

Abstract

Background & Significance: In the absence of significant accidental trauma, the identification of multiple fractures in a young child raises concern for physical abuse. One group has suggested that there is an unrecognized “epidemic” of 25-OH vitamin D insufficiency that produces findings frequently mistaken for child abuse. Our objective was to test this hypothesis.

Methods: We prospectively identified children <5 years old with blood obtained during their care for acute trauma at a single pediatric center. We determined 25-OH vitamin D levels and the number of identified fractures.

Results: Among 281 eligible participants, 25-OH vitamin D levels were obtained in 83 (29%). Using a threshold of 20ng/mL, 13 (16%) participants were found to have 25-OH vitamin D insufficiency. The proportion of children with at least one fracture was 62% for children with insufficiency, and 57% for those with sufficient 25-OH vitamin D levels ($p=0.768$). The mean number of fractures was 1.8 for 25-OH vitamin D sufficient children and 1.1 for 25-OH vitamin D insufficient children ($p=0.675$). Seven children had five or more fractures identified, including 5 who were diagnosed with physical abuse, and 2 with severe accidental trauma. Of the children with >5 fractures who were diagnosed with non-accidental trauma, all had 25-OH vitamin D levels >20 ng/mL. The proportion of children diagnosed with physical abuse was not statistically different for children with 25-OH vitamin D insufficiency vs. those without ($p=0.474$).

Conclusion: 25-OH vitamin D insufficiency in the absence of significant trauma is not a plausible explanation for multiple fractures.