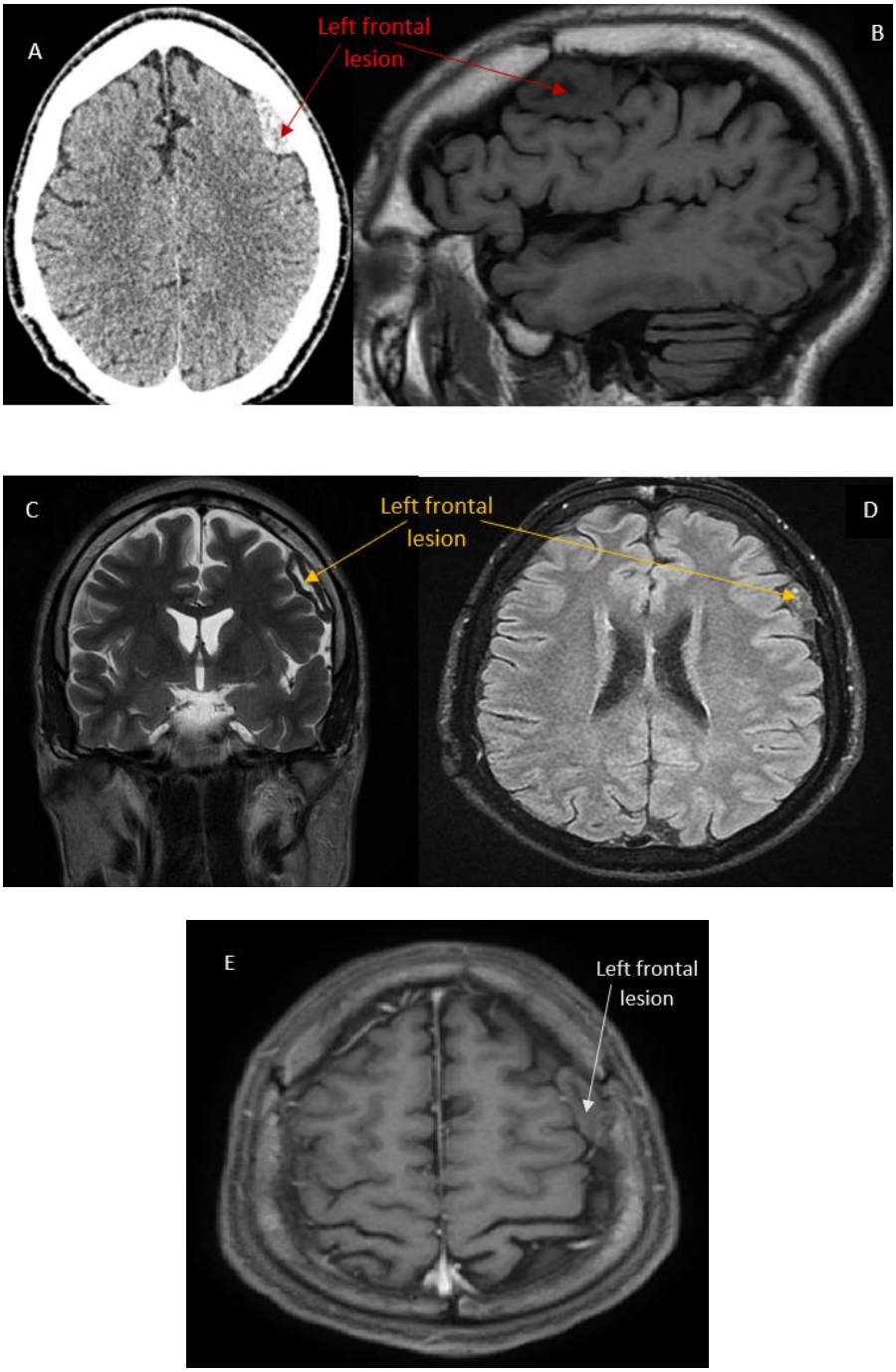

Figure 2 Pre-operative CT-Scan and MRI showing the intracranial dural chondroma

Cerebral CT axial section shows a unique left frontal extra-axial lesion, slightly spontaneous hyper dense, measuring 30,8 x10,3mm, without mass effect **(figure 1A)** Subsequent brain MRI demonstrated a T1 Weighted hypointense, in the center of the lesion and isosignal in the periphery T2 Weighted hyperintense in the center of the lesion, surrounded by hyposignal with frontal compression opposite. On T1 Gado hyposignal in the center and isosignal in the periphery of the lesion **(Figure 1: B, C, D, and E)**. With these characteristics, we first thought of a meningioma.

