Editorial
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FIGHT AGAINST PERIPROSTHETIC JOINT INFECTION

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INTRODUCTION

According to an intriguing article published in the Journal of Infection and Public Health, Periprosthetic Joint Infection (PJI) raises grave social, economic, and clinical concerns in public health that require a complete and accurate approach to improve focus on proven disease prevention and treatment strategies. Defined by an infection of the Prosthetic Joint Infection (PJI) is a post-arthroplasty complication (1). The world's occurrence ranged from 1- 2% of hip and knee arthroplasty, which means hundreds of thousands of cases per year, maybe even more.

PJI causes significant morbidity and mortality for patients. The treatment is sometimes very frustrating, since it requires a long course of treatment, needs several surgeries, while the patient experiences limited knee function, and must experience sub-optimal life quality during the treatment and afterwards. Furthermore, the mortality rate due to PJI can be as high as 14% in a follow-up of about four years (2).

In addition, PJI has a significant impact on the economic aspect. Treating PJI can be up to 24 times more expensive than primary Total Knee Arthroplasty (TKA) surgery. By 2020 in the United States, it is estimated that the cost of PJI treatment will have exceeded US$ 1 billion (3).

Accordingly, it is interesting to cite a statement published in a reputed journal stating that PJI raises grave social, economic, and clinical concerns in public health that require a complete and accurate approach to improve focus on proven disease prevention and treatment strategies (4). Yes, indeed, PJI has become a world health problem.

Staphylococcus aureus is responsible for more than half of all PJIs. Other bacteria, such as the Staphylococcus epidermidis group, Enterococcus sp., and Gram-negative bacilli, also contribute to smaller incidences. These bacteria produce PJI

through generating a protective biofilm as an adaptive response to a wide range of environmental stresses (1).

Eradicating those bacteria is difficult due to the biofilm formation on the implant surface. Mature biofilm is mostly (85%) composed of extracellular matrix with only 15% bacteria cells. The extracellular matrix protects bacteria from antibiotics, medication, and the host's immune system (1). PJI treatment is much more effective before the biofilm matures, during which, it is called the reversible phase. As the biofilm matures, it enters the irreversible or chronic phase.

Essential methods to prevent and minimize PJI are currently the subject of extensive research. PJI preventive strategies and guidelines have been issued and widely accepted. The American Academy of Orthopaedic Surgeons (AAOS) published The Diagnostics and Preventative of Periprosthetic Joint Infections in 2020 as an endeavor to fight against PJI (5).

Another exciting and promising endeavor to avert PJI is the ongoing scientific work on implant surface modification with either active or passive coating, such as antibacterial, silver, hydrogen, chlorine, iodine, or chromium coating. Antibiotic coating is an efficient approach that could substantially reduce the incidence of PJI. Antibiotic resistance, which results in the recurrence of infection, has been observed as a negative side effect. On the other hand, using some non-antibiotic coatings seems promising to spot the failures and observe the successes (1).

However, when PJI has occurred, only a few strategies have been presented, such as successfully controlling the PJI and decreasing complications, involving Debridement, Antibiotics, Implant Retention (DAIR), or the use of one-or-two-stage surgical revision (6,7). Despite these preventative and treatment approaches being implemented successfully, the incidence of PJI continues to rise (1).

PJI is still a very challenging complication to tackle. Therefore, early diagnosis and prevention are fundamental to preventing chronic PJI. Today's research focusing on those aspects raises optimism about fighting PJI in the future.

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