Chronic Recurrent Multifocal Osteomyelitis

FAKULTNÍ NEMOCNICE® OLOMOUC

Faculty of Medicine and Dentistry

Palacký University Olomouc

Authors: Afifi Nada, Gardee Sara

Supervisor: MUDr. Kateřina Bouchalová Ph.D

Department of Paediatrics, Faculty of Medicine and Dentistry, Palacký University and University Hospital Olomouc

Introduction

Chronic recurrent multifocal osteomyelitis (CRMO) is an auto-inflammatory disease which causes abnormal inflammation to occur in and around the bones. It is a rare disease with an estimated prevalence less than 1 in 1,000,000. The etiology is unknown, and its clinical manifestations may include periodic bone pain (with the presence of multiple lesions that can occur at any skeletal site), joint swelling, and fever. CRMO may be accompanied by bowel inflammation and skin conditions; such as, acne, psoriasis, pustules and erythema. There is no definitive classification or diagnosis of CRMO - the diagnosis is per exclusionem after the elimination of malignancy, infection and other differential diagnoses. There is also no definitive guidelines for treatment. Treatment is tailored to the patient, starting with NSAID therapy with the addition of bisphosphonates and/or biologics if/when required. 25-hydroxyvitamin D (25-OH vitamin D) is a steroid hormone that controls calcium and phosphate metabolism and bone mineralization. In the standard population the percentage of hypovitaminosis D is between 8-30%. There has not been any investigations or publications into the levels of 25-OH vitamin D in CRMO patients.

CRMO

NO CLASSIFICATION CRITERIA
NO DIAGNOSTIC CRITERIA
NO GUIDELINES FOR TREATMENT

Aim of Study

Comparison between the level of 25-OH vitamin D in patients with CRMO at the time of diagnosis and the level at the last check-up.

Materials and methods

This study was performed in collaboration with the University of Seattle, USA. Sixteen patients from FNOL Paediatrics clinic were included in the study, in which four were male and twelve were female. Data was registered and analysed using REDCAP (Research Electronic Data Capture) .

Results

Patients with CRMO received vitamin D supplements. At the time of diagnosis twelve of the sixteen patients had low levels of vitamin D compared to the reference value 75nmol/l. Two out of the remaining four were borderline. Prevalence of a low level of vitamin D in patients with CRMO was found to be 75% (source: own). The levels of 25-OH vitamin D at the last check-up was statistically significantly higher than 75nmol/l, (p=0.004).

Fig. 1. Wilcoxon paired test showed a statistically significant increase in vitamin D values, p = 0,011 ***(source: own)***

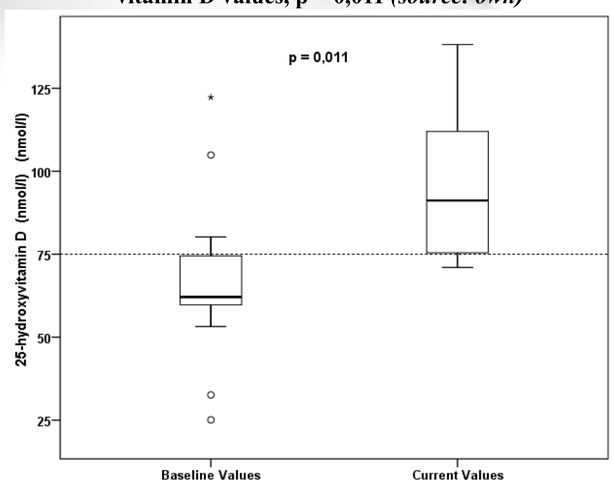

Fig. 2. The Interquartile Range of the results we collected ***(source: own)***

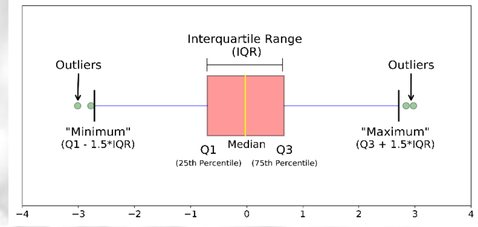

Table 1. Comparison of the level of 25-OH vitamin D with the reference value 75nmol/l ***(source: own)***

Comparison with reference value 75						
N = 16	Median	Minimum	Maximum	Mean	Standard Deviation	p
Baseline Value of 25-hydroxyvitamin D (nmol/l)	62,1	25,1	122,3	67,2	23,4	0,074
Current Value of 25-hydroxyvitamin D (nmol/l)	91,2	71,0	138,2	95,3	20,0	0,004

Conclusion

In our series of CRMO patients, we analysed for the first time an association between vitamin D and CRMO. We revealed that 75% of patients had low levels of vitamin D at time of diagnosis. Our data suggests a good effect of vitamin D supplementation in patients with CRMO.
Further, we contributed to international studies (Development and Validation of CRMO classification criteria in children using a data-based approach, CRMO - international CHOIR registry) to help with a faster determination of CRMO diagnosis and the possibility of designing future studies to find the most suitable treatment for patients.

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References: Bouchalová K, et al.; Chronic recurrent multifocal osteomyelitis (CRMO) in childhood – overview and own results. Revmatol., 27,2019, No.3, p. 115-127 Charoenngam N, Holick MF. Immunologic Effects of Vitamin D on Human Health and Disease. Nutrients. 2020 July15;12(7):2097. doi: 10.3390/nu12072097. PMID: 32679784; PMCID: PMC7400911.