2.4. Therapeutic intervention

The patient underwent surgery. The lesion was macroscopically completely removed through a right frontal craniectomy. We found a grayish hard and spongy lesion that was not adherent to any intracranial structures, thus, easily removable. The material was then sent to the laboratory for histology showing high-density cartilage proliferation

[HEx20] **(Figure 2B), and** chondrocytes of variable size with sometimes binucleated nuclei surrounded by a clear halo (HEx40) **(Figure 2C.)**

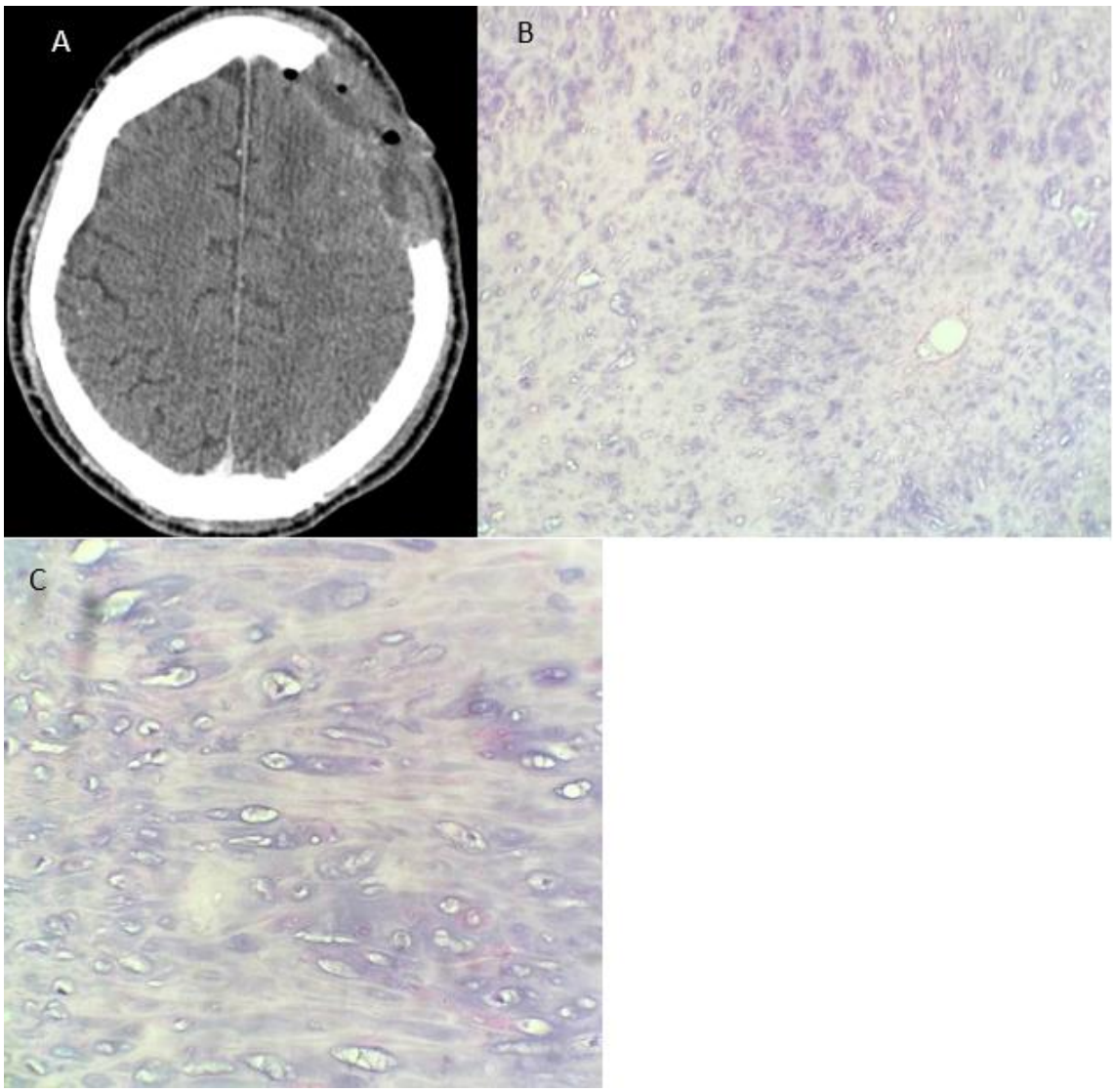

Figure 2 Post-operative CT-Scan (A) and the pathological anatomy slides (B & C)

2.5. Follow-up and outcome

After one week of follow-up, the patient was doing well, and headaches-free. Cerebral CT six months later showed a total removal of the dural chondroma with no evidence of local recurrence **(Figure 2A)**.

3. Discussion

Intracranial dural chondromas is a rare phenomenon and benign neoplasm, accounting for less than 1% of all intracranial lesions. In the literature, the age of diagnosis was between 20 and 60 years [6]. In this study, we report the case of a 38-year-old man. The clinical presentation of intracranial chondromas depends on their location and includes headache, seizures, and focal neurologic deficits [6,7].

The preoperative diagnosis is challenging. Differential diagnostic problems arise with other intracranial tumors, particularly meningiomas at the convexity. On magnetic resonance imaging (MRI), the chondroma appears multilobed with low to moderate signal intensity on T1-weighted imaging and signal hyperintensity on T2-weighted imaging [8–10]. This radiological characteristic was similar to our case. Some authors hypothesized that the development of CDC might be related to mesenchymal stem cells in the cranial suture. This was particularly observed in our case, the lesion developed under coronal suture. It is important to distinguish chondromas from meningiomas, with similar MRI

