CLINICAL AND MRI COMPARISON OF ECCENTRIC VERSUS CONCENTRIC REHABILITATION IN SYMPTOMATIC KNEE OSTEOARTHRITIS: A PROSPECTIVE RANDOMIZED STUDY

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Background: Rehabilitation is at the center of the non-medical management of knee osteoarthritis. Concentric muscle strengthening is often preferred, while eccentric contractions play an important role in controlling knee flexion and knee stability and allow the development of a high level of strength with a low energy cost. But few studies have focused on these two technique.

Objectives: To explore the effect of a 6-week-exercise program on function, pain and performance level in symptomatic knee osteoarthritis patients

Methods: An analysis was performed of the data from 60 individuals with symptomatic knee osteoarthritis who were included in the EXACT study. The EXACT study was a prospective, randomized controlled trial which included patients aged 40 to 85 with KL 2 or 3 or responding to the American College of Rheumatology criteria. The first group benefited from a 6-week eccentric rehabilitation program and the second group from a standard 6 week concentric rehabilitation program. The endpoints were the changes from baseline to week 6 in Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain, function, and quality of life (QoL) scores, performance measured with quadriceps power (PMax) and contraction strength (MMax). MRI muscle analysis was performed before and after physical activity.

Results: Among 80 patients screened, 60 were included in the study and randomized. 25/30 subjects finished the program in the concentric group and 28/30 in the eccentric group. The mean population age was 74 (+15), mean IMC 272 (+17), and mean evolution eccentric = 4.5 ± 19 (p=0.0001); intergroup analysis p=0.7). Similar significant results were found in the WOMAC function subscale. No difference between the groups appeared in VAS pain evolution (p=0.7). The eccentric group showed a significant improvement in PMax and high speed MMax evolution (p=0.001 and p=0.002). This improvement was not found for the concentric group (p=0.52 and p=0.27). MRI showed a vastus medialis hypertrophy only in the eccentric group (p=0.002). We did not observe any change in the fatty infiltration of the quadriceps on MRI.

Conclusion: Rehabilitation, whether eccentric or concentric, has a beneficial action on function and pain in symptomatic knee osteoarthritis whatever the methods. A gain in muscle performance and vastus medialis volume was found only with the eccentric rehabilitation. This study confirms the importance of any type of rehabilitation in knee osteoarthritis and raises the question of the relation between muscle gain/ performance and function or pain

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ARE RACIAL DISPARITIES IN REVISION TKA OUTCOMES ASSOCIATED WITH HOSPITAL OR SURGEON VOLUME?


Background: Total knee arthroplasty (TKA) outcomes are linked to surgical volume, despite the increase in TKA utilization, racial disparities in TKA outcomes persist. Blacks in the US are at a higher risk of aseptic revision TKA (R-TKA) when compared to Whites, yet the reasons for this are not understood.

Objectives: The objective of this study is to examine the relationship between hospital and surgeon annual TKA volume and R-TKA outcomes by race.

Methods: This is an observational cohort study. New York Statewide Planning and Research Cooperative System data for 2004 – 2013 was used to identify patients who underwent primary TKA. Data through 2015 was used to identify R-TKA within 2 years of the index TKA. Hospital characteristics were obtained from the AHA Annual Survey. Surgeon data was collected from New York State Education Department and New York State Physician profile. Surgeon annual TKA volume was categorized based on cutoffs established by Wilson et al1 as <=89, 90-235, 236-644 and >=645. We calculated the odds of R-TKA in Whites and Blacks separately and generated crude odds ratios (OR) comparing Blacks to Whites to examine trends across volume categories. A multivariate logistic regression model adjusted for known R-TKA risk factors was also performed.

Results: A total of 163,576 patients were included. Mean (SD) age was 66.4 (10.4) years, 107,233 (65.6%) were female, 124,277 (76.6%) were White and 15,990 (9.8%) were Black. 2925 patients underwent aseptic R-TKA. In logistic regression analysis, Blacks had a higher risk of R-TKA (OR 1.42, 95%CI 1.26-1.6) compared to the highest volume surgeons (>=146). Patients who had surgery at a hospital with annual volume of 236-634 TKA were less likely to undergo R-TKA compared to the highest volume hospitals (>=645) (OR 0.88, 95%CI 0.88-0.9). Other risk factors for R-TKA were younger age and worker’s compensation payer status with inflammatory arthritis who had a lower risk. Figures 1A and 1B show the odds of R-TKA in Whites and Blacks, respectively, by hospital and surgeon volume. Figure 1C shows the crude OR for Blacks to Whites for each category pair. The OR ranged from 0.9 to 2.5, with the largest disparity found in patients who have TKA performed by surgeons with 60-145 annual TKA volume compared to the highest volume surgeons (>=146).

Conclusion: Patients having TKA by a surgeon performing <60 TKA per year have higher risk of R-TKA. Racial disparities in R-TKA risk are highest for TKA by surgeons performing 60-145 TKA per year at hospitals performing >=645 TKA per year. Future studies should examine factors, such as whether trainees are involved the surgery, that may vary based on social determinates of health, such as patient race and payor.

REFERENCES: