

Clinical and social aspects of periprotesis infections of the knee and hip joint

Abstract

The article presents information about the results of treatment of periprosthetic infection, so from 122 treated patients 67 were operated, 35 (28,7%) implanted prostheses were removed: 16 - of the hip joint and 19 - of the knee joint. Infection of the hip joint endoprosthesis was revealed in 88 (72,13%) patients, of the knee joint - in 34 (27,87%) According to the results of microbiological studies of the wound secretion, the growth of *Staphylococcus aureus* was obtained in more than 50% of cases. The frequency of associated somatic pathology and repeated hospitalizations is presented.

Keywords: periprosthetic infection, joint, microorganism

Volume 12 Issue 3 - 2024

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Received: November 5, 2024 | **Published:** December 17, 2024

Introduction

Hip and knee joint replacement is one of the most common surgeries in traumatology and orthopedics. However, despite the development of modern technologies in medicine, the risk of infection of endoprosthesis components remains high. According to different authors, the frequency of complications after primary prosthetics ranges from 0.3% to 6%.¹⁻⁵ One of the reasons for the development of periprosthetic infection (PPI) of both hip and knee joints is intraoperative infection, less frequently - hematogenous infection from the focus of chronic infection. The most frequent causative agents of periprosthetic infection are Gram-positive bacteria - *Staphylococcus aureus* and *Staphylococcus epidermidis*, which account for up to 60% of cases.^{2,7} Risk factors for the development of PPI are significant, specifically: the presence of chronic diseases in the patient (diabetes mellitus, rheumatoid arthritis, pathology of the cardiovascular system), overweight, and cancer, taking glucocorticosteroids, the presence of bad habits - smoking and drinking. In some cases the course of periprosthetic infection is complicated by the development of systemic inflammatory reaction of the organism, sepsis, renal amyloidosis and possible death of the patient. At the same time, the costs of periprosthetic infection are significant and represent a significant economic cost to health care.²⁻⁹

The aim of the work

To analyze the methods of treatment of periprosthetic infection after primary hip and knee joint prosthetics, to focus attention to periprosthetic infection and its social significance for public health care.

Materials and methods

A retrospective analysis of medical records of inpatients treated in the purulent traumatology department of the Health Care Institution "Clinical Emergency Hospital of Grodno" in the period from 2020 to 2023 was carried out. The sensitivity of isolated microorganism strains was determined by disk-diffusion method or with the help of semi-automatic microbiological analyzer ATV - expression and "Vitek - L compact 30". In our studies we used nutrient cultures and disks with antibacterial drugs from HIVEDIA (India) and test systems from BioMerieux (France).

Results

In the period from 2020 to 2023, 122 patients with periprosthetic infection developed after total hip and knee arthroplasty were treated on the basis of the purulent traumatology department of the Municipal Clinical Emergency Hospital of Grodno. Thirty-two patients with periprosthetic infection were treated in 2020, 22 patients in 2021, 24 patients in 2022, and 44 patients in 2023, respectively. Among them, there were 72 (59%) females and 50 (41%) males. The mean age of men was 61±11 years and women 67±11 years. Infection of hip joint endoprosthesis was detected in 88 (72,13%) patients, knee joint - in 34 (27,87%).

During the follow-up period, 67 (54.92%) of 122 patients were operated on: in 2020-20 patients, of which 9 patients had their endoprosthesis removed (5 hip and 4 knee prostheses), in 2021-14 patients were operated on, 8 patients had their endoprosthesis removed (3 hip and 5 knee prostheses), in 2022 -11 patients, 7 endoprosthesis were removed (3 -hip and 4 -knee joints) and in 2023 22 patients were operated on, 11 of them had implanted endoprosthesis removed (5 -hip and 6 - knee joints). Operations on abscesses opening and joint drainage amounted to 47.76% of the total number of surgical interventions. Thus, 67 out of 122 treated patients were operated on, 35 (28,7%) implanted prostheses were removed: 16 - of the hip joint and 19 - of the knee joint.

According to the results of microbiologic studies of wound secretion, in more than 50% of cases the growth of *Staphylococcus aureus* was obtained, in other cases Gram-negative microflora prevailed.

When analyzing the medical records of inpatients, the data were obtained that 88 (72.1%) patients had concomitant somatic pathology. In 54 cases there were diseases of cardiovascular system (ischemic heart disease, arterial hypertension, rhythm disorders), in 17 cases -diabetes mellitus, in 7 cases - obesity of 2-3 degree and in 7 cases-chronic renal failure. There were 2 cases of confirmed systemic osteoporosis and 1 case of rheumatoid arthritis. It is worth noting that in the period from 2020 to 2023, out of 122 treated patients, 16 (13.1%) hospitalized from 2 to 4 times a year due to exacerbation of periprosthetic infection.

Conclusion

- 1) The treatment of patients with periprosthetic infection was based on surgical intervention in 54.92% of cases, while radical surgical intervention with removal of all endoprosthesis components was performed in 28.7% of patients with periprosthetic infection.
- 2) Patients with infectious complications after endoprosthesis in 72.1% had somatic pathology that required appropriate therapy. In our opinion, strict compliance with the indications for endoprosthetic replacement of large joints of the extremities with correction of somatic pathology in the preoperative period in combination with effective antibiotic therapy will reduce the number of infectious complications in the postoperative period.

Acknowledgments

None

Conflicts of interest

The authors declare that there are no conflicts of interest.

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