

Interpreting physical signs of child maltreatment: 'grey cases' and what is 'reasonably possible'

Geoff Debelle

Abstract

There is a growing evidence-base for physical signs of child maltreatment. However, health professionals sometimes find themselves in situations that are not clear cut, particularly when there is one suspicious injury in an otherwise normal child in a family where there are no risk factors for maltreatment present. This paper highlights such situations and guides the clinician through uncertainty to a consideration of whether or not the explanation for an injury is reasonably possible. This will be done by discussing the location, configuration and patterns of injury arising from low level falls, stairway falls, climbing into the bathtub, pacifiers or bottles, and being bitten by another child; explanations often proffered for an injury.

The location of bruising in disabled children and young people will also be discussed.

If uncertainty surrounding the causation of an injury remains following advice and peer review, this must be acknowledged and stated unequivocally.

Keywords ecchymosis; burns; bites; oral haemorrhage; subdural haematoma; fractures; falls; child abuse

Introduction

The diagnosis of physical abuse in a child presenting with injury is one of the most difficult challenges in clinical paediatrics. However, there is an emerging evidence-base that has been reviewed extensively and is widely available; this includes systematic reviews of bruises, bites, abusive head trauma, burns, fractures and oral injuries (see Further Reading). This evidence base will be drawn on but not comprehensively covered here.

Despite the evidence-base, there are signs of physical injury that remain equivocal and situations where the likelihood of physical abuse is difficult to determine; e.g. an infant with a torn labial frenum and no other external signs of injury. This paper will focus on such 'grey cases' where 'diagnostic uncertainty' can lead to circumspection and indecision. It is important to stress from the outset that expert advice from a senior paediatrician should be sought in such cases and carefully documented.

Geoff Debelle MBBS, FRACP, FRCPC, DRCOG is Consultant Paediatrician at Birmingham Children's Hospital, Steelhouse Lane, Birmingham, UK. Conflicts of interest: none declared.

This article will not cover the physical signs of early neglect, an important emerging area, particularly in child abuse prevention.

Bruising

Bruising is very uncommon in non-independently mobile infants (less than 1%). It increases in frequency with greater mobility, occurring over bony prominences on anterior surfaces such as the shins, knees and elbows, corresponding to falls. Bruising is generally uncommon on the neck, ear, buttocks, forearm, abdomen, upper arm, posterior leg and foot. Bruising across the forehead may occur in infants that are non-mobile but attempting to pull to stand and, when doing so, bump their head, or when crawling. Facial bruising may occur in toddlers through slipping, tripping and falling, with less than 6% occurring on the cheeks and periorbital areas. In young children (less than 6 years), accidental bruising occurs predominantly in a 'T' shape; across the forehead and down to involve the nose, upper lip and chin, with bruising to the back of the head in more than one-third.

Bruising is the commonest physical manifestation of child maltreatment and is characterized by its location, pattern and configuration (Box 1). In abused children, bruises tend to occur away from bony prominences, the commonest site being the neck, ear and cheeks, buttocks, trunk, and arms. Bruises are large, commonly multiple, and occur in clusters. *Petechial bruising* is more common in abusive injuries but their absence is of no diagnostic value.

Extravasation of blood along tissue planes may distort the precise location of an injury. For example, blood tracking down from a forehead bruise will result in 'two black eyes'; blood from scrotal or penile bruising may track into the suprapubic area, resulting in a diffuse, triangular bruise, the apex of which is the original injury.

Non-abusive bruising in disabled children can occur on the abdomen, arms and hands but is uncommon on ears, neck, chin, anterior chest and genitalia. As they become more mobile, the location of bruises more closely resembles that of able-bodied children.

Predisposition to 'easy bruising'

The characteristics of bruising suggestive of physical abuse are shared to some extent by those in children with *underlying congenital or acquired defects in haemostasis*, particularly in infants. Unusual bleeding out of proportion to the purported injury must be investigated. It is therefore important to take a full drug history (NSAIDs, warfarin, aspirin) and a past and family history of prolonged bleeding with haemostatic challenge and not to accept at face value a story of 'easy bruising'.

Blood should be taken for a full coagulation profile (Box 2); an INR is not sufficient. It is advisable to liaise with the laboratory and to take a spare 1 ml blood in citrate for additional investigations, when required. It is also advisable to discuss any abnormal results with a paediatric haematologist; e.g. Factor XII deficiency does not correlate with clinically detectable bleeding. Haematological disorders that may present with bruising are listed in Box 3.

