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Common Misperceptions of Child Abuse in Toddler Femur Fractures

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Common Misperceptions of Child Abuse in Toddler Femur Fractures

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Introduction

- Current AAOS guidelines recommended that all children younger than thirty-six months with a femur fracture be evaluated for child abuse.
- In children who are not yet of walking age, typically younger than 12 months, a femur fracture is highly suggestive of child abuse.^{4,5}
- Conversely, only 2.6% of children of walking age with a femoral shaft fracture were believed to have associated child abuse.⁵
- These the AAOS Clinical Practice Guidelines could potentially subject 42-63% of cases to unnecessary evaluation by Child Protective Services.^{2,6}
- This project aims to investigate how a patient's age and the morphology of femur fracture impacts a physician's or advance practitioner's assessment of non-accidental injury likelihood and their decision to pursue further investigation into the injury for possible child abuse.

Methods

- This project utilized a cross sectional survey survey composed of 20 scenarios with 60 associated questions.
- Patients were divided into 5 age groups: 6, 12, 18, 24, 35 months.
- While fracture morphology verbiage was altered, images were identical for each case of oblique and spiral as well as for CML and corner fractures.
- Physicians and advanced practitioners (AP) from orthopedics, radiology, emergency medicine, general pediatrics, SCAN team, and family medicine.



A 24-month-old presented to the Emergency Department complaining of pain in their right leg. Radiology report indicated a right oblique femur fracture. The following is the most recent radiograph.

In your opinion, how likely is this scenario representative of abuse?

- 1 (Highly Unlikely < 20%)
 2 (Unlikely 21-40%)
 3 (Neutral 41-60%)
 4 (Likely 61-80%)
 5 (Highly Likely >80%)

How likely are you to pursue further child abuse investigation for this aged child with this presentation?

- 1 (Highly Unlikely < 20%)
 2 (Unlikely 21-40%)
 3 (Neutral 41-60%)
 4 (Likely 61-80%)
 5 (Highly Likely >80%)

Which factor(s) influenced your decisions for questions 1 and 2? Check all that apply.

- age
 fracture type
 other

If "other" please list what factors influenced your decision: _____

Results

- Of 100 survey responses, 75 were utilized in data analysis.
- Mean likelihood of abuse rating by fracture type in patients 18-35 months of age was 3.8, corresponding to 61-80% likelihood of abuse.
- Mean likelihood for further investigation of child abuse in patients 18-35 months of age was 3.7, corresponding to 61-80% likelihood to further investigate.
- Changing CML and Corner significantly altered responses within the 6, 12, 35 months of age groups.
- Changing Oblique and Spiral significantly altered responses within the 12 and 24 months of age groups.
- The strongest predictors of perceived high likelihood of abuse were respondent specialty, with emergency medicine ($p < 0.001$) and advanced practice providers ($p = 0.006$) having the highest likelihood ratings.

Discussion

- The incidence of femur fractures among children of walking age
- In training, clinicians are taught to have a high index of suspicion for child abuse in pediatric patients.
- However, this study demonstrates an extremely high assessment of chance for abuse for femoral shaft fractures in walking-age children which directly contradicts the real-world likelihood where the estimate should be less than 10%.
- Additionally, 61-80% of providers are likely to pursue further investigation of child abuse in cases where child abuse is unlikely.
- This bias may exhaust hospital and community resources in evaluating toddler femur fractures for abuse and cause unnecessary stress for patients and families.
- Accurate reporting should be the goal to ensure that patients are evaluated and screened appropriately.

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