Bone and joint infection, from prevention to complications

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Editor's Pick:

While preparing the next issue we look for evidence and for trends. We would like so much to have great news to share with our readers and provide reliable science. This is why sometimes we create the “Editor’s Pick” that stands for a specific direction or orientation that we observe during the last months and that is of interest for our colleagues, readers. As the turnover of science publications is becoming frenetic we could eventually find often specific trends and novelties to communicate. Some of that information is contradictory and we have to be really careful with choices in outlining evidence and sustainable care. This month’s pick is “Infection” a vast subject that brings papers and research in almost every issue. Infection and Microbiology are science branches and specialties with dedicated Journals and specific units in patient care. However, there are very few specific services of “Bone and Joint Infection” created in big institutions in order to cope with high volume care. Our infectiologists are the same experts that care for necrotizing fasciitis, burns, intensive care units subjects or meningitis. Obviously the Orthopedic Surgeon is facing the infected patient with a painful and inflammatory joint, at the same title as the Neurologist who cares for meningitis or the Pneumologist who manages severe lung or pleura infection. We face facts but our field of expertise is somewhere else, at the border. For us, infection is a complication. Complications with infections are more frequent than we imagine as many loosen implants or unexplained disturbances have somewhere micro-organisms that are compromising

function and finally are responsible for failures as it results from a thoughtful systematic review published by the University of Washington in Seattle [1].

A great research published by the French office of “Medcins sans Frontières” jointly with a Hospital in Amman (Jordan) showed that hidden infections in a reconstructive surgery program are frequently underestimated. This retrospective study was undertaken of 1891 civilian war-wounded patients from Iraq, Syria, Yemen and Gaza treated in Amman from August 2006 to January 2016. One thousand three hundred and fifty-three people underwent surgical interventions for previous bone injury and had systematic bone cultures. Many patients (46%) without any clinical, biological or radiological signs of infection demonstrated infection based on bone cultures. The authors conclude that bone culture should become a prerequisite for any reconstruction in such contexts [2].

New methods for diagnosing periprosthetic infection include multiplex-PCR and biomarkers such as alpha-defensin. A study published in this issue [3] compared these new methods with clinical assessment, conventional microbiological methods and histopathology. The authors from the University of Mannheim (Germany) compared results of conventional microbiology and histopathology of puncture fluid and tissue specimens with the results of the alphadefensin test and multiplex-PCR from the synovial membrane specimen harvested from hip and knee surgeries in thirty joints from twenty-eight patients. The authors conclude after a solid statistical analysis that neither alpha-defensin test nor multiplex-PCR could detect periprosthetic infection immediately and reliably. Multiplex-PCR was suitable for detecting the non-infected but not the truly infected. Alpha-defensin test was helpful but showed no satisfactory results. Conventional microbiological methods remain the most reliable for periprosthetic infection diagnosis [3].

A study wrote by Daniel Pérez-Prieto and colleagues from Spain focuses on chronic and low-grade infections that are so

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difficult to diagnose [4]. This article challenges the diagnostic criteria of the American Academy of Orthopedic Surgeons and the guidelines of the Musculo-Skeletal Infection Society (MSIS) by demonstrating that on a sample of seventy-three cases almost one quarter would never have been identified. The authors outline that blood inflammatory markers such as the C-Reactive Protein (CRP) level and the Erythrocyte Sedimentation Rate (ESR) may not be accurate as diagnostic tools in Prosthetic Joint Infections (PJI), particularly to identify low-grade and chronic PJI.

Another paper published recently by a French Team focuses on a neglected pathogen of infections involving fracture-fixation devices that is *Staphylococcus lugdunensis*. This germ is probably involved in more cases of implant-related infections than believed before and the samples of cases from several centers from Southern France [5].

Overall science moves forward. Concepts are changing. Evidence based medicine provides better knowledge that can be immediately used in practice. Therefore the Editor's pick this month outlines papers that challenge our minds and provide valuable information and references.

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