New AAOS Guidelines For Hip And Knee Joint Infections

The American Academy of Orthopaedic Surgeons (AAOS) recently approved and released an evidence-based clinical practice guideline on the diagnosis of periprosthetic joint infections of the hip and knee. A periprosthetic joint infection occurs when bacteria or other foreign organisms enter the wound during or at any point following joint replacement surgery, sometimes even years after surgery. An infection can cause the joint to be painful or cause the implant to loosen, often times resulting in the need for revision surgery.

Research indicates that periprosthetic infection, also known as septic failure, is the leading cause of total knee replacement revision (25 percent) and the second-leading cause of total hip replacement revision (15 percent) in the U.S.

"Every orthopaedic surgeon inevitably sees patients who come back with a problem such as stiffness or pain in the joint," said Craig J. Della Valle, MD, associate professor of orthopaedic surgery, Rush University Medical Center and chair of the physician work group that developed the guideline. "It is very important to determine whether the problem was caused by an infection or not, primarily since treatments of septic versus aseptic joint failure are so vastly different."

However, Dr. Della Valle noted that a diagnosis of septic joint failure can be very difficult to make and, since some diagnostic procedures are somewhat costly and invasive, physicians should ensure the most appropriate course of action is followed.

"The Academy created this clinical practice guideline to improve the diagnostic process for patients who may have a periprosthetic joint infection," he said. "This serves as a point of reference and an educational tool for both primary care physicians and orthopaedic surgeons, streamlining the process while minimizing costs, patient discomfort and risk. We were able to make several strong recommendations due to the prevalence of good, evidence-based data."

The final physician-oriented guidelines for diagnosing periprosthetic joint infection contain 15 recommendations overall, including:

- Diagnosis should begin with a simple blood test for erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP).
- In cases where both ESR and CRP are normal, chance of infection is low.
- Physicians should avoid starting antibiotic treatment until after culture results are obtained.

"The recommendation to withhold antibiotics prior to obtaining appropriate cultures is particularly important," explains Dr. Della Valle. While there may be rare situations when a patient has systemic symptoms (such as fever and low blood pressure) that require immediate antibiotic administration, in the vast majority of cases, the indiscriminate use of antibiotics is discouraged. "The first rule of treatment in medicine is always to make the diagnosis first. Unfortunately, we often times see patients who are given antibiotics prior to having appropriate cultures drawn from within the joint that can lead to a delay in diagnosis and a subsequent delay in appropriate treatment. Further, identification of the specific bacteria which is causing the infection is important in administering the most effective antibiotic to cure the infection, and if antibiotics are given before we can get a good culture, we may not have the advantage of knowing exactly which antibiotics to give as the cultures can turn negative even after a single dose of antibiotics."

Additional recommendations, particularly those involving the diagnostic procedure known as joint aspiration (removal of fluid from the joint for laboratory testing, including an assessment of the number of white blood cells, the type of white blood cells and cultures of the fluid), vary depending on the location of the arthroplasty (hip or knee), the probability of infection based on established risk factors (including patient history) and whether or not the patient is scheduled for re-operation on the affected joint.

"Since the hip joint is deeper in the body than the knee, aspiration is more difficult and more uncomfortable for the patient," said Dr. Della Valle. "Because of this difference, we suggest a more selective approach for using this procedure on patients with a total hip arthroplasty." The following recommendations were among those made by the work group for patients being assessed for periprosthetic joint infections who are scheduled for revision surgeries:

- Multiple cultures should be obtained at the time of reoperation.
- The use of frozen sections of tissues adjacent to the implant when infection has not already been established or excluded.
- Prophylactic antibiotics should be given prior to revision (or repeat) surgery.

According to the work group, one key question that needs to be addressed through further research is whether one single test can be identified that will consistently allow clinicians to rule in or rule out the presence of a periprosthetic infection in all patients. For example, continued studies evaluating the efficacy and cost-effectiveness of using advanced imagery and molecular testing to diagnose periprosthetic joint infection are warranted.

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