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"Parenteral Corticosteroids After Fragility Fracture Increases the Odds of a Repeat Fracture"

Osteoporosis is a skeletal disorder characterized by porous and low-density bones. Patients with osteoporosis have an increased risk of fragility fractures and subsequent repeat fractures. Due to the high morbidity and mortality associated with fractures, medications that cause high risk of falls and decreased bone density should be used with caution to prevent repeat fractures. Some studies have shown that there is no change in fracture-associated medication use before and after a fracture. This study aims to explore the trends of systemic corticosteroid use, which causes a known physiologic decrease in bone density, before and after primary fracture and their association with repeat fractures.

Our patient population consisted of 2643 patients with a repeat fracture that met inclusion criteria in the REACHnet database. Systemic glucocorticoid use was significantly associated with refracture (Adjusted odds ratio = 1.39, 95% CI = 1.13-1.71). Parenteral (intravenous, intramuscular, or intra-articular) corticosteroids increased odds of repeat fracture (aOR= 1.37, 95% CI=1.08-1.74), but oral corticosteroids did not. Corticosteroid usage after initial fracture also increased odds of repeat fracture (aOR=1.52, 95% CI=1.20-1.91), but when exploring administration method and timing together, only parenteral corticosteroids after the initial fracture increased the odds of a repeat fracture (aOR=1.52, 95% CI 1.18-1.96).

Despite the known physiologic effect of corticosteroids on bone mineral density, corticosteroid use increased over time, from 23.8% in 2011 to 50.1% in 2015. In addition, a higher percentage of patients received corticosteroids after an initial fracture (36.6%) compared to prior the initial fracture (17.6%), and the odds of continued use after the fracture is 4.51 times higher for previous corticosteroid users.

This study showed that corticosteroid use is very high in patients at risk with fragility fractures, and its use increases over time. In addition, patients on corticosteroids before their initial fracture are much more likely to continue corticosteroids after the fracture despite its high risk for a repeat fracture. Because parenteral corticosteroid use is a risk factor for repeat fractures, physicians should only prescribe them if they are necessary. Our study showed that only 44% of patients taking corticosteroids had a medical condition that requires corticosteroid use. This shows that parenteral steroid overutilization for inappropriate or nonspecific diagnoses may contribute to increased fracture rates. Physicians may need to assess the risks and benefits of parenteral corticosteroids to prevent repeat fragility fractures in this vulnerable population.