International Journal of Nursing and Health Care Research
Thomsen M, et al. Int J Nurs Health Care Res 8: 1622
www.doi.org/10.29011/2688-9501.101622
www.gavinpublishers.com

Case Report

Osteoid Osteoma of The Toe in Children: Case Report and Literature Review

Thomsen Marc[1*], Thomsen Sophie Leonie[2], Erhardt Matthias[1]

[1]Clinic for Orthopaedic and Trauma Surgery, Baden-Baden, Germany

[2]Clinic for Orthodontics, University of Dresden, Germany

[*]**Corresponding author:** Thomsen Marc, Clinic for Orthopaedic and Trauma Surgery, Baden-Baden, Germany

Citation: Thomsen M, Thomsen Sl, Erhardt M (2025) Osteoid Osteoma of The Toe in Children: Case Report and Literature Review. Int J Nurs Health Care Res 8: 1622. DOI: https://doi.org/10.29011/2688-9501.101622

Received Date: 18 February 2025; **Accepted Date:** 25 February, 2025; **Published Date**: 27 February, 2025

Introduction

Osteoid Osteoma (OO) constitutes 10-12% of all benign bone tumours. It has a male predilection and often occurs in younger patients. They may present with a nocturnal pain getting better by non-steroidal anti-inflammatory medication. Radiologically, a particular feature is the presence of a cortical lucent nidus surrounded by sclerotic bony reaction.

Some painless OOs of phalanx reported often have a similar circumstance of discovery: painless swelling of the toe accompanied by an enlargement of the nail (hippocratism) [1]. Closer the lesion is to the skin, more the inflammation of the surrounding soft tissues will be visible and will manifest itself by swelling.

Case Report

We report about a 15-and-a-half-year-old boy. Since two years after a football match he complained about pain at the end of the second toe of the right foot. The additional swelling started painless with periods of night pain and some kind of painful swelling after sports. The toe showed a widening of the nail and makrodaktylie (Figure 1).

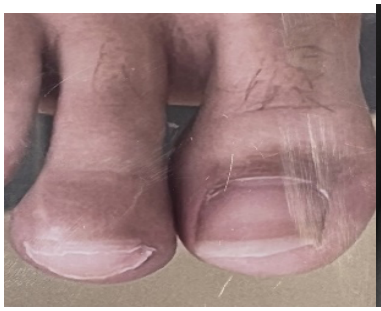

Figure 1

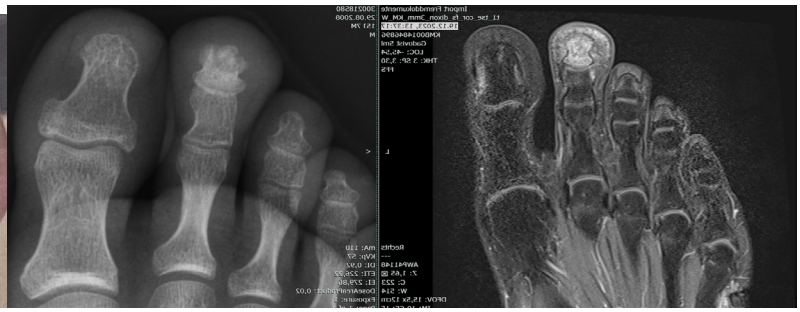

Figure 2

MRI (Magnetic Resonance Imaging) in fat-suppressed T2-weighted sequences revealed a hyperintense signal alteration of the distal phalanx, indicative of bone marrow edema, along with involvement of the adjacent soft tissues. In T1-weighted sequences, these structures appeared hypointense. During the contrast-enhanced phase, there was an increased contrast uptake in both the soft tissues and the bony distal phalanx, with a hypointense demarcation medially at the phalanx (Figure 2). Radiological findings suggested a high suspicion of osteomyelitis; however, no inflammatory laboratory markers were present.

Operation

Due to persistent symptoms and an enlarged distal phalanx, partial nail resection was performed, removing one-third of the nail along with adjacent soft tissues. This approach allowed the resection of the osseous defect while achieving a favorable cosmetic outcome.

Histology

Osteoblasts and osteocytes were observed at the peripheral margins, accompanied by osteoclastic giant cells. No atypical cellular components or necrosis were detected. Cartilage tissue was not present. The findings were most consistent with an osteoid osteoma.

Literature Review and Our Case

Reviewing literature, we found 12 Case reports with an Osteoid Osteoma of the toe in children up to 16 years. Together with our boy we had 10 boys and 3 girls. The average age was 12,7 years.

Nearly all (12) had night pain more or less, 10 had macrodaktilie. In 6 cases we had the great toe-, 4 had the second-, one had the 3- and in two children the 4th toe that was affected. In 11 cases the distal phalanx had the problem. The mayority (10) had a widening of the nail.

