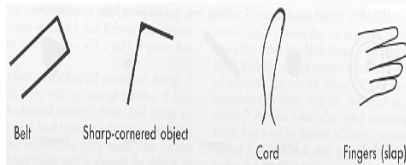


Burns and Bruises: The Evaluation of Cutaneous Injuries in Child Abuse

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The photos in the handout have been removed for privacy purposes.



- Most common injury, 90%¹
- Only 8% pattern injuries²
- Location
- Skin color affects detection
- Can't date by color
- Labs: CBC, PT, PTT

Bruises

Stephenson T. Bruising in children. *Current Paediatr.* 1995;5:225-229.
2) McMahon P. Soft tissue injury ... child abuse. *J bone joint surg.* 1995

Accurate dating of bruises by color is not possible with the present scientific literature:

- Color varies with depth of bruise and skin color
- rate of healing varies with location on body
- timing of bruise appearance depends on depth
 - superficial bruises appear early
 - deep bruises may take take days to appear

Normal Bruises

- Bruises over bony prominences
 - knees
 - shins
 - forehead
- Facial scratches in babies with long fingernails

Non-ambulatory children rarely bruise accidentally

- Sugar, et al. *Archives of Ped and Adolescent Medicine*, 1999
- Carpenter, *Archives of Diseases in Children*, 1999
- Mortimer, *Archives of Diseases in Children*, 1983

Skin Injuries in Children

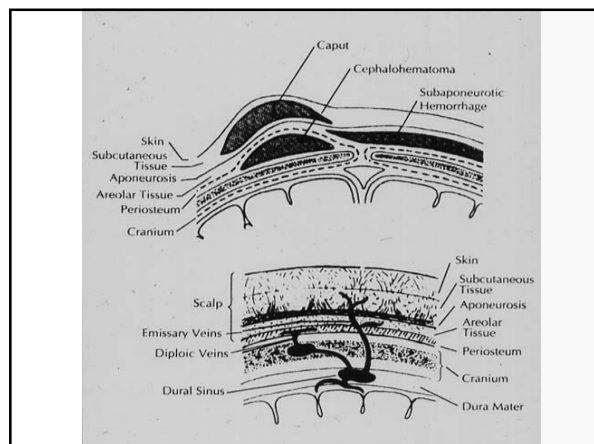
- < 9 months old: 1.2% with bruises
- > 9 months old: 76.6% with skin injuries
- < 1% 15 or more injuries
- all ages:
 - < 2% bruises to thorax & abdomen
 - < 1% bruises to chin, ears, or neck
- no difference between boys and girls

Labbé J, Caouette G. Recent skin injuries in normal children. Pediatrics 2001 108:271 - 276

ACCIDENTAL	ABUSIVE
Shins	Upper arms
Lower arms	Anterior thigh
Under chin	Trunk
Forehead	Genitalia
Hips	Buttocks
Elbows	Face
Ankles	Ears
Bony prominences	Neck

Patterned Injuries

Facial Injury



Oral Injury

Differential Diagnosis of Bruising

- Accidental
- Inflicted
- Dermatologic
- Coagulation disorders
- Folk therapies
- Genetic/Metabolic
- Miscellaneous

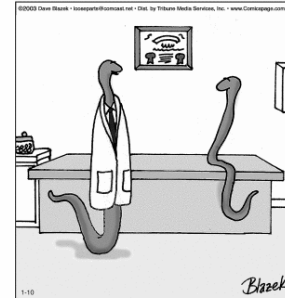
Coagulation Disorders Which May Mimic Abuse

- Idiopathic Thrombocytopenic Purpura (ITP)
- von Willebrand's Disease
- Hemophilia
- Ingested anticoagulants
- Leukemia
- Vitamin K deficiency

Mongolian Spots

- Black 90 - 95.5
- Asian 81.0- >90%
- Latin-American 70.1
- White 9.6
- Rarely on face
- Disappear by age 4 - 5 in 95%

Loose Parts by Dave Blazek



"Now let's have a look at your skin.
Or, if you like, you can leave it and
pick it up later."

Burns

Incidence and Prevalence

- 40,000 children <15 yrs. hospitalized yearly
- >2000 children die yearly from burns
- Approximately 20% of burns are inflicted
- Scald burns - 85% of all burns in children
- Flame burns - 13%
- Electrical, chemical - 2%

Burns

- 30 - 50% result of abuse
- Configuration
 - Sparing of creases or pressure points
 - Stocking/glove
 - Pattern burns
 - > 2 sites, symmetric
- Children burn in 1/4 - 1/2 time

Classification of Burn Injuries

Superficial	Superficial layer of the epidermis Characterized by redness only
Partial thickness	Extends into the dermis causing blistering and tissue loss
Full Thickness	Entire dermis, appendages, nerves destroyed, no pain
Fourth Degree	Extends into the muscles, bones and joints

Types of burns

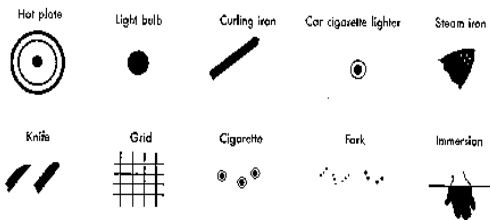


FIG. 45-3. Distinctive burns. (From Johnson CP: Pediatric Clin North Am 37:807, 1990.)

Solid Contact Injuries

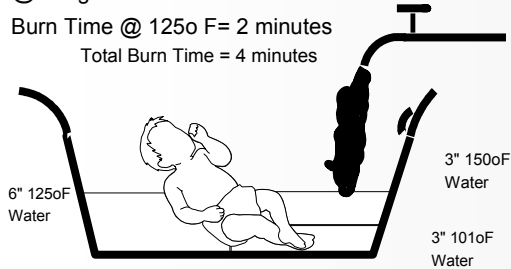
Liquid Injuries

Time required to sustain a full thickness burn from hot liquid

<u>Degrees</u>	<u>Time</u>
120	10 minutes
122	5 minutes
127	1 minute
130	30 seconds
140	5 seconds
150	2 seconds
158	1 second

Child left in comfortable water.
Parent returns to find hot running, child
burned.

To add 3" (11 gal)
@ 5.5 gal/min flow = 2 minutes
Burn Time @ 125o F= 2 minutes
Total Burn Time = 4 minutes



Other Types of Burns

- Radiation burns – commonest is sunburn
- Flame burns- commonly occur in house fires
- Chemical burns – acid, alkali, peppers, garlic
- Electrical burns – combination of heat and electrical forces
- Microwave burns

Differential Diagnosis of Burns

- Accidental
- Inflicted
- Dermatologic conditions
- Chemical burns
- Folk therapies

Child Abuse Program

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Medical, Mental
Health, and Case
Management
services for
children who may
have been abused

- Medical consults
- Mental health intervention
- Forensic interviews
- Parenting capacities