NEW IMAGING TECHNOLOGIES IN OA: WHERE ARE THE ADDED VALUES?

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The exact role for new imaging technologies in osteoarthritis (OA) depends in part on the setting (clinical trials or routine care) and also on the tissues we decide are important to be studied.

In clinical practice, modern imaging such as ultrasound provides a useful adjunct for patients where there is diagnostic uncertainty - the EULAR recommendations for the use of imaging in the clinical management of peripheral joint OA provide an evidence-based background to this use of imaging. The impact of imaging is minimal in guiding choice of therapy as our therapeutic options (outside of surgery) are very limited.

In clinical studies and trials, there are a number of imaging modalities that provide insights into a range of OA tissues, for both quantification and characterisation. Most techniques have been based on MRI because of its soft-tissue advantages. In OA trials, MRI-based quantification methods provide improved responsiveness advantages over semi-quantitative scores, which have served an important role in highlighting the multi-tissue nature of OA and frequency of pathology. Using appropriate sequences, manual segmentation of cartilage or contrast-enhancing synovitis can be quantified, and dynamic-contrast enhanced images can also be used to provide volumetric and pharmacokinetic assessments of the synovium. Using such information, we now know how to power studies for cartilage thickness endpoints. A number of MRI techniques have been developed to study cartilage composition, such as T2-mapping and T1rho. They have provided insights into structural deterioration, but are limited by technical aspects which make them difficult to apply in multicentre clinical trials.

Artificial intelligence and supervised machine learning have promised much in medicine, but in MSK imaging there has been some useful applications. Early technology applied 2D statistical shape models (SSMs) to X-rays, usually of the hip, providing novel information on bone shape. However the advent of 3D MRI or CT-based SSIM technology has provided the ability to do automated quantification of large OA datasets. One of the most interesting tissues studied to date has been 3D bone shape. Studies have shown changes in bone shape are more responsive than radiographic joint space narrowing or even MRI quantitative cartilage thickness, predict incident radiographic OA, and that bone shape is associated with joint space narrowing or even MRI quantitative cartilage thickness. Studies have shown changes in bone shape are more responsive than radiographic joint space narrowing or even MRI quantitative cartilage thickness, predict incident radiographic OA, and that bone shape is associated with joint space narrowing or even MRI quantitative cartilage thickness. Studies have shown changes in bone shape are more responsive than radiographic joint space narrowing or even MRI quantitative cartilage thickness, predict incident radiographic OA, and that bone shape is associated with joint space narrowing.

At the same time, it is well known that physical activity has many benefits for this patient group. Hence, analgesics is a part of the management for many patients with rheumatic diseases. Pain may be a barrier for physical activity, and patients with rheumatic diseases is reported to have a lower physical activity level than the general population.

The aim of this lesson will be to present a case history of a patient with extensive pain problems and discuss the treatment options based on relationship between analgesics, pain and physical activity.

Objectives:
- To discuss the effect of analgesics on activity
- To discuss pain tolerance during exercise
- To discuss the effect of physical activity on pain

REFERENCES: