Disease Features And Clinical Outcome Of 16 Cases With Chronic Non-bacterial Osteomyelitis

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Disclosures:
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Introduction: Chronic non-bacterial osteomyelitis (CNBO) is an autoinflammatory noninfectious disorder that affects the skeletal system. An association with further autoimmune and autoinflammatory disorder such as SAPHO syndrome and deficiency of IL-1 receptor antagonist (DIRA). The disease pattern can be either acute or chronic, uni-focal or multi-focal and of single episode or recurrent. Only when the condition is chronic multifocal recurrent osteomyelitis to use the term chronic recurrent multifocal osteomyelitis (CRMO). The purpose of this study was to determine the clinical characteristics and outcome of children with CNBO.

Methods: This clinical and histopathological study comprised a review of 16 children (10 boys, 6 girls) who had been diagnosed as having CNBO between 1995 and 2013. Diagnosis of CNBO was made by clinical signs of osteomyelitis (pain, local swelling) in the absence of infections origin, laboratory data, radiological and magnetic resonance imaging (MRI) studies, technetium bone scan, positron emission tomography (PET), and microbial and histopathologic analysis. In terms of treatment, nonsteroidal anti-inflammatory drugs (NSAIDs) and bisphosphonate were used as a first-line therapy.

Results: The mean age at diagnosis was 11.1 years (range 7 months-15 years). The mean time between first symptoms and diagnosis was 1 year (range 1month-2 years 8 months). All cases showed multifocal lesions. In laboratory data, elevated erythrocyte sedimentation rate (ESR) and fibrinogen degradation products protein-E fraction (FDP-E) levels were observed in 8 cases. FDG-PET was performed on 12 cases and technetium bone scan was performed on 3 cases. FDG-PET and bone scan demonstrated increased multifocal uptake of bones and average number of bones with high accumulation was 4.7 per case. The most common bones affected were phalanges of the foot in FDG-PET. MRI showed marked high signal on a T2-STIR with an average number of 11.7 bone lesions per case. Phalanges of the foot were the most frequently affected regions in MRI. Inflammatory bone lesions were accompanied with local soft tissue involvement including periosteal, articular and muscular inflammation. Dual-energy X-ray absorptiometry (DEXA) showed high bone resorption. The mean percent of the young adult mean value was 65.7%. Bone biopsies were performed in 12 cases, and increased lymphocytes and histiocyte infiltration of the cortical bone with reactive bone marrow were observed. Culture tests and Polymerase chain reactions were negative, so it was shown non bacterial. In terms of treatment, all patient were treated with NSAIDs and bisphosphonate as a first-line therapy at least 3 months. For severe cases, TNF-α antibody should be considered. In our cases, the symptoms improved in 11 cases with a first-line therapy, but deteriorated in 5 cases. So anti-TNF-α antibody or anti-IL-6 receptor antibody treatment was started for these 5 cases.

Discussion: In our study as reported in the literature, initial symptoms were bone pain in all patients and fever in only 5 cases. Inflammatory markers were increased in 8 cases, but it had little to do with the pathology. Phalanges of the foot were the mostly affected, usually with lesions of the metaphysis as in previous reports. T2-weighted MRI sequences with fat-suppression techniques were demonstrated to be a very sensitive diagnostic tool at the initial and follow-up examinations. Aside from technetium bone scans and FDG-PET can also be helpful in the initial diagnostic settings. CNBO is classified as an autoinflammatory disorder. It is thought mutation in the TNF-α and/or IL-1RA genes, so TNF-α antibody is used as a therapy. TNF-α is implicated in the pathophysiology of various autoimmune and autoinflammatory disorders, including CNBO, where it has been documented to be in creased inflammatory lesions. And clinical outcome to anti-TNF-α antibody treatment has been documented CNBO. In our cases, NSAIDs was effective with a response in 69% of patient. And remaining patients, improvement has been observed after anti-TNF-α antibody or anti-IL-6 receptor antibody treatment. We believe that the proposed protocol on how to arrive the diagnosis improve outcome for these patients.

Significance: We report characteristics and clinical outcome of 16 cases with CNBO. The phalanges of the foot were the most frequently affected regions. The symptoms improved in 11 cases with NSAIDs and bisphosphonate, but deteriorated in 5 cases. Biological therapy was effective in these 5 cases.

Acknowledgments:

References:

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