Fibrous Cortical Defects and Non-Ossifying Fibromas in Patients with Precocious Puberty

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Background

Fibrous cortical defects (FCDs) and non-ossifying fibromas (NOFs) are the most common benign lesions of the skeletal system, with an estimated incidence of up to 30% in children and adolescents. They are not neoplasms and belong to the group of developmental abnormalities. As they do not cause clinical symptoms, they are usually incidentally found in X-ray examinations.

Objective

Although their etiologies are unknown, FCDs and NOFs develop mostly in regions of intense bone growth. We hypothesized that patients with precocious puberty (PP) would have a higher prevalence of FCDs and NOFs than age-matched patients without PP.

Method

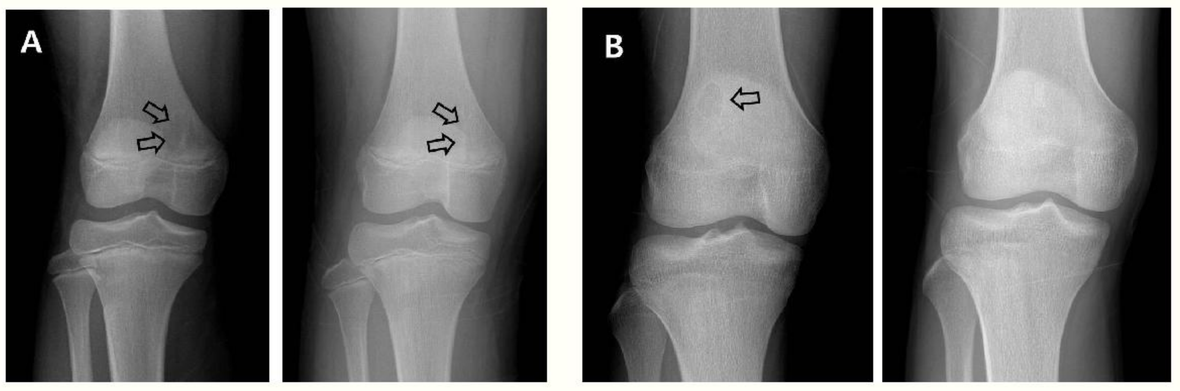
A retrospective radiological assessment of 607 patients with PP diagnosed between 2003 and 2014 was performed. The number of FCDs and NOFs and their location and morphology were determined on x-ray images of the area surrounding the knee joint. X-ray images of the corresponding area, taken to evaluate the condition of the growth plate, from 911 age-matched patients without PP served as the control.

Results

Among the 607 patients with PP, 56 had FCDs or NOFs, resulting in a **significantly higher prevalence in the PP patients than in the age-matched controls without PP (9.2% vs. 2.3%).** Most (71.4%) of the lesions were located in the distal femoral metaphysis; none of the patients had multifocal lesions. The mean age at discovery was 9.9 ± 2.4 years. The follow-up period was between 3 months and 10.5 years.

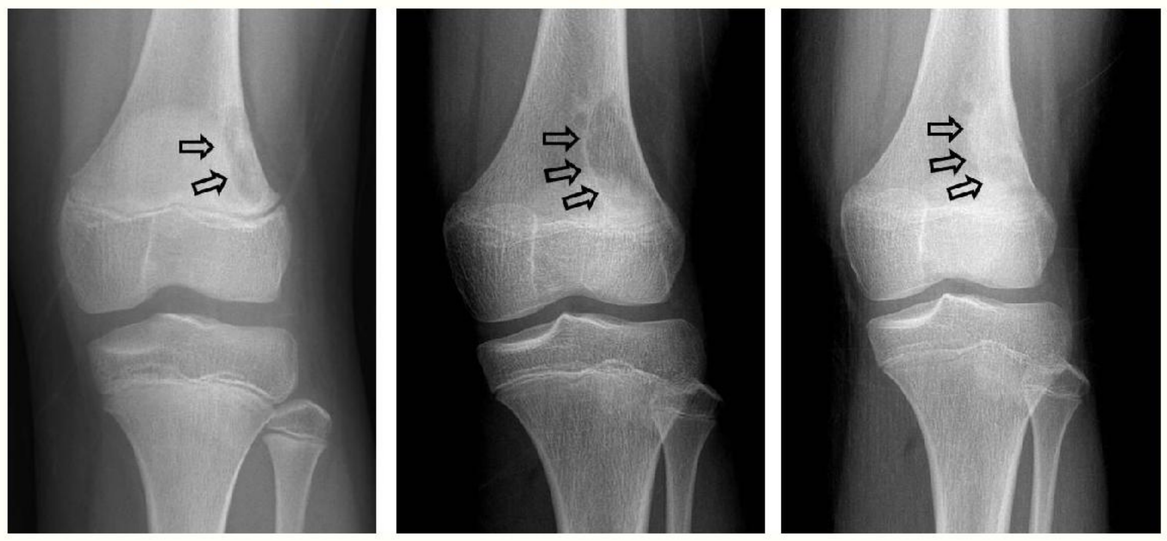
Based on the radiological findings, 32 of the 56 patients had FCDs, all of which resolved completely during the follow-up period.

Figure 1. Fibrous cortical defects (A) 9-year-old female. (B) 16-year-old male.



In NOFs, 19 patients resolved completely during the follow-up period. But the remaining 5 patients with NOFs, the lesion either did not change in size or became much larger to the end of follow-up period .

Figure 2. A 12-year-old female with NOF. Radiograph showed a lytic lesion in the distal part of left femur. The lesion resolved completely during the follow-up period.



Conclusions

The prevalence of FCDs and NOFs was lower in our study population than in the reported populations. FCDs and NOFs occurring in the condition of PP might be related to the intensive bone growth associated with this condition. Lesions that fail to regress spontaneously should be followed until they regress.

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