Literature	Year	age (years)	gender	toe	distal	nightpain	macro daktylie	differental diagnoses
Bordelon et al. [2]	1975	14	m	1 (first)	y	y	y	
Bellemans [3]	2021	11	m	4	y	y	y	
Haoudou et al. [4]	2021	13	m	3	y	y	y	
LaCroix et al. [5]	2001	7	m	4	y	y	n	osteomyelitis (OM) ?
Ozturk et al. [6]	2000	9	f	1	y	y	y	
Prietzel et al. [7]	2009	12	f	2	y	y	y	trauma, OM ?
Rapp and Kaiser [8]	2010	14	m	1	y	n	y	
Seo et al. [9]	2023	13	f	1	MTP	y	y	OM ?
Sproude et al. [10]	2004	14	m	2	y	y	y	OM ?
Torrent et al. [11]	2017	16	m	1	MTP	y	n	enchondroma ?
Wang et al. [12]	2019	12	m	2	y	y	y	tumor ?
Yamaga et al. [13]	2015	16	m	1	y	y	n	OM ?
Our Case	2024	15	m	2	y	y	y	enchondroma, OM ?
Total		12,7	10 m/ 3f	6x1,4x2,1x3,2x4	11 vs 2	12 vs 1	10 times	

Thiemann et al. [14] reviewed 34 studies reporting a total of 37 cases of children and adults between 1975 and 2020. The mean age of these patients was 24.3 years (range: 7-53 years), with a male-to-female ratio of 1.6:1. The most frequently affected site was the great toe (n=22, 61%), while the other toes were less commonly involved (second toe: n=7, 19%; third toe: n = 2, 6%; fourth toe: n = 3, 8%; fifth toe: n=2, 6%). In the majority of cases, the distal phalanx was affected (n=31, 86%).

The most common differential diagnoses included infection (n=17, usually suspected osteomyelitis or paronychia) or a benign/malignant tumour (n=14).

This was comparable to our review with the children. But we had 10 boy's vs 3 girls affected.

When the radiological appearance is not typical because central calcification was lacking and other entities could be possible such as such as nonossifying fibromas, enchondromas, eosinophilic granulomas, tuberculosis could be possible as Noordin et al. [15] described.

In the case of osteoid osteoma of the toe in children, surgical treatment is generally considered the therapy of choice although in long tubular bones, Radiofrequency Ablation (RFA) is regarded as the gold standard of treatment [16].

But RFA is not a viable option for toe lesions. The main reasons include the frequently uncertain dignity of the lesion, the very small lesion size, the risk of expected skin necrosis due to the heat from the needle tip, and the immediate proximity of the lesion to neurovascular structures in the toes. Nevertheless, when complete resection of the nidus is achieved and surgical treatment also demonstrates high success rates, ranging from 88% to 100% [16,17].

Finally, our patient was happy without pain and a normal looking toe.

References

1. McDermott MB, Kyriakos M, McEnery K (1996) Painless osteoid osteoma of the rib in an adult. A case report and a review of the literature. Cancer. 77: 1442-1449.
2. Bordelon RL, Cracco A, Book MK (1975) Osteoid-osteoma producing premature fusion of the epiphysis of the distal phalanx of the big toe. A case reports. J Bone Joint Surg Am 57: 120-122.
3. Bellemans M, de Saint-Aubin de Somerhausen N, Lê PQ (2021) Osteoid Osteoma: A Unique Presentation in a Child's Lesser Toe. Case Rep Orthop 2021: 8876584.
4. Haoudou R, Malghem J, Galant C, Docquier PL (2021) Painless osteoid osteoma of the distal phalanx of a toe. J Surg Case Rep 2021: rjaa614.
5. LaCroix ML, Thomas JR, Nicholas NW (2001) Subperiosteal osteoid osteoma of the distal phalanx of the fourth toe. Orthopedics. 24: 695-696.
6. Oztürk A, Yalçinkaya U, Ozkan Y, Yalçin N (2008) Subperiosteal osteoid osteoma in the hallux of a 9-year-old female J Foot Ankle Surg 47: 579-582.
7. Prietzel T, Hitzler P, Wojan M, Aigner T, von Salis-Soglio G (2009) [Painful enlargement of the 2nd toe due to an osteoid osteoma in the distal phalanx]. Z Orthop Unfall 147: 362-365.
8. Rapp M, Kaiser MN (2010) Osteoid Osteoma: A painless enlargement of the great toe. Surgery Journal. 5: 9-12.
9. Seo KB, Yoo SJ, Chu YY, Lim C (2023) Osteoid Osteoma of the Proximal Phalanx of the Great Toe in a 13-Year-Old Female Patient. J Am Acad Orthop Surg Glob Res Rev 7: e21.00223.
10. Sproule JA, Khan F, Fogarty EE (2004) Osteoid osteoma: painful enlargement of the second toe. Arch Orthop Trauma Surg 124: 354-356.
11. Torrent J, Bailez A, Asuncion J (2017) Recurrence of an intra-articular osteoid osteoma of the great toe: a case report and review of the literature. J Surg Case Rep.
12. Wang S, Han Z, Liu X (2019) Hyperhidrotic Macrodactylism Caused by Osteoid Osteoma: A Case Report and Review of the Literature. J Foot Ankle Surg 58: 586-590.
13. Yamaga K, Minamizaki T, Dokai T, Kikkawa T, Yoshida H (2015) Increasing great toe pain in a patient with soft tissue swelling and nail enlargement. Osteoid osteoma in the distal phalanx of the great toe. Skeletal Radiol 44: 1011-10122,1065-1067.
14. Thiemann R, Seide HW, Luitjens KD, Beil FT, Rolvien T, et al. (2021) [Difficulties in diagnosing an osteoid osteoma of the big toe: A case report with review of the literature]. Orthopade. 50: 689-699.
15. Noordin S, Allana S, Hilal K, Nadeem N, Lakdawala R, et al. (2018) Osteoid osteoma: Contemporary management. Orthop Rev (Pavia) 10: 7496.
16. Cantwell CP, Obyrne J, Eustace S (2004) Current trends in treatment of osteoid osteoma with an emphasis on radiofrequency ablation. Eur Radiol 14:607-617.
17. Dalili D, Dalili DE, Isaac A, Martel-Villagrán J, Fritz J (2023) Treatment of Osteoid Osteoma. Semin Intervent Radiol 40: 100-105.