Imaging of Fibrous Dysplasia Protuberans, an Extremely Rare Exophytic Variant of Fibrous Dysplasia

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Abstract: This paper details the case report of a 26-year-old man who presented with a growing right-sided skull mass evaluated with ultrasound, non-contrast CT, contrast-enhanced MRI and 99mTc-MDP whole body bone scan with SPECT/CT. These studies suggested a broad differential diagnosis favoring benign osseous lesions. Given a more recent increase in the rate of growth, headache and large size, the lesion was excised via craniotomy followed by cranioplasty. Pathology confirmed fibrous dysplasia (FD) as the diagnosis. Interestingly, this report is the imaging evaluation of the exophytic subtype of FD, the so-called FD protuberance, an extremely rare variant of FD, of which only two case reports are found in the literature.

Keywords: fibrous dysplasia; SPECT/CT; exophytic bone lesion
Figure 1. Cont.
Diagnostics Protuberans variant of FD, with only two case reports in the literature, first described in 1994 [4,5]. This rare variant mimics benign lesions such as osteochondroma, exostosis, surface osteoma, enchondroma protuberance, and even malignant bone tumors such as osteosarcoma and chondrosarcoma. To our knowledge, the FD protuberans variant is not described in the nuclear medicine or radiology literature [4–6]. As such, this case report appears to be the first imaging evaluation of FD protuberans [7,8].
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References
1. Kinnunen, A.R.; Sironen, R.; Sipola, P. Magnetic resonance imaging characteristics in patients with histopathologically proven fibrous dysplasia—A systematic review. Skelet. Radiol. 2020, 49, 837–845. [CrossRef] [PubMed]
2. DiCaprio, M.R.; Enneking, W.F. Fibrous dysplasia. Pathophysiology, evaluation, and treatment. J. Bone Jt. Surg. Am. 2005, 87, 1848–1864. [CrossRef]
3. Dorfman, H.D. New knowledge of fibro-osseous lesions of bone. Int. J. Surg. Pathol. 2010, 18, 62S–65S. [CrossRef] [PubMed]
4. Dorfman, H.D.; Ishida, T.; Tsuneyoshi, M. Exophytic variant of fibrous dysplasia (fibrous dysplasia protuberans). Hum. Pathol. 1994, 25, 1234–1237. [CrossRef]
5. Hamadani, M.; Awab, A.; Rashid, A.; Ali, T.; Brown, B. Fibrous dysplasia protuberans in a patient with McCune-Albright syndrome. J. Coll. Physicians Surg. Pak. 2006, 16, 376–377. [PubMed]
6. Fitzpatrick, K.A.; Taljanovic, M.S.; Speer, D.P.; Graham, A.R.; Jacobson, J.A.; Barnes, G.R.; Hunter, T.B. Imaging findings of fibrous dysplasia with histopathologic and intraoperative correlation. AJR Am. J. Roentgenol. 2004, 182, 1389–1398. [CrossRef] [PubMed]
7. Hwang, D.; Jeon, J.; Hong, S.H.; Yoo, H.J.; Choi, J.Y.; Chae, H.D. Radiographic Follow-Up of Fibrous Dysplasia in 138 Patients. AJR Am. J. Roentgenol. 2020, 215, 1430–1435. [CrossRef] [PubMed]
8. Zhibin, Y.; Quanyong, L.; Libo, C.; Jun, Z.; Hankui, L.; Jifang, Z.; Ruisen, Z. The role of radionuclide bone scintigraphy in fibrous dysplasia of bone. Clin. Nucl. Med. 2004, 29, 177–180. [CrossRef] [PubMed]