Case Report

Access this article online

Website: www.afrjpaedsurg.org

DOI: 10.4103/0189-6725.194678

Quick Response Code:

Unusual presentations of child abuse: A report of two cases and the role of imaging

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ABSTRACT

Insufficient attention has been paid to child abuse in Nigeria, where corporal punishment is still acceptable both at home and in the wider public including schools. This is not limited to the parents; these punitive measures can also be undertaken by the extended family, caregivers, and neighbors. Mild to extreme force is allowed particularly when the crime involves tarnishing the family image. We hereby report two cases of extreme discipline that can be termed as a form of child abuse to draw the attention of clinicians and radiologists to other possible findings aside from those already reported in literature.

Key words: Child abuse, computed tomography, foreign body abscess, intrapulmonary aberrant needles, ultrasound

INTRODUCTION

Insufficient attention has been paid to child abuse in Nigeria,[1] where corporal punishment is still acceptable both at home and in the wider public including schools. This is not limited to the parents; these punitive measures can also be undertaken by the extended family, caregivers, and neighbors. Mild to extreme force is allowed particularly when the crime involves tarnishing the family image.

Its incidence has been on the rise with both parents working and leaving their children with caregivers.[1] This has largely led to the underreporting of such cases; making its radiologic features and diagnosis in this environment very challenging.

Common clinical manifestations are diverse and consist of skeletal, nonskeletal (skin and visceral), and head trauma. Skeletal trauma involves fractures of the skull, long bones, and ribs with the classic metaphyseal lesions; nonskeletal trauma includes burns, bruises, and organ lacerations; head trauma includes scalp lacerations, retinal, and intracranial hemorrhages.[2]

We hereby report two cases of extreme discipline that can be termed as a form of child abuse to draw the attention of clinicians and radiologists to other possible findings aside from those already reported in literature.

CASE REPORTS

Case 1

A 9-year-old boy presented at the surgical outpatient clinic with a 3 month history of progressive right forearm swelling. The swelling was initially painful but resolved on recurrent massage with anti-inflammatory topical ointment by the mother. There was no change in coloration of overlying skin and no limitation of movement. There was an antecedent history of mother hitting the child with a bunch of broomsticks because he had been very stubborn.

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Cite this article as: Omidiji OT, Atalabi OM, Evbuomwan OE, Okwuegbuna FI, Oluseyi O. Unusual presentations of child abuse: A report of two cases and the role of imaging. Afr J Paediatr Surg 2016;13:213-6.

On examination, he was a healthy looking child, not pale, anicteric, acyanosed, and not in respiratory distress. Essential findings were in the musculoskeletal system. A fluctuant swelling was palpated in the middle-third of the right forearm, ulnar region. The swelling was nontender, not warm to touch, and not attached to underlying structures. There was no discoloration of the overlying skin. An initial diagnosis of a lipoma was made [Figure 1a].

Radiograph of the right forearm showed soft-tissue swelling with no calcifications *in situ* [Figure 1b].

Ultrasound of the swelling showed a cystic mass with linear echogenic structures within on the longitudinal scans which were seen end-on on transverse images with mild posterior acoustic shadowing. The cyst had internal echoes *in situ*. There was marked vascularity at the base of the lesion [Figure 2a-c].

An excision of the abscess with the evacuation of the broomsticks was subsequently carried out [Figure 2d]. The procedure was well tolerated. Both parents were counseled against corporal punitive measures on their children.

Case 2

A 9-year-old female pupil referred from a primary health-care center on account of back pain and swelling of 9 days duration. The patient was beaten with a broom on the back by her older female cousin as a punishment for an offense. The broom purportedly swiped a metallic object (needle) from the hand of another person standing nearby and drove it into the patient's back. This was suspected as the metal was nowhere to be found and patient began complaining of excruciating pain at the affected site. Attempts were made to remove the needle after a chest radiograph showed the needle in the subcutaneous region. She was subsequently referred to the hospital after attempts made at removing the needle proved abortive.

The pain was exacerbated by lying on the affected side. There was no history of cough, hemoptysis, and fever or dyspnea at rest or during exertion; there was no bleeding at the site of the trauma.

On examination, she was not pale, anicteric, cyanosed, and no respiratory distress. Scarification marks were however noted over the body, more pronounced in the trunk. Normal weight and height for age were seen.

Essential findings were in the musculoskeletal system. There was a thin plaster over the right paravertebral region. Mild swelling was seen at the site, with an incision marks over the swelling. The site was mildly tender with no differential warmth or pointing sign.

