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Hematogenous pyogenic vertebral osteomyelitis: clinical and microbiological characteristics

Aleksandr Yu. Bazarov, Tyumen Regional Clinical Hospital No. 2, Tyumen, Russia
Konstantin S. Sergeev, Tyumen State Medical University, Tyumen, Russia
Roman V. Paskov, Tyumen Regional Clinical Hospital No. 2, Tyumen, Russia

Abstract

Statement of the Problem: Hematogenous pyogenic vertebral osteomyelitis (PVO) is a rare and hardly diagnosed disease. The main pathogen of PVO is *S. aureus* isolated from 20.0 to 84.0%. It is impossible to isolate a pathogen of PVO in 34.3–35.4%. The general effectiveness of biopsy (open or closed) and blood test for sterility reaches 66.0%, and an open biopsy 93.0% of cases. **Objective.** To analyze clinical picture and composition of pathogens of PVO. **Material and Methods.** A retrospective monocenter analysis of medical records of patients with PVO at the Tyumen Regional Hospital in 2006–2017 was carried out. The nature of the isolated microflora was studied based on 209 patients: 68 were conservatively treated, and 141 were operated on. Ninety three bacterial strains were isolated from the surgical material in 77 patients, 20 – from aspiration biopsy in 32 patients, 21 – from blood in 20 patients. **Results.** The causative agent of PVO was identified in 117 (56.0%) patients including gram-positive flora in 56.3%. The main pathogens were *Staphylococcus spp.* (53.8%). *S. aureus* (MSSA) was isolated in 35.5%, MRSA in 3.3%. In 26 (12.4%) patients, two or more pathogens were detected. **Conclusion.** The most common cause of PVO is gram-positive flora with a predominance of *S. aureus* (38.8%). Anaerobes were identified in 30.6%. In 26 (12.4%) cases, more than one pathogen was isolated. There were no significant differences in the form of the disease with gram-positive and gram-negative flora, and polymicrobial lesions (p=0.498). *S. aureus* is more common for the cervical spine lesions (p=0.003), there is a tendency to an increase in peptostreptococci for the lumbar spine (p=0.09). *S. aureus* is significantly more often isolated in acute form PVO than in subacute (p=0.009) and chronic (p=0.012) forms, and peptostreptococci – in subacute (p=0.001) and chronic (p=0.003) forms of the disease.

Recent Publications

1. **Herren C, Jung N, Pishnamaz M, Breuninger M, Siewe J, Sobottke R.** Spondylodiscitis: diagnosis and treatment options. Dtsch Arztebl Int. 2017;114:875–882. DOI: 10.3238/arztebl.2017.0875.
2. **Cheung WY, Luk KD.** Pyogenic spondylitis. Int Orthop. 2012;36:397–404. DOI: 10.1007/s00264-011-1384-6.
3. **Yoon SH, Chung SK, Kim KJ, Kim HJ, Jin YJ, Kim HB.** Pyogenic vertebral osteomyelitis: identification of microorganism and laboratory markers used to predict clinical outcome. Eur Spine J. 2010;19:575–582. DOI: 10.1007/s00586-009-1216-1.
4. **Kwon JW, Hyun SJ, Han SH, Kim KJ, Jahng TA.** Pyogenic vertebral osteomyelitis: clinical features, diagnosis, and treatment. Korean J Spine. 2017;14:27–34. DOI: 10.14245/kjs.2017.14.2.27.
5. **Vishnevsky AA.** The nonspeific osteomyelitis of the spine as a problem of nosocomial infection. Voprosy travmatologii i ortopedii. 2013;(1):14-19. In Russian.



Photograph

Biography

The main scope of my research and practice interest lies within the sphere of spine traumas and pathologies. Since 2005, I have been treating patients with pyogenic vertebral osteomyelitis from all over the Tyumen region (Russia). More than 90% of such patients go through our hospital. By today, the number of treated patients with vertebral osteomyelitis has reached 276 and I have been preparing the results of my work for publishing.

Email: tyumen_trauma@mail.ru