Intra-articular corticosteroid injections in the hip and knee: perhaps not as safe as we thought?

Osteoarthritis (OA) of the hip and knee is among the most common joint disorders. Intra-articular corticosteroid (IACS) injections are frequently performed to treat OA and other joint-related pain syndromes. However this treatment may be more dangerous than previously thought, according to a recently published report [1]. In a multi-national study, researchers suggested that injection-associated risks such as rapid progressive osteoarthritis, which eventually may lead to joint collapse, should be integrated into consent forms so that patients are aware of the potential risks associated with these treatments.

Osteoarthritis of the hip and knee are common and debilitating joint disorders. Physicians often inject anti-inflammatory corticosteroids into the joint to treat the pain and swelling associated with osteoarthritis. The procedure is widely viewed as safe, and patient consent forms mainly mention the risks of hemorrhage and infection among more rare side effects associated with most needle-based procedures.

However, the recent study from a group of researchers from the University of Erlangen, Germany and the Institute of Sports Imaging, French National Institute of Sports and led by Dr. A Guermazi, Professor of radiology and medicine at Boston University School of Medicine, found that corticosteroid injections may be associated with complications that potentially accelerate the destruction of the joint and may hasten the need for total hip and knee replacements.

“We’ve been telling patients that even if these injections don’t relieve your pain, they’re not going to hurt you,” Dr. Guermazi said. “But now we suspect that this is not necessarily the case.”

Figure 1. Rapid progressive osteoarthritis joint space loss (type 1) in a 61-year-old woman who presented with hip pain. (a) Anteroposterior left hip radiograph shows joint space narrowing (arrowheads) and femoral and acetabular osteophytic changes (arrows) consistent with Kellgren-Lawrence grade III hip osteoarthritis. She was referred for US-guided steroid injection. (b) Four months after intraarticular corticosteroid injection, she presented with worsening left hip pain. Anteroposterior hip radiograph shows severe interval joint space narrowing (arrowheads) and enlarging subchondral cysts (arrows). (c) Coronal intermediate-weighted fat-suppressed MRI obtained at the same time as b shows complete loss of the acetabular and femoral cartilage (arrowheads), with subchondral cystic changes (black arrows). In addition, there is joint effusion and synovitis (**) and periarticular soft-tissue edema (white arrows). This patient underwent total joint replacement 3 months later. Image reproduced from [1], courtesy of Radiological Society of North America.
In a review of existing literature on complications after treatment with corticosteroid injections, Dr. Guermazi and colleagues identified four main adverse findings: accelerated osteoarthritis progression with loss of the joint space, subchondral insufficiency fractures (stress fractures that occur beneath the cartilage), complications from osteonecrosis (death of bone tissue), and rapid joint destruction including bone loss.

The researchers recommend careful scrutiny of patients with mild or no osteoarthritis on X-rays who are referred for injections to treat joint pain, especially when the pain is disproportionate to the imaging findings. Prior research has shown that these patients are at risk of developing rapid progressive joint space loss or destructive osteoarthritis after injections. Physicians may also want to reconsider a planned injection when the patient has acute change in pain not explained by X-rays as some underlying condition affecting joint health may be ongoing, the researchers said. Most importantly, younger patients and patients earlier in the course of the disease need to be told of the potential consequences of a corticosteroid injection before they receive it.

"Physicians do not commonly tell patients about the possibility of joint collapse or subchondral insufficiency fractures that may lead to earlier total hip or knee replacement," Dr. Guermazi said. "This information should be part of the consent when you inject patients with intra-articular corticosteroids."

With corticosteroid injections so widely used, the potential implications of the study are enormous, according to Dr. Guermazi.

"Intra-articular joint injection of steroids is a very common treatment for osteoarthritis-related pain, but potential aggravation of pre-existing conditions or actual side effects in a subset of patients need to be explored further to better understand the risks associated with it," Dr. Guermazi said. "What we wanted to do with our paper is to tell physicians and patients to be careful, because these injections are likely not as safe as we thought."

CONCLUSION
Intra-articular corticosteroid (IACS) injections are frequently performed with the hope of relieving joint pain. However, large retrospective analyses and prospective studies evaluating accelerated osteoarthritis (OA) or joint destruction after IACS injections are lacking. The authors believe that certain patient characteristics, including but not limited to acute change in pain not explained by using radiography and no or only mild OA at radiography, should lead to careful reconsideration of a planned IACS injection.

In these circumstances, MRI may be helpful to further evaluate the actual cause of pain prior to a planned injection.

Given that IACS injections are increasingly performed to treat pain in patients with hip or knee OA, the authors suggest that the radiologic community should actively engage in high-quality research on this topic to better understand potential at-risk conditions prior to intervention and to better understand potential adverse joint events after these procedures to avoid possible complications.

REFERENCES

Figure 2. Osteonecrosis in a 29-year-old man who presented with right hip pain. (a) Anteroposterior radiograph of the pelvis shows osteonecrosis in the right femoral head, with preserved femoral head contours (arrows). He subsequently went to the sports medicine clinic and received a right hip joint corticosteroid injection for pain. (b) Three months later, he was referred to our institution for repeat intra-articular corticosteroid injection. The patient presented with a severe limp when walking and described the pain as worse than his original pain. Preprocedural sagittal US image shows a defect in the anterior right femoral head cortex (black arrow) and moderate joint effusion with a severely thickened anterior joint capsule (white arrows). The intra-articular corticosteroid injection was cancelled given the US findings, and the referring orthopedic physician was informed of the findings. (c) Repeat anteroposterior right hip radiograph obtained 1 week after US when the patient was seen in the orthopedic clinic for a follow-up visit enabled confirmation that the superior femoral head articular surface had collapsed (arrows), and the patient underwent right hip joint replacement.

Image reproduced from [1], courtesy of Radiological Society of North America.