imaging features, T1 hypodense and T2 hyperdense [11,12]. Typically meningiomas showed avid homogenous contrast enhancement, and an enhancing dural tail [13,14]. On CT, the meningiomas and chondromas are typically slightly hyperdense. In addition, the meningioma is often associated with bone remodeling (hyperostosis); Which is not a feature of dural chondromas.

Surgery of chondromas is not difficult because of the avascularity of the tumor and lack of invasion into the surrounding structures. But the insidious slow-growing aspect of the lesion is the trickiest and over time, makes it becomes clinically sound. Complete resection of tumors is the best mode of treatment, especially in cases of chondroma dural convexity with clear margins such as ours. After these tumors were removed, no recurrence was reported and a satisfactory long-term prognosis was obtained [15].

4. Conclusion

Intracranial dural chondroma constitutes a rare, benign, slow-growing tumor. Their imaging characteristics are nonspecific to differentiate from meningioma or other entities. The definitive diagnosis requires a histopathological examination. Complete surgical excision with resection of dural attachment is the treatment of choice.

Compliance with ethical standards

Disclosure of conflict of interest

The authors have nothing to disclose

Submission statement

This manuscript is original and has not been submitted.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] Agrawal R, Saroha A. Intracranial chondroma of the falx cerebri: A rare case report with review of literature. Asian J Neurosurg [Internet]. 2019 Sep [cited 2023 Aug 2];14(3):911–4. Available from: http://www.thieme-connect.de/DOI/DOI?10.4103/ajns.AJNS_82_19

[2] Connolly C, Sabarigirivasan V, Cottone L, Flanagan AM, Tirabosco R. An overview and update on bone lesion in craniofacial bones. Diagn Histopathol [Internet]. 2021 May 1 [cited 2023 Aug 2];27(5):216–25. Available from: https://www.sciencedirect.com/science/article/pii/S1756231721000219

[3] Connolly ID, Johnson E, Lummus S, Hayden Gephart M. Massive Intradural Chondroma Masquerading as Lower Body Parkinsonism. Cureus [Internet]. 2018 Jan 22 [cited 2023 Aug 2]; Available from: https://www.cureus.com/articles/8447-massive-intradural-chondroma-masquerading-as-lower-body-parkinsonism

