

OCD-like lesions in children with Blount disease: What is the clinical relevance?



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OBJECTIVES

The purpose of this study was to evaluate the prevalence of OCD-like lesions around the knee in children with Blount disease. Additionally, we planned to describe the morphologic features of these OCD-like lesions based on plain radiographs and MRI and evaluate any clinical factors that may be associated with such radiologic findings

METHODS

After institutional review board approval, the medical records of all patients with a diagnosis of Blount disease (ICD-9 732.4) treated between January 2005 and March 2016 at a single institution were reviewed. All patients included in this study had an initial standing full-length anteroposterior mechanical axis radiograph and anteroposterior and lateral knee radiographs. MRI information was included when available. All patients noted to have an OCD-like lesion on an imaging study (x-ray and/or MRI) were identified and each such MRI was reviewed by three independent examiners, a musculoskeletal radiologist and two pediatric orthopedic surgeons. Each patient's OCD-like lesion was graded according to two validated staging systems, as described by DiPaola and Hefti. Student t test for comparison of continuous variables and chi-square for categorical variables. Differences were considered statistically significant at $p < 0.05$.

RESULTS

Table 1. Demographic Information on Patients with Blount

	Early Onset	Late Onset	Total
Patients (no. [%])	21 (33%)	42 (67%)	63
Limbs (no. [%])	36 (41)	51 (59%)	87
Gender (no. [%])			
Male	9 (43%)	32 (76%)	41 (65)
Female	12 (57%)	10 (24%)	22 (35)
Mean age at X-rays (year [range])	7.2 (2 – 18.1)	12.6 (7.8 – 18.3)	10.8 (2 – 18.3)
Side (no. [%])			
Right	1 (5%)	15 (36%)	16
Left	5 (24%)	18 (43%)	23
Bilateral	15 (71%)	9 (21%)	24

DISCUSSION

A total of 68 patients with Blount disease were identified. Five patients were excluded: two due to inadequate imaging, and three patients were adults at initial presentation. Of the 63 remaining patients (87 affected limbs) all had plain radiographs and 37 of these patients (53 limbs) also had an MRI. A total of 9 OCD-like lesions in 6 patients were identified on plain radiographs, with an overall prevalence of 10% (6/63) of patients and 10% (9/87) limbs. From the 37 patients (53 limbs) who had an MRI, 7/37 (19%) patients 10/53 (19% limbs) had the OCD-like lesion present on their MRI. All lesions were found in the posterior one third of the medial femoral condyle. The mean area of the lesion on plain imaging was 197.2 mm² (95%CI = 133.9 mm², 260.5 mm²) and 163.0 mm² (95%CI = 107.6, 218.5) on MRI ($p=0.36$). Based on the Hefti classification there were 3 stage I, 2 stage II and 5 stage III lesions. Using the Dipaola system there were 4 stage I, 4 stage II and 2 stage III lesions. Comparing patients with an OCD-like lesion versus those without, there was no statistically significant difference between the groups in terms of early-onset versus late-onset disease ($p=0.21$), gender ($p=0.23$), mean age at imaging ($p=0.06$) and laterality ($p=0.07$). Additionally, there was also no significant difference between the two groups in terms of mean MAD (63.3 mm vs 71.9 mm, $p=0.39$), mean mL DFA (91.3 degrees vs 89.7 degrees, $p=0.43$) and mean MPTA (71.7 degrees vs 71.8 degrees, $p=0.95$).



Figure 1. MRI - Coronal fast spin-echo fat-suppressed T2-weighted image. OCD-like lesion medial femoral condyle of the distal femur

CONCLUSIONS

OCD-like lesions in the medial femoral condyle can be seen in children with Blount disease. The overall prevalence of these lesions is around 10% based on plain radiographs and 19% based on MRI scans. Based on the numbers available, we were unable to demonstrate any associations between the presence of such OCD-like lesions and the patient's age, gender or magnitude of varus deformity. Further research is needed to fully ascertain the etiology and natural history of these lesions in children with Blount disease.