Prevalence of Abuse Among Young Children With Rib Fractures: A Systematic Review

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OBJECTIVES: We aimed to estimate the prevalence of abuse in young children presenting with rib fractures and to identify demographic, injury, and presentation-related characteristics that affect the probability that rib fractures are secondary to abuse.

METHODS: We searched PubMed/MEDLINE and CINAHL databases for articles published in English between January 1, 1990, and June 30, 2014 on rib fracture etiology in children 5 years or younger. Two reviewers independently extracted predefined data elements and assigned quality ratings to included studies. Study-specific abuse prevalences and the sensitivities, specificities, and positive and negative likelihood ratios of patients' demographic and clinical characteristics for abuse were calculated with 95% confidence intervals.

RESULTS: Data for 1396 children 48 months or younger with rib fractures were abstracted from 10 articles. Among infants younger than 12 months, abuse prevalence ranged from 67% to 82%, whereas children 12 to 23 and 24 to 35 months old had study-specific abuse prevalences of 29% and 28%, respectively. Age younger than 12 months was the only characteristic significantly associated with increased likelihood of abuse across multiple studies. Rib fracture location was not associated with likelihood of abuse. The retrospective design of the included studies and variations in ascertainment of cases, inclusion/exclusion criteria, and child abuse assessments prevented further meta-analysis.

CONCLUSIONS: Abuse is the most common cause of rib fractures in infants younger than 12 months. Prospective studies with standardized methods are needed to improve accuracy in determining abuse prevalence among children with rib fractures and characteristics associated with abusive rib fractures.

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