523 Reduced Incidence of Fractures After Treatment with Oxandrolone in Burn Patients

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Introduction: Bone density loss is a significant and well documented complication after major burns. Oxandrolone and bisphosphonates have both been used successfully to mitigate this outcome. Studies show these agents reduce both short-term and long-term bone loss, but no studies have examined the long-term clinical outcomes of these agents. This study investigates long-term outcomes of treatment with oxandrolone and bisphosphonates in burn patients.

Methods: We examined a deidentified database of electronic medical records across 55 healthcare organizations including over 75 million patients. ICD 10 codes were used to identify patients with thermal or chemical burns from January 1, 2010 to December 31, 2020. We included patients who received their first dose of oxandrolone or bisphosphonate within one month of injury. Propensity score matching was used to balance patient cohorts. ICD 10 and CPT codes were used to evaluate outcomes.

Results: We identified 280,367 patients with burn injuries during the study time period. Of these, 903 (0.32%) received at least one dose of oxandrolone and 307 (0.11%) received at least one dose of a bisphosphonate medication within 1 month of injury. Mortality was higher among matched patients receiving oxandrolone (OR: 3.146, CI: 2.224, 4.449) or a bisphosphonate (OR 3.027, CI: 1.8, 5.092). Fracture at any site and fracture of long bones were significantly lower among matched patients who received oxandrolone (OR: 0.704 CI: 0.542, 0.914, OR: 0.689, CI: 0.51, 0.931; respectively) compared to those who did not. No reduction of fractures was seen among patients who received bisphosphonates ($p > 0.05$). Among patients receiving oxandrolone acute kidney failure was increased (OR: 1.941, CI: 1.454, 2.592) compared to those not receiving the medication but chronic kidney failure was reduced (OR: 0.513, CI: 0.351, 0.749). There was no increase in acute or chronic kidney failure among patients receiving a bisphosphonate ($p > 0.05$). Liver injury was not increased among patients receiving either medication ($p > 0.05$).

Conclusions: Oxandrolone and bisphosphonate medications have been well studied and shown to decrease bone density loss after burn injury. Fractures of all bones and specifically long bones were reduced in patients receiving oxandrolone, suggesting that decreased bone catabolism during the acute recovery period may provide long-term injury protection. While we do see an increase in mortality with both of these medications, there is no we do not see any increase in liver failure or chronic kidney failure suggesting that factors unrelated to the administration of these medications are driving the increased mortality and may be related to selection bias. This is the first study to show that oxandrolone decreases the incidence of fractures after burn injury.

525 Dysphagia in Thermal Injury: The Impact of Inhalation Injury on Incidence and Recovery

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Introduction: Dysphagia is known to be a prevalent condition in the burn population. Dysphagia can lead to adverse events such as aspiration pneumonia, dehydration, and malnutrition. However, there is little data on the incidence and duration of dysphagia specifically in the inhalation injury subset of burn patients. The aim of this study is to determine the incidence and factors that contribute to dysphagia in the inhalation injury burn population as compared to the cutaneous burn population.

Methods: A retrospective study was conducted of patients admitted to a burn center from January 2016 - January 2021 and intubated for >48 hours. Patients who died during hospitalization or transferred hospitals were excluded. Dysphagia duration was analyzed based on days free from the ventilator. Two groups were compared: 1) non-inhalational injury vs inhalational injury patients and 2) Grade 1 vs Grade ≥2 inhalational injury patients. Statistical analysis included student's t-test, chi-square test, and Kruskal-Wallis test. Bayesian generalized linear models were created to measure the independent association of inhalational injuries with the outcomes.

Results: During the study period, 142 patients were admitted, of whom 49 patients had inhalation injury (35%). Inhalational injury patients had a lower %TBSA burn than non-inhalational injury patients (mean 18% ± 21% vs 31% ± 15%, $p < 0.001$). There were no significant differences in age, sex, tracheostomy placement, ventilator days, or hospital length of stay between the two groups. The inhalational injury group had a higher rate of dysphagia at the first Speech Language Pathologist (SLP) instrumental assessment (88% versus 51%, $p < 0.001$) and at discharge (55% versus 28%, $p=0.001$). After controlling for %TBSA, inhalational injury was independently associated with an increased odds of dysphagia at first SLP instrumental assessment (OR 13.0, 95% CrI 4.7-43.4, posterior probability ≥99%) and at discharge (OR 3.2, 95% CrI 1.5-6.9, posterior probability ≥99%). Additionally, inhalational injury patients had a longer period of dysphagia post-extubation with an average of 9.5 vs 7.1 days to any diet ($p < 0.006$) and average of 12.6 vs 7 days to a regular texture diet ($p < 0.001$). Grade 1 inhalational injuries had no difference in duration of dysphagia or dysphagia at discharge compared to Grade ≥2 inhalational injury patients.

Conclusions: Inhalational injury was independently associated with dysphagia upon initial SLP instrumental assessment and at discharge. Patients with an inhalational injury also had a longer dysphagia resolution time. The severity of the inhalation injury did not impact dysphagia incidence.