If the coagulation profile is normal, a rare connective tissue disorder that may predispose to easy bruising, such as Ehlers–

Characteristics of bruising suggestive of physical abuse

- Bruising in infants that are not independently mobile
- Bruises situated away from bony prominences
- Bruises on the ear, neck, cheeks, buttocks, abdomen, arms and hands
- Multiple bruises
- Bruises occurring in clusters
- Bruises that carry a positive or negative imprint of a hand, implement or ligature used

Box 1

Danlos syndrome or Osteogenesis Imperfecta (OI), can usually be excluded by a detailed and careful history and examination such as a negative family history and the absence of excessive sweating, abnormal skin elasticity or unusual scars, joint hypermobility, blue sclerae and *significant* Wormian bones on skull X-ray. Mild degrees of joint hypermobility are present in the normal population. Blue sclerae can be a subtle finding, also seen in normal infants and is not diagnostic of OI on its own. To be significant, Wormian bones must be greater than 10 in number and measure greater than 6 × 4 mm, arranged in a mosaic pattern. The only indication for further investigation (e.g. DNA analysis on a blood sample) is further significant bruising while the child was in a safe environment.

Non-haematological conditions that may mimic physical abuse are listed in Box 4.

Patterns of abusive bruising

There are distinctive patterns of bruising characteristic of abusive injury seen even in the presence of an underlying disorder. Both can co-exist and the diagnoses are not mutually exclusive. The question as to whether such a bruise could arise with lesser

Blood tests undertaken in a child with bruising due to suspected physical abuse

- Coagulation screen:
 - Prothrombin Time (PT)
 - Activated Partial Thromboplastin Time (aPTT)
 - Thrombin Time
 - Fibrinogen (Clauss)
- Full blood count and film
- Factor VIIIc, Von Willebrand Factor antigen and activity
- In a child less than 2 years:
 - Platelet glycoproteins 1b, 1Ib/1IIa or PFA closure time with epinephrine and ADSP
 - Factor XIII assay/screen
- In a child of any age with an unexplained CNS haemorrhage: Factor XIII assay/screen

Age appropriate normal ranges must be quoted for all results.

Box 2

Haematological disorders that may present with bruising

- Defects in primary haemostasis (bruises, petechiae, bleeding from mucosal membranes):
 - Von Willebrand's disease
 - ITP
 - Inherited disorders of platelet function (e.g. storage pool disorder, Glanzmann's thrombasthenia)
 - Vasculitis (Henoch–Schonlein purpura, sepsis)
 - Drugs (aspirin, NSAIDs)
 - Connective Tissue disorders (Ehlers–Danlos syndrome)
 - Scurvy
- Defects in secondary haemostasis (bleeding into deeper tissues such as muscle and joints):
 - Coagulation disorders (e.g. Factor VIII deficiency, Factor XIII deficiency)
 - Vitamin K deficiency
 - Drugs (warfarin, heparin)
 - α_2 antiplasmin deficiency

Box 3

degree of trauma, such as so-called 'normal handling' in a child with an underlying haemostatic defect may arise. Normal handling rarely gives rise to bruising under any circumstances; some force is necessary and the minimum required to cause bruising would be dependent on the nature and severity of the underlying condition.

A bruise pattern commonly mimics the injuring object. With high-velocity impact injuries, such as a *hand slap* or whipping with an electric flex, an unbruised *negative image* of the hand or cord is outlined by a fine rim of petechiae due to rupture of stretched capillaries at the margin of the injuring object. This may occur even when the force does not crush directly impacted vessels. Greater forces rupture directly impacted vessels creating a *positive image* bruise of the object.

Anatomy rather than the shape of an injuring object determines other patterns: Prominent *vertical linear bruising along*

Non-haematological conditions that may mimic physical abuse

- Birth marks (e.g. blue spots, some haemangioma)
- Cultural practices (e.g. coining, cupping)
- Congenital melanocytic naevi
- Self-inflicted injuries, including dermatitis artefacta
- Photosensitive dermatitis and contact dermatitis (either may leave a patterned mark that may be mistaken for an implement)
- Idiopathic scrotal oedema (self-limiting, acute scrotal swelling and erythema that may mimic scrotal bruising)

Box 4

Download English Version:

<https://daneshyari.com/en/article/4172470>

Download Persian Version:

<https://daneshyari.com/article/4172470>

[Daneshyari.com](https://daneshyari.com)