766

POLYMICROBIAL INFECTIONS AND HIGH RESISTANCE AMONG GRAM-NEGATIVE BACTERIA ARE COMMON IN ORTHOPEDIC IMPLANT-ASSOCIATED INFECTIONS: A BRAZILIAN MULTICENTER STUDY

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Introduction: Orthopedic implants restore mobility and improve quality of life in patients with orthopedic conditions. Despite advances, orthopedic implant-associated infections (OIAI) remain a clinical challenge. This study describes the mono- and polymicrobial microbiological profile and susceptibility profile of OIAI.

Methods: Retrospective cohort study with 246 OIAI episodes in 210 patients, from November/2021 to February/2024, including fracture-related infection (FRI), periprosthetic infections (PPI), and chronic osteomyelitis (COM). Microbiological analysis was performed on deep tissues and orthopedic implants removed intraoperatively. Susceptibility was assessed by disk diffusion and broth microdilution. Episodes were classified as monomicrobial infection (MMI), polymicrobial infection (PMI), or culture-negative infection (CNI). Qualitative variables were analyzed using chi-square and Fisher's exact tests, and quantitative variables using Mann–Whitney or Student's t tests.

Results: A total of 164, 70, and 14 episodes of FRI, PPI, and COM, respectively, were included. Frequencies of MMI, PMI, and CNI were 49.2% (121/246), 36.6% (90/246), and 14.3% (35/246). Most FRIs occurred as MMI (71.1%), while in PPI the frequencies of MMI and PMI were similar (23.1% vs 31.1%; $p = 0.27$; OR = 1.43; 95% CI: 0.74–2.79). A total of 446 microorganisms were isolated, with predominance of Gram-positive cocci (GPC) (66.6%, 297/446). PMI had a higher proportion of Gram-negative bacilli (GNB) compared with MMI (37.7% vs 25.8%; $p = 0.033$). The main agents were coagulase-negative *Staphylococcus* (CoNS) (30.5%) and *S. aureus* (27.1%). Among GNB, Enterobacteriaceae accounted for 23.1%. *S. aureus* was more frequent in MMI ($p < 0.001$), while *Acinetobacter/Streptococcus* spp. were more common in PMI ($p < 0.05$). Linezolid and sulfamethoxazole + trimethoprim (SMX+TMP) showed the lowest resistance rates for *S. aureus* (2.0% and 6.0%), while vancomycin was more effective against CoNS (92.0%, $p = 0.01$). Enterobacteriaceae showed high resistance to ertapenem (70.0%, $p = 0.06$).

Conclusion: Polymicrobial infections are common in OIAI, accounting for nearly half of cases, with high prevalence of GNB and high overall resistance. *S. aureus* and CoNS predominated and show preserved susceptibility to SMX+TMP, making it a drug of choice for treating OIAI.

Keywords: Musculoskeletal Infections, Polymicrobial Infections, Gram-negative bacilli, Resistance.

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767

CLIMATIC INFLUENCE ON THE INCIDENCE OF ACCIDENTS WITH VENOMOUS ANIMALS IN RIO GRANDE DO SUL: AN ANALYSIS FROM 2020 TO 2024

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Introduction/Objective: Accidents with venomous animals occur through contact with species that possess venom glands, with high morbidity and mortality potential in humans, especially without rapid care. The incidence of this condition is strongly related to the season of the year. This study analyzed the epidemiological scenario of accidents in Rio Grande do Sul (RS) between 2020 and 2024, considering the influence of the subtropical climate, with the objective of understanding the relationship between temperature and the number of cases.

Methodology: Ecological study with data on cases and months of the year for accidents in RS between 2020 and 2024, obtained from SINAN via DATASUS. Incidence per 100,000 inhabitants was calculated using IBGE state population data by month. For temporal analysis, a graph was created relating month, season of the year, and average temperature. Temperatures were obtained from meteorological stations listed in SIMAGRO and INMET and converted to a simple monthly mean for each analyzed year, relating to climatic seasons. The association between climatic factors and cases was verified using the chi-square test ($p < 0.001$) and the Walter–Elwood seasonality test with a critical value in the evaluated years ($p < 0.001$).

Results: The months and seasons with the highest incidence rates were those with the highest average temperature, with emphasis on summer. Summer incidence (8.8) compared with autumn (8.09) decreased by 8%, and compared with spring, by 34% (5.84), and finally in winter by about 70% (2.64). The average temperatures of these seasons, compared with summer, show reductions of 6°C, 3.7°C, and 9°C, respectively.