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## BISPHOSPHONATES IN PREVENTING ASEPTIC LOOSENING OF MEGAPROSTHESIS

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**Background:** Aseptic loosening of megaprosthesis is the most common late complication of joint replacement and the reason of revision surgery. Instability arises in consequences of the absences of osseointegration at the contact between bone and implant surface with increased activity of osteoclasts. In this context the particular interest is the bisphosphonates drugs as inhibitors of bone resorption. Experimental studies have confirmed the impact of bisphosphonates on bone density around the implants, and the ability to initiate osseointegration in the area of direct contact of bone and implant surface.

**The aim:** To determine the impact of bisphosphonates on osseointegration of endoprosthesis legs at the clinical practice.

**Materials and methods:** 76 patients treated between 2006 and 2009 in Ukrainian National Cancer Institute underwent megaprosthetics with cement fixation. These patients were randomized into two groups depending on using bisphosphonates. The main group consisted of 36 patients and the control group of 40 patients, respectively. The following reconstructions were performed: distal femur - 27, proximal tibia - 22, proximal femur - 17, proximal humerus - 6, distal tibia - 4. The follow-up period ranged from 36 to 84 months (median follow-up period: 49.2 months). The mean age was 31.2 years. The analysis of the radiological signs of aseptic loosening of implant was conducted. Radiographic examination and evaluation of the following early radiographic signs: 1) the appearance of enlightenment site between stem and the inner surface of the cortex; 2) density decreasing of cortical bone; 3) dislocation of prosthetic legs. Bisphosphonates (pamidron acid 60 mg or zoledronic acid 4 mg) were administered once every two months after the operation for one year.

**Results:** In the control group the radiographic signs of aseptic loosening of prosthesis were observed in 5 (12.5 %) of 40 patients. One of them underwent endoprosthesis proximal femur replacement, other 4 patients with distal femur replacement. 4 patients demonstrated appearance of radiographic signs of aseptic loosening of prosthesis legs in the first year of follow-up, and 1 patient in the second year follow-up, respectively. In the experimental group the radiographic signs of aseptic loosening were observed in one case (2,8%) in the second year follow-up.

**Conclusion:** These results lead to a preliminary conclusion about the ability of bisphosphonates to decrease incidence of aseptic loosening of megaprosthesis with cement fixation. (This study is ongoing).

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