Chest radiograph revealed a sharp linear metallic density structure (the needle) in the chest at the level of the 9th posterior rib extending from the subcutaneous tissues into the adjacent lung [Figure 3a and b].

Soft-tissue ultrasound of the affected region was essentially normal. No foreign body was seen within the soft tissues.

Chest computed tomography also demonstrated the linear metallic density structure in the right chest within the lung fields, with no hydropneumothorax or reactive pneumonia. Mild pleural thickening was however noted

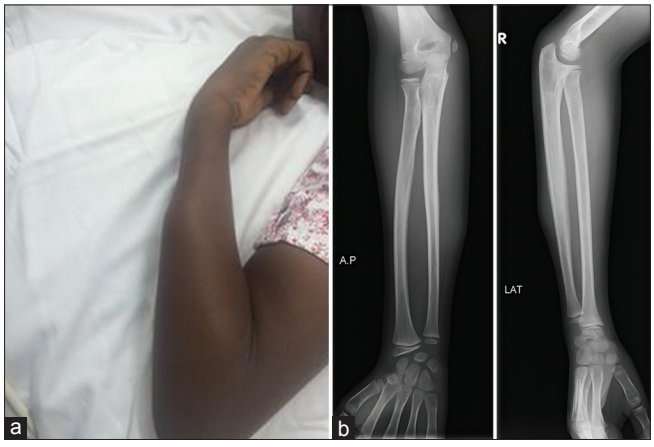

Figure 1: (a) Photograph of the first child's right forearm showing soft-tissue swelling in the distal third. (b) Plain radiographs of the forearm. Soft-tissue swelling is noted adjacent the left ulnar with no calcifications *in situ*

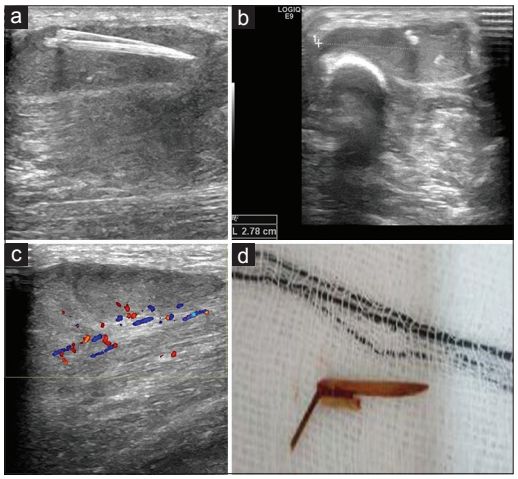

Figure 2: (a) Soft-tissue ultrasound of the left forearm a longitudinal image showing spindle-shaped echogenic foreign bodies within a well-defined hypoechoic collection. (b) Soft-tissue ultrasound in transverse plane shows two foci, seen end on within the hypoechoic collection. (c) Color Doppler ultrasound of the mass demonstrates the foreign body abscess with vascularity at its base. (d) The foreign bodies after excision

at the site. The needle had been displaced further into the lung fields [Figure 4].

Since the patient was asymptomatic at the time of presentation (no pneumothorax or pleural effusion), the surgeons hence decided to practice "watchful waiting." Both parents were advised of the need for video-assisted thoracoscopic surgery. She is presently being followed up at the clinic.

DISCUSSION

Child abuse or maltreatment is any act, or failure to act, by a parent or other caregiver that results in actual or potential harm to a child. It includes all forms of physical, sexual, and psychological abuse or neglect and can occur in a child's home or in the organizations, schools, or communities the child interacts with.

Physical abuse is a very difficult diagnosis to consider, especially in an environment where it is encouraged as a punitive measure, leading to the underreporting of such cases.[3] It is a life-threatening condition resulting in skeletal, head soft tissue, and skin injuries. The skin injuries are often overlooked because of dark skin color. They tend to heal with time and most often do not present to the hospital unless there are complications arising from it, such as in the index cases. The items used for abusing the children are usually canes, belts, cables, wires, or whatever may be available in the vicinity at the time of the offense.

A broom is a cleaning tool usually made of stiff fibers from various natural and man-made materials. In Nigeria, brooms are often made from palm fronds and bamboo and are common household items. Due to its thin sharp tips, they often have the propensity to break and become embedded in the skin and subcutaneous tissues, causing severe harm. Severe ocular injuries have been reported in cases of brooms being used as missiles most frequently in children, resulting in blindness.[4]

Skin injuries commonly documented in literature are bruises in multiple stages of healing, often in the softer regions of the thighs, abdomen, buttocks, cheeks, neck, and anogenital regions; thermal burns from cigarettes or heated metal objects and scalding water; bites from humans or animals and binding injuries.[5] The injuries noted in the first case was more of a penetrating type because of the assault instrument, resulting in foreign body abscess in the first patient.

