Introduction and Acknowledgement/Warning

Content of this podcast will likely be distressing to listeners and especially so to those trainees who are parents themselves. If at any point, you feel overwhelmed listening to it, then switch it off.....take a few deep breaths and return to it at a time you are mentally OK.

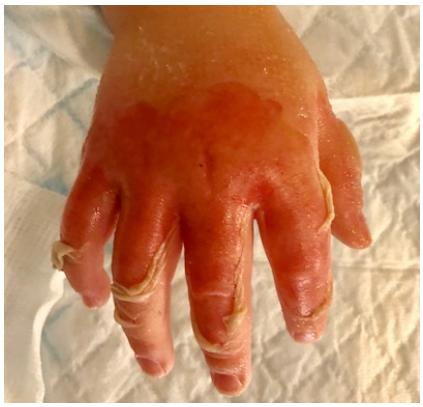
SAQ NAI

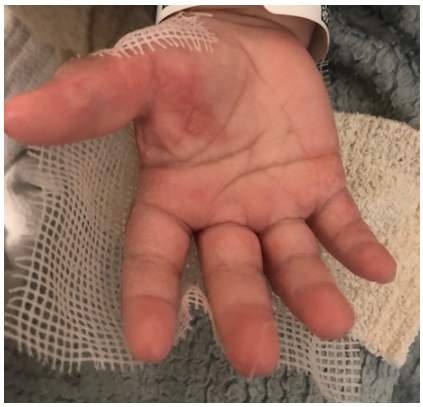
You are the consultant in charge of the paediatric area in a suburban emergency Department. Your registrar comes to you asking about treatment options for a 2 year old child who has sustained burns to the hand.

The registrar tells you that child sustained the burn to the back of his right hand when he put the hand over a hot plate whilst sitting on a kitchen bench while mum was cooking.

On questioning the mother, she states that the child leaned backward onto the hot plate but did not sustained any further injury.

On examining the child, you notice the burn to the hand as shown in the picture below.





Question 1: (2 marks)

Describe and interpret the features of this injury?

1. Moist Scald to the dorsum of the right hand with mixed superficial partial thickness to deep partial thickness burns, most likely tender to touch
2. The burn on the dorsum of hand indicates injury inconsistent with the history given by mum, thus raising a suspicion of NAI.

Question 2: (5 marks)

List the differential diagnosis suggestive of a condition other than NAI in burns.

1. Accidental burns
2. Phytophotodermatitis
3. Various complementary and alternative therapies (cupping, moxibustion, coining, salting, garlic application)
4. Staphylococcal Scalded Skin Syndrome
5. Impetigo

Question 3: (6 marks)

Name 6 historical red flags for NAI?

1. Parental denial of trauma despite severe injury
2. Implausible history for degree or type of injury (eg, major trauma attributed to a "fall down the stairs" or other short fall such as a fall from a sitting position or an injury mechanism that requires the child to have capability beyond their developmental level [eg, severe scald burns in a 12-month-old attributed to the patient "turning on the hot water faucet"]) (Injury not consistent with developmental age)
3. Injury pattern that doesn't fit with developmental level of child
4. Unexplained or excessive delay in seeking care
5. Inconsistent history from Caregiver
6. Previous involvement of DHS

7. Domestic violence, Drug/Alcohol abuse, Low Socio-Economic Status
8. Prior presentations suspicious for NAI
9. Significant comorbidities or medical concerns with child such as prematurity, congenital defects.
10. Severe injury explained as self-inflicted or blamed on other young children or pets

Question 4: (5 marks)

List five (5) examination findings that would support your suspicion.

1. Oral injuries e.g. torn frenulum, palatal petechiae
2. Eyes: retinal haemorrhages
3. Burns: cigarette, immersion, splash, branding
4. Head injuries: altered conscious state
5. Abdo: tenderness
6. Skin: bruising multiple ages and multiple sites, e.g. torso, ears, face, neck e.g. pinching, slap mark, restraint, grab marks
7. FTT, growth and developmental delay
8. General: malnutrition, poor hygiene
9. Genital injury

Question 5: (5 marks)

Name 5 characteristics of a bruise on a child that increase your level of suspicion for NAI.

1. Any bruising in infants younger than 6 months of age
2. More than one bruise in a pre-mobile infant and more than two bruises in a crawling child
3. Bruises located on the torso, ear, neck, or buttocks
4. Bruises with a pattern of the striking object (eg, slap, belt, or loop marks; spoons; spatulas; or other objects)
5. Human bite marks

Question 6 (5 marks)

List five (5) radiological findings that would support your suspicion

1. Healing fractures of different ages
2. Metaphysical chip # long bones
3. Spiral fracture long bones e.g. humerus
4. CTB: subdural hematoma, acceleration-deceleration injury, diffuse axonal injury
5. Posterior rib fracture
6. Avulsion Fracture thoracic/lumbar spine
7. Torsional injury, bucket handle injury

BEWARE of Toddler Fractures

Toddler fractures typically occur between nine months and three years of age and are believed to be the result of new stresses placed on the bone due to recent and increasing ambulation.

Although early reports suggested that tibial toddler fractures were indicative of non-accidental injury, subsequent work has suggested that this is not the case and that the vast majority are not suspicious. As such they should not raise the alarm when present in isolation and the correct age group (i.e. ambulating toddlers).

Question 7 (4 marks)

List 4 types of Fractures with less specificity for child abuse.

1. Isolated long bone fractures in ambulatory children (such as toddlers tibia fracture)
2. Linear skull fractures
3. Clavicle fractures
4. Subperiosteal new bone formation

Question 8 (7 marks):

What would be your plan for further management of this child

Plan:

1. Cooling of the hand
2. Analgesia
3. Tetanus immunisation if child is unimmunised
4. Referral to Forensic Paediatric Medical Service at a tertiary children's hospital
5. Contact DHS
6. Photograph the injuries
7. Early engagement of social work to enquire about the health of rest of family and if mother needs help
8. Enquire about siblings and safety of siblings
9. Referral to a burns unit/Plastic Surgeon

It's important to examine the child from head to toe thoroughly