Presentatie 9.3

Intramuscular gluteal glucocorticoid injection versus intra-articular glucocorticoid injection in knee osteoarthritis: a 24-week multicenter randomized controlled non-inferiority trial (103)

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Introduction
Intramuscular (IM) glucocorticoid injection could be an alternative treatment option for intra-articular (IA) glucocorticoid injection for patients with knee osteoarthritis (OA) in primary care. However, there is no study on evaluating its effectiveness.

Research question
Is an IM gluteal glucocorticoid injection non-inferior to an IA glucocorticoid injection in reducing knee pain in patients with knee OA in primary care?

Methods
The study was a pragmatic randomized controlled non-inferiority trial with two parallel groups (NTR6968). Patients (≥ 45 years) with symptomatic knee OA were randomly (1:1) allocated to receive an injection of 40 mg triamcinolone acetonide either IA in the knee joint or IM in the ipsilateral ventrogluteal area. All patients were followed for 24 weeks after the injection. The primary outcome was the Knee injury and Osteoarthritis Outcome Score (KOOS) pain score (0-100, 0 indicates extreme pain) at 4 weeks, with a non-inferiority margin of 7. Secondary outcomes included the non-inferiority of KOOS pain scores at 2, 8, 12 and 24 weeks. Statistical analysis was based primarily on the per-protocol (PP), and secondary on the intention-to-treat (ITT) principle. Linear mixed models with repeated measurements were used for calculating group differences over time, adjusted for baseline KOOS pain score, sex, presence of depression and duration of knee OA. Minimally clinically important difference (MCID) for KOOS pain score = 9.

Results
Of a total of 145 patients included, 65% female, mean (SD) age 67 (10) years, mean (SD) baseline KOOS pain score 48 (17). 71 were randomized to the IA group and 74 to the IM group. In PP analysis, 138 patients were included with 66 in IA group and 72 in IM group. Patients reported a clinically relevant improvement in knee pain from 2 to 12 weeks after the injection in both groups (**figure 1**). At 4-week follow-up, the mean between-group difference in KOOS pain score was not statistically significant, but its 95% confidence interval (CI) contained the prespecified non-inferiority margin (IA minus IM: 3.4; 95CI, -3.3-10.1; $p_{superiority}$= 0.320) (**figure 2**). The between-group differences in KOOS pain scores at 2, 8, 12 and 24 weeks were all not statistically significant and non-inferiority was shown at 8 and 24 weeks follow-up (**figure 2**). All the results were similar in ITT analysis.
Conclusions KOOS pain score differences between the two groups were non-significant and smaller than the MCID over the 24 weeks of follow-up. However, IM glucocorticoid injection, compared to IA injection, could present inferior effectiveness in some cases at 4 weeks after the injection. IM injection was non-inferior to IA injection only at 8 and 24 weeks.

Has the study already been completed?
Yes, this trial has been completed, but the analyses of the secondary outcomes is currently ongoing.

Has the study been conducted on the basis of GP data and / or in a GP population?
Yes, all the participants were typical knee OA patients recruited in primary care and all injections were administered by the GP.

How is the theme of collaboration discussed in the presentation?
GPs, orthopedic surgeons, rheumatologists and researchers are involved in this trial, and participating GPs got injection training under supervision of orthopedic surgeons.

What do you want to ask attendees, what do you want to collect?
Intramuscular injection or intra-articular injection, which one do they prefer?