Reminder of important clinical lesson

Burns in children: the importance of assessing for non-accidental injuries

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Children represent 30% of all burn cases seen by accident and emergency physicians in the UK every year, with toddlers being most at risk within this age group. With the emergence of walking autonomy, the need for constant supervision is sometimes not enough to prevent this type of injury from happening. However, in remembering the importance of children's health and safety, non-accidental injury is always to remain a differential diagnosis. The authors review a paediatric burns case underlying the importance of keeping an open mind to allow a proper clinical diagnosis to be formed.

BACKGROUND

Burns are a common presenting in accident and emergency (A&E), with nearly 40 000 paediatric consultations on a yearly basis.¹ Most injuries result from hot water scalding, and scenarios such as children pulling on kettle electric

leads are all commonly seen.² However, nearly half of all burns admitted to specialist units are under the age of 16, are second to non-accidental injury (NAI).¹ This case report reviews a common presentation of a child to the paediatric A&E department with a traumatic burn and the essential

(Copied from Wolf SE Merck: *Burns*, Manual Online Medical Library, 2009)

Figure 1 Rule of Nines (for adults) Lunder and Browder chart (for children) for assessment of the extent of the burn.

points to remember when assessing burns in paediatrics with regard to assessing non-accidental injury and the safeguarding of children.

CASE PRESENTATION

A 10-month-old child presented to the A&E department of a district general hospital with of a scalding burn to the dorsal aspect of the right foot. The initial history was that the child had been congested due to a recent cold and the parents had set up a vaporizer of boiling water on the floor to help with the toddler's breathing. However, the toddler had accidentally kicked the water resulting in the burn to his right foot. His parents reported witnessing the accident and immediately pulled his sock off and placed the foot under cold water for 20 min before rushing him to the A&E department.

This was the first presentation to A&E and the first injury of this type the parents reported. The child was of good health, all vaccinations were up to date and there was no medical history.

Initial observation of the child with his parents showed a good relationship and interaction between parents and child, which seemed appropriate for the situation. The child appeared well nourished and there were no other burns or apparent other injuries. Initial observations were normal; temperature 36.3°C, respiratory rate of 20, saturations of 99% on room air, pulse rate 128 and a capillary refill time of 2 s. Closer examination of the burn was difficult initially due to anxiety and discomfort of the child, but with reassurance and good analgesia a full examination was possible. The burn covered most of the dorsum of the right foot but sparing the toes, it appeared to follow a NAI distribution with a stocking distribution with no splash marks and a possible immersion demarcation line. The burns were clinically assessed to be 1% superficial and 0.5% partial thickness depth,³ covering 1–2% of total body surface area (Rule of Nines, Lunder and Browder chart (figures 1 and 2).

INVESTIGATIONS

No further medical investigations were needed at this time.

TREATMENT

The burns were cleaned and dressed, but due to the young age and the extent of the burns the child was admitted to the burns unit overnight for observations.

However, as a paediatric patient, further investigation of the nature and history of the injury was undertaken. Initial photos were taken of the injury at presentation; for possible further medical treatment and incase of the need for legal investigations. A paediatric review was also requested. Repeated history and examination confirmed the same story for injury and further interaction between the family observed. This allowed a confident diagnosis of accidental injury to be confirmed.

OUTCOME AND FOLLOW-UP

The wound was reviewed every 12 h during a period of close observation for 48 h. After this time, the patient was discharged home, with follow-up with the plastics team after 5 days.

Figure 2 Picture of burns.

Along with reassurance about adherence to strict hygiene for the wound, special attention was also given to the parents of the child, explaining the various risk factors for burns in children to help prevent problems in the future. The child, in accordance with national protocol^{1 4-6} was also placed on a National Burns Register, which aside from treatment review would alert clinicians if future presentations occur.

DISCUSSION

Our case represents a common presentation to any district general hospital and highlights the importance of keeping NAI as a differential diagnosis and the need for continual reassessment by multiple clinicians.

Initial observation of the child and interaction with his family gave us important clues into assessing the child. A healthy well-nourished child, who has reached all developmental milestones, is up to date with all immunisations and has a lack of medical history or presentations to the A&E department helps to identify immediately at risk children, but should not distract us from continuing to take a good history of the event. It is vital that a thorough history is taken including witnesses of the accident, initial first aid provided and time taken to seek medical attention. Although the examination revealed a burn which is often seen in a NAI case, with stocking distribution and no splash marks, the injury appeared to be consistent with the history given. Our case highlights a case with a good

relationship noted between the family and a consistent story from both parents, to all medical personal throughout the child's hospital stay. This reinforced the validity of the presentation and allowed us to safely agree that no further investigations were warranted.

Our hospital has an agreed protocol for all paediatric patients being admitted to the A&E department in order that no child or presentation can be missed due to inexperienced, overworked/busy doctors or cases that are difficult to determine. Special attention is given to these cases to determine the nature of the incident and the risk of it being a NAI.

Another protection method in place is that all children under the age of 16^{1 7 8} presenting with traumatic injuries are to be assessed by the paediatric team: this includes burns. It is also a requirement of the Royal College of Paediatrics and Child Health that all paediatricians are to be trained in assessing children for NAIs.

Recent medical cases in the media including the enquiry into the death of 'baby'⁹ reminds us all that as doctors and healthcare professionals we need to make sure that every presentation of a child to the A&E department provides us with a chance to prevent any further NAI cases to go unnoticed and thus ensuring the safeguarding of children.

Competing interests None.

Patient consent Obtained.

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Learning points

- ▶ Always keep NAI as a differential diagnosis for all traumatic injuries in paediatric patients.
- ▶ Over 90% of burns can be prevented through parents and patients education on health and safety.
- ▶ Good communication between medical professional allows thorough history and allows histories to be compared to allow cases of concern to undergo further investigation.
- ▶ It is the responsibility of all medical personal to help prevent NAI and child abuse and ensuring the safeguarding of children.

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