

Use of biochemical markers (Lipoprotein phospholipase A2 and hyaluronic acid) for laboratory diagnosis of metabolic and degenerative diseases of the musculoskeletal system

Abstract

Musculoskeletal disorders currently belong to the most common diseases. The presented work describes the use of biochemical markers (Lipoprotein phospholipase A2 and hyaluronic acid) for laboratory diagnosis of metabolic and degenerative diseases of the musculoskeletal system. Concentrations of LP-PLA2 were significantly elevated in the patients with bone resorption compared to the control group of healthy individuals. Serum levels of Lp-PLA2 also negatively correlated with decreased levels of serum osteocalcin in patients. HA concentrations in synovial fluid did not differ from published reference values in synovial fluid. Patients who underwent arthroscopy had significantly elevated synovial HA concentration than patients who underwent total knee endoprosthesis. HA positively correlates with osmotic pressure determined by examination of osmolality in synovial fluid. Lipoprotein phospholipase A2 concentrations are elevated in patients with bone density impairment. LpPLA2 concentrations correlate with the severity of bone density impairment expressed by the T score. Hyaluronic acid concentrations in patients with knee osteoarthritis undergoing arthroscopic surgery are significantly increased compared to the group of patients undergoing total knee arthroplasty. Concentrations of hyaluronic acid in synovial fluid do not correlate with the severity of the disease assessed according to radiological criteria (X-ray classification according to Kellgren and Lawrence). Hyaluronic acid concentrations in synovial fluid correlate with increased osmotic pressure and may therefore be an additional indicator of osteoarthritis severity.

Keywords: lipoprotein phospholipase A2, hyaluronic acid, metabolic diseases, degenerative diseases, knee osteoarthritis, osteoporosis