Supplementary data

SUSPICION OF PHYSICAL CHILD ABUSE

DO NOT HESITATE

Consult with Child Protection Team

Act according to your local guidelines and laws

ANAMNESTIC RED FLAGS

All injuries < 6 months of age

No traume / denial of trauma

No witness to injury

Delay in seeking medical care

History not compatible with injury

Repeated emergency room visits

OBJECTIVE RED FLAGS

Respiratory deterioration

Seizures

Retinal hemorrhage

SKIN

Infant with any bruise

Child < 4 years: bruise in TEN* region

Burns and bite marks

TEN: chest, abdomen, back, buttocks, genitourinary region, hips, ears, neck

RADIOLOGICAL RED FLAGS

Any fracture in non-ambulatory

Long-bone fractures: femur, humerus, tibia

Rib fractures

Multiple fractures

Multiple fractures of different age

Classic metaphyseal lesion(s)

Skull fracture(s)

Subdural hematoma / hygroma

RISK INDICATORS

CHII D

Internalizing behaviors (fearfulness, social distancing) (1)

Externalizing behaviors (violence, hyperactivity) (1)

Appears neglected (2)

Learning and intellectual disability (3)

Born prematurely (4)

Living in foster care (5)

Prior contact with social services (6)

RISK INDICATORS

CAREGIVER

Low paternal age (1)

Low socioeconomic status (1)

Violence in family (1)

Maltreated in childhood (1)

Multiple pregnancies / twins / triplets (1)

Substance abuse (1)

Lack of social competences (1)

Psychiatric illness (1,7)

Depression
PostTraumatic Stress Disorder
Attention Deficit Hyperactivity Disorder
Internet Gaming Disorder

RISK INDICATORS

ENVIRONMENT

Health crises (2,8,9)

Natural disasters (10)

High levels of crime (11)

Low neighborhood cohesion (1)

Neighborhood poverty (7,12)

Relational issues between caregivers (1)

Inappropriate interaction between caregiver-child (2)

1: Stith, 2009, 2: Baird, 2020, 3: Vanderminden 2013, 4: Kelly, 2017, 5: Benedict 1993, 6: Sorenson, 1994, 7: Cross 2018, 8: Kostelny 2016, 9: Petersen 2020, 10: Molnar 2003, 11: Keenan, 2014, 12: Doyglas 2014

Figure 1. Red flags and risk indicators of physical child abuse.

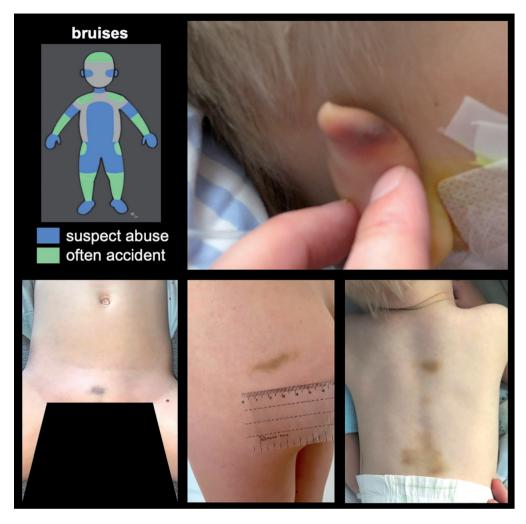


Figure 2. Bruises are the most common finding in physically abused children, especially when present in the blue areas and occurring in children under 4 years of age. In particular, bruising of the torso, ears and neck (TEN region) is highly suspicious of NAI. Physical examination of the entire body is mandatory

All 4 siblings had incomplete compliance with vaccination program, signs of malnutrition, vitamin D deficiency, pinworms, and lice.

Clinical presentation of NAI illustrating how red flags and risk indicators should raise attention

Findings after clinical and paraclinical assessment by the child History and clinical presentation protection team Bilateral retinal hemorrhages A 5-month-old infant was brought to the emergency department as - CML (distal femur and tibia undergoing healing) a result of seizures with no history of trauma. Medical officer found - Signs of older bilateral fractures of several costae bruises to the back and a CT scan revealed bilateral frontal subdural Elevated liver enzymes (ALT 129) hemorrhages (SDH). - Kidney abnormalities, possibly sequelae after trauma [Bruises had been noticed by the grandparents on several occasions, - Signs of old fracture of the pubic bone (ramus superior) but had not been reported]. An unresponsive 10-month-old was brought to the emergency - Truncal bruising department. The mother was out shopping for groceries and the Multiple rib fractures father said he heard a bump from the nursery, while he was playing a - Retinal hemorrhage video game online. He found his child unconscious next to the bed. - CML (distal femur) A CT scan revealed bilateral subdural hematomas and a complex occipital skull fracture. A 2.5-year-old child presented with an acute diaphyseal femoral During hospitalization, adequate parental skills and normal developfracture, accompanied by his mother. He had had 2 previous visits ment and behavior of the child were observed. Furthermore, the skelwithout fractures. According to the mother he had just learned to etal survey did not reveal additional injuries. climb and fell in a playground. Due to the number of hospital visits The highly relevant initial suspicion of child maltreatment was disand the spiral nature of the femoral fracture the child protection team proved. was involved. A 12-year-old boy presented in school with bruising on his back, with Poly-victimization (neglect, physical and sexual abuse): a pattern indicating use of a belt and extension cord. - Bruises and scarring on the back, upper arms and neck - Signs of caries and dental neglect The boy had recently started in school after 12 months of absence - Signs of forced oral sex with injuries on tongue and lip ties and oral along with his 3 younger siblings. gonorrhea infection The family had frequently moved between several municipalities. A gym teacher notified the social authorities. Inadequately treated asthma