A Randomized Controlled Trial Evaluating Duloxetine on Postoperative Outcomes following Primary Total Knee Arthroplasty

Steven J Kurina[1], Jaewon Yang[2], Matthew Tyler Weintraub[3], Anne Debenedetti[1], Vasili Karas[4], COL. (ret) Tad L Gerlinger, Craig J Della Valle[5], Denis Nam[1]
[1]Rush University Medical Center, [2]University of Washington, [3]Midwest Orthopaedics At Rush, [4]Midwest Orthopaedics at Rush, [5]Rush University Med Ctr

INTRODUCTION: Utilizing serotonin and norepinephrine reuptake inhibitors (SNRIs such as Duloxetine) to treat musculoskeletal pain has recently garnered interest. However, current literature remains limited with mixed results reported and no randomized trials. The purpose of this study was to evaluate the effect of duloxetine on postoperative pain, function, and opioid consumption in patients undergoing primary total knee arthroplasty (TKA).

METHODS: Patients undergoing primary TKA were randomized to receive either duloxetine (30 mg) or placebo daily one week prior to surgery until 6 weeks postoperatively after screening found them not to meet criteria for central sensitization. Daily morphine milliequivalents (MME), hours of sleep, and subjective measures of feeling well rested were assessed for two weeks postoperatively. VAS and KOOS were assessed at six-weeks following surgery. An *a priori* power analysis determined that 44 patients were required in each cohort to detect a minimally clinically important difference of 2-points in VAS pain scores.

RESULTS: A total of 102 patients were enrolled with 58 randomized to the duloxetine cohort and 44 to placebo. Demographics were similar between groups, reflecting successful randomization. In the two weeks following surgery, patients in the duloxetine group reported feeling significantly more well-rested on a 10-point scale (7.0 vs. 6.3, p=0.04). There were no differences in MME consumption (duloxetine: 351 vs. placebo: 359, p=0.36) or average nightly hours of sleep (duloxetine: 6.5 vs. placebo: 6.9, p=0.11). The duloxetine group had greater KOOS scores at six weeks postoperatively (72 vs. 67, p=0.01). There was no difference in VAS pain scores (2.0 vs. 2.5, p=0.16).

DISCUSSION AND CONCLUSION: Patients taking duloxetine felt significantly more well rested immediately following TKA and had superior KOOS scores at 6 weeks, although this difference may not be clinically important. Further research is required to investigate the benefit of duloxetine and SNRIs following TKA in patients without central sensitization.