[4] Doukas A, Tallo A, Parvin R, Hans V, Daemi P, Cheko A, et al. Giant Dural Supratentorial Chondroma Generating the Question of How Large Can a Tumor Become without Revealing Itself. Clin Pract [Internet]. 2015 Dec 29 [cited 2023 Feb 9];5(4):777. Available from: https://www.mdpi.com/2039-7283/5/4/777

[5] Guo Q, Fang Z, Li Y, Xu Y, Guan H, Li F. Treatment of spinal cord compression caused by C2 osteochondroma with reconstruction and fusion after total resection: Case report and literature review. J Spinal Cord Med [Internet]. [cited 2022 Oct 12];44(1):96–101. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7919876/

[6] Clinical and Radiologic Characteristics, Surgical Outcomes, and Its Possible Origins of Chondroma of the Dural Convexity [Internet]. [cited 2023 Aug 2]. Available from: https://www.hindawi.com/journals/bmri/2020/5961358/

[7] Shrot S, Cohen AR, Rodriguez FJ, Berkowitz F, Soares BP, Huisman TA. Intracranial dural chondroma in a child—conventional and advanced neuroimaging characteristics and differential diagnosis. Neuroradiol J [Internet]. 2018 Aug 1 [cited 2023 Feb 9];31(4):386–9. Available from: https://doi.org/10.1177/1971400917712268

[8] Cone Sullivan J, Goldsmith J, Rojas R, Varma H, Kasper EM. Intracranial Dural Parafalcine Chondroma: Case Report and Systematic Review of the Literature. World Neurosurg [Internet]. 2019 Feb [cited 2023 Feb 9];122:1–7. Available from: https://linkinghub.elsevier.com/retrieve/pii/S1878875018322150

[9] Cosar M, Iplikcioglu AC, Bek S, Gokduman CA. Intracranial falcine and convexity chondromas: two case reports. Br J Neurosurg [Internet]. 2005 Jan [cited 2023 Feb 9];19(3):241–3. Available from: http://www.tandfonline.com/doi/full/10.1080/02688690500207322

[10] Zhan RY, Pan XF, Wan S, Lan P, Zhang YC, Weng NC, et al. Solitary Intracerebral Chondroma without Meningeal Attachment: A Case Report with Review of the Literature. J Int Med Res [Internet]. 2011 Apr [cited 2023 Feb 9];39(2):675–81. Available from: http://journals.sagepub.com/doi/10.1177/147323001103900238

[11] Gharib M, Nikfarjam Z. When Chondroma Happens in an Unexpected Location: A Case Report of Intra-Axial Intracranial Chondroma. Int Med Case Rep J [Internet]. 2020 Jul [cited 2023 Feb 9];Volume 13:275–8. Available from: https://www.dovepress.com/when-chondroma-happens-in-an-unexpected-location-a-case-report-of-intr-peer-reviewed-article-IMCRJ

[12] Liwei Z, Jianping D, Xuzhu C, Linsen M, Junmei W. An intracranial chondroma with intratumoral and subarachnoidal hemorrhage. Neurol India [Internet]. 2011 [cited 2023 Feb 9];59(2):310. Available from: http://www.neurologyindia.com/text.asp?2011/59/2/310/79170

[13] Go JL, Rajamohan AG. Imaging of the Sella and Parasellar Region. Radiol Clin North Am. 2017 Jan;55(1):83–101.

[14] Takizawa H, Sugiura K, Baba M, Chisiki T, Kamatsuka E, Tachisawa T, et al. Parasellar chondroma: A case report. Br J Neurosurg [Internet]. 1987 Jan [cited 2023 Feb 9];1(1):147–51. Available from: http://www.tandfonline.com/doi/full/10.3109/02688698709034351

[15] Hong JT, Lee SW, Son BC, Sung JH, Choi HC, Kim MC. Delayed occurrence of intracranial supratentorial chondroma following compound depressed skull fracture. Acta Neurochir (Wien) [Internet]. 2005 Mar [cited 2023 Feb 9];147(3):343–5. Available from: http://link.springer.com/10.1007/s00701-004-0430-1