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BROWSER'S NOTES

Browser's notes

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Influence of baseline magnetic resonance imaging features on outcome of arthroscopic meniscectomy and physical therapy treatment of meniscal tears in osteoarthritis.

MacFarlane LA, et al.
Am J Sports Med. (2019); 47(3):612–9.

Early MRI-based changes in patients with meniscal tear and osteoarthritis.

Collins JE, et al.
Arthritis Care Res (2019); Apr 1. [Epub ahead of print] PMID: 30932360.

These two studies used MeTeOR (meniscal tear in osteoarthritis research) study participants to investigate the association between knee MR findings using the MOAKS (MRI osteoarthritis knee score) and the treatment of meniscal tears. The multicenter randomized controlled MeTeOR trial compared clinical outcomes of 351 patients aged ≥45 years with mild to moderate osteoarthritis (OA) and meniscal tears treated with either arthroscopic partial meniscectomy followed by physical therapy (APM/PT group) or physical therapy alone (PT group). No clinical differences between groups were found at either 6 or 12 months post-treatment.

MacFarlane, et al. evaluated 220 MeTeOR subjects (121 APM/PT, 99 PT) comparing baseline joint status, judged by knee MR MOAKS score, with 6 month treatment results for the 2 groups. Of patients with no MOAKS "bone marrow lesions" (BML, i.e. edema-like marrow signal), those treated with APM/PT had a 13 point greater 6 month improvement in KOOS pain score than those treated with PT alone. Similarly, for patients with less cartilage damage (maximum subregional cartilage damage size <75%), the APM/PT group had an 8 point greater KOOS pain score improvement than those treated with PT alone. There were no correlations between 6 month change in pain scores and baseline BML size, cartilage damage depth, meniscal extrusion, or meniscal damage grades. The authors also created an overall joint "damage score" using the two baseline (pre-therapy) MOAKS parameters that most strongly correlated with 6 month change in pain scores. Those scores were the number of articular subregions with BMLs and cartilage damage size (maximum score for any subregion). The joint damage score is the sum of the BML subscore (0 = none, 1 = any degree of edema-like marrow signal) and cartilage damage subscore (0 = maximum area of cartilage damage <75% of a subregion, 1 = >75% of a subregion) and ranged from 0 (least damage) to 2 (greatest damage). For all patients, the distribution of baseline damage scores were 13% for grade 0 (mean age 56 years, 38% Kellgren-Lawrence [KL] = 0, 14% KL = 3), 52% grade 1 (mean age 58 years, 29% KL = 0, 17% KL = 3), and 34% grade 2 (mean age 60 years, 9% KL = 0, 48% KL = 3). Interestingly, there was no correlation between baseline damage score and baseline KOOS pain score. APM/PT treated patients with damage scores of either 0 or 1 had greater KOOS pain improvement than PT alone patients with the same damage scores (15 point and 7 point greater improvement, respectively), while there was no difference between treatment groups for subjects with the greatest damage score of 2. While these data suggest pre-treatment knee MR may be used to select patients with less joint derangement (damage scores of 0 or 1) for APM/PT, while recommending PT alone for those with worse joints (damage score = 2), the authors warn that the damage score has not be independently validated and the difference between groups was not statistically significant. Their post-hoc exploratory analysis did not include an adequate number of patients in all damage score groups to draw firm conclusions. Further studies are needed before making any treatment recommendations.

Collins, et al. investigated whether treatment choice affected the progression of joint damage assessed by knee MR over the 18 months following MeTeOR study enrollment. Baseline and 18 month knee MRs were available for 175 study subjects (103 APM/PT, 72 PT alone) and assessed using MOAKS for BMLs, cartilage thickness, cartilage surface area damage, osteophyte size, effusion-synovitis, and Hoffa-synovitis. Baseline MOAKS ratings were similar between groups, although there were more APM/PT patients with KL grade 3 radiographs and fewer KL 2 than for the PT group. Over the

18 months, there were changes in some MR structural parameters for both groups. More surgical patients showed progression of cartilage surface area damage with advancement in >2 articular subregions for 60% of the APM/PT group but only 33% of the subjects treated by PT alone. APM/PT treated patients showed greater progression in osteophytes and effusion-synovitis as well. However, there were no significant differences in changes of MOAKS scores for Hoffa-synovitis, BMLs or cartilage thickness scores. These data suggest that treatment of a meniscal tear in patients ≥45 years old with mild to moderate OA by APM may lead to more rapid progression of joint damage. However, longer term follow up is needed to determine if the initially faster progression in MR findings persists and translates into a difference in symptoms between treatment groups.

Abstracted by C. S. Winalski, M.D.
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