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Imaging Findings in Elder Abuse: A Role for Radiologists in Detection

Natalie Z. Wong, BS^{a,b}, Tony Rosen, MD, MPH^{a,*}, Allen M. Sanchez, MD^c,
Elizabeth M. Bloemen, MPH^d, Kevin W. Mennitt, MD^c, Keith Hentel, MD, MS^c,
Refky Nicola, DO^e, Kieran J. Murphy, MD^f, Veronica M. LoFaso, MD, MS^b,
Neal E. Flomenbaum, MD^a, Mark S. Lachs, MD, MPH^b

^aDivision of Emergency Medicine, Weill Cornell Medical College, New York, New York, USA

^bDivision of Geriatric and Palliative Medicine, Weill Cornell Medical College, New York, New York, USA

^cDepartment of Radiology, Weill Cornell Medical College, New York, New York, USA

^dUniversity of Colorado Medical School, Aurora, Colorado, USA

^eDepartment of Imaging Sciences, University of Rochester Medical Center, Rochester, New York, USA

^fDepartment of Medical Imaging, University of Toronto, Toronto, Ontario, Canada

Abstract

Purpose: Emergency department assessment represents a critical but often missed opportunity to identify elder abuse, which is common and has serious consequences. Among emergency care providers, diagnostic radiologists are optimally positioned to raise suspicion for mistreatment when reviewing imaging of geriatric injury victims. However, little literature exists describing relevant injury patterns, and most radiologists currently receive neither formal nor informal training in elder abuse identification.

Methods: We present 2 cases to begin characterisation of the radiographic findings in elder abuse.

Results: Findings from these cases demonstrate similarities to suspicious findings in child abuse including high-energy fractures that are inconsistent with reported mechanisms and the coexistence of acute and chronic injuries. Specific injuries uncommon to accidental injury are also noted, including a distal ulnar diaphyseal fracture.

Conclusions: We hope to raise awareness of elder abuse among diagnostic radiologists to encourage future large-scale research, increased focus on chronic osseous findings, and the addition of elder abuse to differential diagnoses.

Résumé

Objet : Les cas de mauvais traitements infligés aux personnes âgées sont courants et lourds de conséquences. L'évaluation au service d'urgence pourrait jouer un rôle crucial dans leur détection, mais fait souvent figure d'occasion manquée. De tous les professionnels de la santé qui interviennent au service d'urgence, les médecins spécialistes en diagnostique sont particulièrement bien placés pour sonner l'alarme tandis qu'ils interprètent les examens radiologiques des personnes âgées présentant des lésions traumatiques. Malheureusement, peu de documents décrivent les aspects caractéristiques des lésions résultant de mauvais traitements infligés aux personnes âgées et aucune formation structurée ni informelle n'est actuellement offerte aux radiologistes en la matière.

Méthodes : Nous présentons deux cas afin d'amorcer le travail de caractérisation sur les aspects radiographiques de la violence envers les personnes âgées.

Résultats : Les caractéristiques relevées sont semblables à celles évocatrices de mauvais traitements infligés aux enfants, à savoir des fractures à haut transfert d'énergie qui ne cadrent pas avec le mécanisme de blessure déclaré, et la présence de lésions graves et de lésions chroniques concomitantes. Des blessures rarement observées dans le cadre de lésions traumatiques accidentelles ont également été observées, par exemple une fracture à la portion distale du cubitus.

* Address for correspondence: Tony Rosen, MD, MPH, 525 E 68th St, Room M130, New York, New York 10065, USA.

E-mail address: aer2006@med.cornell.edu (T. Rosen).

Conclusion : Nous visons à sensibiliser les médecins spécialistes de la radiologie diagnostique à la violence envers les personnes âgées afin de favoriser les activités de recherche à grande échelle, de mettre l'accent sur les caractéristiques associées aux lésions osseuses chroniques et d'intégrer les mauvais traitements infligés aux personnes âgées aux diagnostics différentiels.

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Key Words: Elder abuse; Elder abuse radiology findings; Geriatric injury; Intentional injury

Elder abuse is common and has serious consequences, but it is under-recognized. As many as 10% of U.S. older adults experience elder mistreatment each year [1,2], and evidence suggests that victims have dramatically increased mortality and morbidity [3]. Elder mistreatment involves a trusting relationship between an older person and another individual in which the trust has been violated in some way [1]. This includes sexual abuse, emotional/psychological abuse, neglect, financial exploitation, and physical abuse [1,2]. Unfortunately, fewer than 1 in 24 cases of elder abuse are identified and reported to the authorities [1,2]. Emergency department (ED) assessment represents a critical but often missed opportunity to identify elder abuse, as medical evaluation for acute injury or illness is frequently the only nonfamily contact available to isolated older adults [4,5]. Though extreme cases of mistreatment may be apparent on a cursory assessment, most are subtle [6] and require all providers to be vigilant for clues.

As many geriatric injury victims receive radiographic imaging in the ED, diagnostic radiologists are optimally positioned to raise suspicion for mistreatment [7]. Imaging findings pathognomonic or highly indicative for child abuse are well defined in the literature and play a critical role in child abuse detection [8,9]. Identifying and reporting these findings is a core component of radiologist training and practice. On the contrary, little radiology literature currently exists describing imaging correlates of elder mistreatment [7]. Formal or informal training in elder abuse assessment does not exist for diagnostic radiologists. Research suggests, however, that radiologists are interested in education about elder abuse [10] and predict that imaging correlates may exist [7]. Our aim is to validate that prediction by beginning to characterise the imaging findings in elder abuse.

Case A

A 98-year-old woman with a past medical history of dementia presented to her primary care physician with a 1-week history of left upper extremity pain with bruising and inability to ambulate. A fracture was detected on radiographs, and she was sent to the ED for evaluation and treatment. Her home care included a 24/7 home health aide and her son, who visited biweekly and was designated as her health care proxy. In the ED, the mechanism of her arm injury was unknown. Her son and aide denied any history of recent falls or trauma. The aide proposed that the patient injured herself when banging her arm on her hospital bed at home, and the son endorsed this as a plausible mechanism.

A radiograph of the injured left upper extremity demonstrated an acute, displaced, transverse fracture through the proximal humeral metadiaphysis (Figure 1). This injury pattern is associated with a high-energy mechanism and appeared to be inconsistent with the reported injury etiology. A trauma consult was placed with concerns for elder abuse.

Additional imaging included computed tomography (CT) of the left shoulder; radiographs of the left wrist and forearm, pelvis, left femur, and bilateral hips; and CT of the head. The left forearm and wrist radiographs demonstrated a chronic fracture deformity of the distal ulnar and distal radial diaphyses (Figure 2). The left hip and pelvis radiographs revealed an acute comminuted intertrochanteric fracture of the left proximal femur. An age-indeterminate fracture deformity of the right inferior pubic ramus was also noted. Though suspicion for elder abuse persisted among providers, it was not confirmed during the hospitalization. The patient



Figure 1. Radiograph of the left humerus demonstrates an acute transverse fracture of the proximal humeral metadiaphysis. There is medial displacement of the distal fracture fragment, as well as apex lateral angulation and an overriding component of the fracture fragments.

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