Early predictors of increased bone resorption in juvenile idiopathic arthritis: OPG/RANKL ratio, as a key regulator of bone metabolism

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Abstract:

Abstract Aim(s) of the work: To explore early changes in the predictors of bone turnover in children with juvenile idiopathic arthritis (JIA). To identify osteoprotegerin/receptor activator of nuclear factor-jB ligand (OPG/RANKL) ratio in the serum of the same patients and its relation to the parameters of joint inflammation and joint destruction. Patients and methods: Seventy children with JIA and 30 healthy children individually matched for age, sex, race, and county of residence were included in this study. Serum levels of calcium(Ca), phosphorus (Ph), alkaline phosphatase (ALP), osteocalcin (OC), RANKL and (OPG) were measured. Urinary concentration of deoxypyridinoline (DPD) was also done. All involved joints were assessed by plain radiography. Results: Significant low serum concentrations of ALP and OPG was observed in JIA group, while there was a significant increase in serum level of RANKL and urine level of DPD compared to controls. OPG/RANKL ratio was significantly lower in JIA patients than in controls. OPG/RANKL ratio is correlated with most clinical characteristics, disease activity variables, JIA outcome measures and radiographic findings. DPD, RANKL and OPG/RANKL ratio, respectively,are considered as independent predictors of juxta-articular osteoporosis. OPG/RANKL ratio was the only predictor of bone erosion. Conclusion: The OPG/RANKL ratio could be an early predictor of increased bone resorption and a valuable biomarker for joint inflammation and bone injury in JIA patients.

Keywords:

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