

Fluoxetine Aids in the Reduction of Anxiety and Improvement of Sleep in an Orthopaedic Trauma Population

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INTRODUCTION:

Greater than 50% of musculoskeletal trauma victims suffer mental health decline following their initial injury. Behavioral interventions have not shown consistent results in reducing the mental health decline of orthopaedic trauma patients. This study examines if nine months of Fluoxetine (Prozac) aids in the improvement of sleep and reduction of anxiety after an orthopaedic trauma event. We hypothesized that subjects randomized to fluoxetine would have better overall sleep and sleep efficiency at six weeks and three months postoperatively than those randomized to calcium. Further, we hypothesized those randomized to fluoxetine would have decreased anxiety scores compared to the calcium group.

METHODS: This prospective study randomized patients to nine months of fluoxetine or calcium after a high-energy traumatic orthopaedic event. Anxiety scores were measured via the Beck Anxiety Scale (BAI) and quality of sleep via the Pittsburgh Sleep Quality Index (PSQI). Sleep efficiency was measured in the PSQI by dividing the total hours asleep by the total hours spent in bed. Outcomes were analyzed at six weeks and three months for this study question. Statistical analyses were performed in JMP Pro 17 (SAS Institute Inc, Cary NC). Correlations by group (medication) were completed to determine the relationship between BAI and PSQI scores. Linear regression was performed to examine an interaction effect between randomized medication and anxiety levels on sleep efficiency at 6 weeks.

RESULTS:

A total of 68 subjects were enrolled in the study, with 35 subjects randomized to calcium and 33 subjects randomized to fluoxetine. Slightly more males were enrolled ($n = 38$) than females ($n = 30$). There were 42 completed follow-ups at six weeks and 38 at three months. Regarding the relationship between anxiety and sleep, we found a steep positive correlation between BAI and PSQI at three months in the calcium group ($r = 0.55$, 95% CI: 0.11 to 0.81, $p = 0.01$) that was attenuated in the fluoxetine group ($r = 0.31$, 95% CI: -0.18 to 0.67, $p = 0.21$). Further, we found a significant interaction between anxiety scores and randomized medication at six weeks for sleep efficiency ($F_{(1,41)} = 5.0$, $p < 0.001$) but no significant interaction at three months ($F_{(1,37)} = 0.38$, $p = 0.78$) for sleep efficiency.

DISCUSSION AND CONCLUSION:

Subjects randomized to fluoxetine had better sleep efficiency at six weeks post-operative than those randomized to calcium. Fluoxetine may improve sleep duration and decrease anxiety levels after an orthopaedic traumatic event.