WHAT HAPPENS TO KELLGREN-LAWRENCE GRADE 1 JOINTS IN HAND OSTEOARTHRITIS (OA) AFTER 2.6 YEARS? “OA OR NOT OA THAT IS THE QUESTION” - DATA FROM THE SEKOIA TRIAL

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Purpose: In 1957, Kellgren and Lawrence (KL) introduced in their radiologic scoring method to assess osteoarthritis (OA) a grade 1 for doubtful OA, besides the grade 0 for no OA. How to use and consider this grading system? Is KL 1 the first step to OA?

Methods: Data came from an international 3-year, randomized, placebo-controlled phase III trial designed to assess the effect of strontium ranelate compared to placebo on the radiographic progression of knee OA which included symptomatic primary knee OA patients (ACR criteria) at a KL grade 2 or 3, with a minimal joint space width (JSW) between 2.5–5 mm (SEKOIA trial). In parallel, baseline and final postero-anterior radiographs of each hand were performed. Hand symptoms were assessed using the functional index for Hand OA (FIHOA; range 0–30) and the AUSCAN-function (0–900 normalized at 100). Two independent radiologists scored half of the pairs of radiographs obtained each, blinded to treatment and time sequence, using the KL (range 0–128 for the 32 joints graded), Kallman (0–204) and Verbruggen anatomical phase (0–218) scoring methods with a good inter-rater reproducibility (ICCs > 0.8).

Results: Of 1669 patients included in the SEKOIA trial, 1360 had hand radiographs. 71% were female, mean age 64 over 2.6 years. 1203 joints were scored KL 1 at baseline (mean: 4.1 ± 0.87). Hand OA was established if at least 2 joints were scored ≥ KL 2. All the joints scored grade 1 according to KL scoring method identified at baseline were reassessed on the final hand radiograph. The evolution of all joints scored KL 1 at baseline in the placebo group is described.

Conclusions: Of 1669 patients included in the SEKOIA trial, 1360 had hand radiographs. 999 (73%) had radiologic hand OA at baseline. 297 patients out of 472 in the placebo group had baseline and post-Baseline radiographic findings of OA which included symptomatic primary knee OA patients (ACR criteria) at a KL grade 2 or 3, with a minimal joint space width (JSW) between 2.5–5 mm (SEKOIA trial). In parallel, baseline and final postero-anterior radiographs of each hand were performed. Symptoms were assessed using the functional index for Hand OA (FIHOA; range 0–30) and the AUSCAN-function (0–900 normalized at 100). Two independent radiologists scored half of the pairs of radiographs obtained each, blinded to treatment and time sequence, using the KL (range 0–128 for the 32 joints graded), Kallman (0–204) and Verbruggen anatomical phase (0–218) scoring methods with a good inter-rater reproducibility (ICCs > 0.8). Hand OA was established if at least 2 joints were scored ≥ KL 2. All the joints scored grade 1 according to KL scoring method identified at baseline were reassessed on the final hand radiograph. The evolution of all joints scored KL 1 at baseline in the placebo group is described.

THE VALIDITY OF A NON-RADIOLoGIST READER IN IDENTIFYING CAM AND PINCER FEMOROACETABULAR IMPEdGEMENT (FAI) USING PLAIN RADIOGRAPHY

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Background/Purpose: There is emerging evidence that the majority of hip pain in young active adults is caused by femoroacetabular impingement (FAI), a proposed pre-cursor to the majority of hip osteoarthritis (OA). While FAI has been well described, many patients with symptomatic FAI experience significant delays in diagnosis, are often misdiagnosed and receive inappropriate, ineffective or harmful treatment. Consultation with health care providers in musculoskeletal (MSK) disciplines (primary care, orthopaedics, physical therapy, rheumatology, sports medicine, chiropractic) is frequent to receive an appropriate diagnosis and treatment (Carlisle et al 2011). Radiographic assessment of the hip is a vital component of the workup for pre-arthritis hip pain in this population, and an important clinical and (research) question is whether the radiographic findings of FAI are valid when read by a non-radiologist health care provider. The purpose of this study was to evaluate the criterion validity of a radiographic diagnosis of FAI performed by a trained medical non-radiologist reader.

Methods: This study was conducted within the IMPAKT-HIP study (Investigations of Mobility, Physical Activity and Knowledge Translation in Hip Pain), a large Canadian longitudinal study on the role of FAI and physical activity in hip pain. A random population-based sample of 500 subjects was recruited through random digit dialing in Metro Vancouver, Canada. For the current study, 50 subjects were selected from this sample - 40 randomly and 10 with clinically confirmed FAI to enrich the sample with an adequate number of positive test findings. An AP pelvis (weight-bearing, hips IR 15°) and bilateral Dunn projection radiographs were acquired using standardized protocols. After blinding all demographic and clinical information, the 50 cases were randomized and read by a fellowship-trained MSK radiologist experienced in FAI, and a 3rd year medical student who had received radiographic training to read radiographic signs of FAI. Three radiographic signs were evaluated: the lateral center edge angle (LCE), alpha angle and cross-over sign. FAI was defined radiographically as any one of LCE > 40°, alpha angle > 55° and presence of a cross-over sign. The medical student re-read all films 8 weeks later to obtain data for intra-rater reliability.

Analysis: Validity was assessed using the sensitivity and specificity of the medical students scores against the gold standard obtained from the scores of the fellowship-trained MSK radiologist. The intra-reader reliability for the medical student was examined using Cohen’s Kappa, as well as the prevalence-adjusted bias adjusted Kappa (PABAK) statistic. PABAK measures agreement beyond chance while taking into account both the prevalence of a positive finding and the bias of each measurement for reporting a positive finding. It is thought to be a better estimate for agreement than the standard Kappa. A PABAK of > 0.60 was considered to indicate adequate reliability.

Results: The sample contained 45% women (n = 31), was 62% Caucasian and 38% Chinese, and had a mean age of 38.3 years (SD = 8.0). Hip pain in the past 12 months was reported by 42%. One hip had a fracture and was excluded, leaving 49 hips. The results are given in Table 1. The trained medical student correctly classified most cases and non-cases of FAI. When combining all three tests, the sensitivity was 0.83 and specificity was 0.87. For the individual tests, only the sensitivity for the cross-over sign was below 0.85 (0.50). However there were only 6 positive cases of cross-over (and it is the most difficult to read of the three signs). Apart from the small number of positive cross-over signs,