Visceral injuries are mostly abdominal and constitute 2%–10% of all abdominal injuries; most common are liver and pancreatic lacerations with adrenal and duodenal hematoma.[6] Chest findings include pulmonary opacities due to lung contusions with rib fractures, pneumothorax, hemothorax, and rarely vascular injuries.[7] Penetrating lung injury was seen in the second case resulting in metallic lung impalement or intrapulmonary aberrant needles. Intrapulmonary aberrant needles are very rare in clinical practice with its most common cause being the intrathoracic migration of pins and wires used in the treatment of upper extremity fractures and dislocations. A reported case was due to self-insertion.[8] There were no complications from the needle insertion (no pneumothorax, reactive pneumonia, or effusion) and so patient is being managed conservatively with follow-up at the cardiothoracic surgery clinic until the parents can get enough funds for video-assisted thoracoscopic surgery.[8]

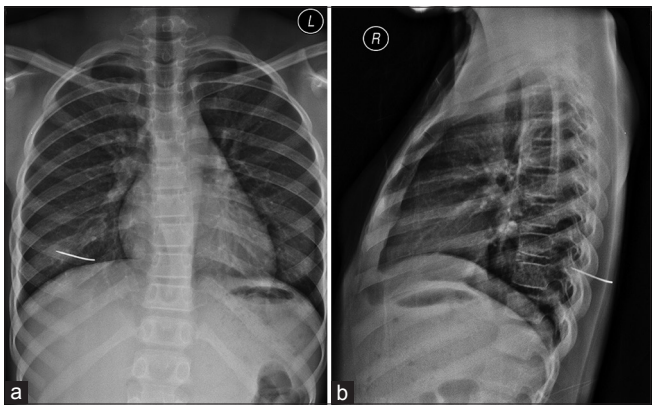

Figure 3: (a) Frontal chest radiograph shows a linear metallic opacity overlying the right lung base. (b) Lateral chest radiograph shows the needle embedded deep in the soft tissue posteriorly

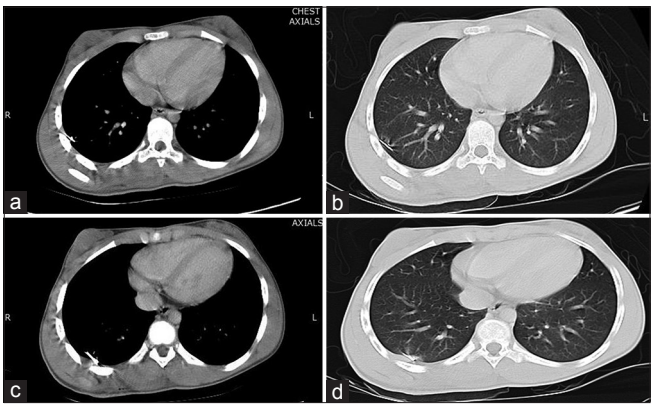

Figure 4: (a) Axial chest computed tomography, mediastinal window demonstrates the linear metallic density structure embedded within the right lung base. (b) Axial chest computed tomography lung window demonstrates the linear metallic density structure embedded within the right lung base with the entry track shown is noted within the right posterolateral chest wall. (c and d) Axial chest computed tomography mediastinal and lung windows demonstrate the linear metallic density structure embedded within the right lung base

Skeletal injuries are often fractures of the long bones and are quite common with the prevalence of 11%–55% in children presenting with nonaccidental injuries, although a study in South Africa documented skull fractures as being the most common in their setting.[3] Other fracture types include rib fractures and metaphyseal corner fractures usually in children <18 months. No fractures were seen in the index cases.

CONCLUSION

Two cases of unusual soft-tissue injuries from child abuse have been documented. More studies are required to properly define its epidemiology in our environment. Radiologists have a role to play in documenting cases of abuse noted in their practice and to have a high index of suspicion when there are unusual presentations. Doctors also need to be aware of increase in the incidence of these cases as well as the associated morbidity and mortality. The usefulness of ultrasound for soft-tissue evaluation should also be emphasized to all cadre of medical care.

The government has a role to play in creating awareness about the dangers of corporal punishment and to also put in place enabling laws that will stem these practices. Parents, caregivers, and school teachers should be made to understand and report such cases to the appropriate authorities so that remedial actions can be taken.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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