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Bone Fractures With and Without Sickle Cell Disease in the Pediatric Population

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Background: Individuals with sickle cell disease are restricted from certain physical activities due to the increased risk of complications including fractures secondary to osteopenia. However the exact incidence and outcomes of fractures amongst these patients is unknown.

Objectives: (1) describe the incidence, epidemiology, and outcomes of fractures in patients with SCD. (2) to compare fracture patterns and outcomes in patients with and without SCD.

Methods: This is a retrospective, cohort study of patients aged 0-25 years old with HbSS, HbSC, or HbS-β-thalassemia with a fracture evaluated at a pediatric emergency department from April 2009-April 2022. Eligible patients were identified using a combination of ICD billing codes and a preexisting hematology clinic database. Patients were age/gender matched with non-SCD patients with fractures. Data on demographics, number and types of fractures and outcomes were collected.

Results: 753 patients with SCD were identified during the study period. SCD patients with fractures were more likely to have multiple comorbidities, lower mean vitamin D levels and were less likely to be on vitamin D supplementation compared to those without fractures. The most common etiology was fall and carpal bones were most commonly fractured. Non-SCD patients with fractures were more likely to be obese and require surgical repair compared to their SCD peers.

Conclusions: Fracture incidence among SCD patients is low. Male gender, multiple comorbidities, and lack of vitamin D supplementation are associated with increased risk of fracture. SCD patients with a fracture were less likely to require surgical treatment compared to their non-SCD counterparts.