Review Article

Skin manifestations of child abuse

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ABSTRACT

Child abuse is a major public health problem all over the world. There are four major types of abuse: physical abuse, sexual abuse, emotional abuse and neglect. The most common manifestations of child abuse are cutaneous and their recognition; and differential diagnosis is of great importance. Clinicians, especially dermatologists, should be alert about the skin lesions of child abuse. In the diagnosis and management of child abuse, a multidisciplinary approach with ethical and legal procedures is necessary. In this manuscript, cutaneous manifestations of physical, sexual, emotional abuse and neglect are reviewed and discussed.

Key words: Child abuse, emotional abuse, physical abuse, sexual abuse, skin signs

INTRODUCTION

The abuse and neglect (or maltreatment) of children is a worldwide problem, although its manifestations and extent vary. It is far more prevalent than is generally recognised. Child maltreatment has short-term and long-term physical, psychological, and social consequences.[1] Abuse, neglect and exploitation remain important causes of mortality and morbidity for the world's children, irrespective of ethnicity, social status or religious belief. Identification and prevention of abuse continue to be impeded by difficulties in recognition and ownership, professional accountability and responsibility, and lack of resources.[2]

Dermatologists are uniquely qualified to recognize the cutaneous signs of child abuse and those conditions that can mimic abuse. In general, nonaccidental injuries may manifest by cutaneous injury, skeletal trauma, or head injury. Cutaneous injury is the most common injury caused by abuse.[3] Therefore, cutaneous signs are very important in the diagnosis of child abuse. In this review cutaneous manifestations of physical, sexual, emotional child abuse and neglect are discussed.

EPIDEMIOLOGY AND DEMOGRAPHIC CHARACTERISTICS

Measurement of child abuse is inherently difficult, since it is rarely seen directly by people outside the immediate family, and is often unreported. However data show that child abuse and neglect are not rare. Child maltreatment happens in all countries and in families of all racial and religious groups. Different laws and child welfare systems, however, preclude comparisons across countries. Physicians and others can be reluctant to become involved. Thus, cases reported to child welfare agencies probably represent the tip of the iceberg.[1]

The number of reports to children's protective services (CPS) and law enforcement agencies in US in which the alleged abuse or neglect occurred have steadily increased since in the 1960s. Reports of all types of abuse increased from 669,000 children in 1976 to 3 million in 1995 (1 out of every 25 children).[4]

During 2007, an estimated 3.2 million referrals, involving the alleged maltreatment of approximately 5.8 million children, were referred to CPS agencies. For 2007, more than one-half (57.7%) of all reports of alleged child abuse or neglect were made by professionals. 794,000 children were determined to be victims of abuse or neglect. Among the children confirmed as victims by CPS agencies in 2007 children in the age group of birth to 1 year had the highest rate of victimization at 21.9 per 1,000 children of the same age group in the national population, more than one-half of the child victims were girls (51.5%) and 48.2 percent were boys and approximately one-half of all victims were white (46.1%), 21.7 percent were African-

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American, and 20.8 percent were Hispanic. As in prior years, neglect was the most common form of child maltreatment. CPS investigations determined that nearly 60 percent (59.0%) of victims suffered neglect, more than 10 percent (10.8%) of the victims suffered physical abuse, less than 10 percent (7.6%) of the victims suffered sexual abuse and less than 5 percent (4.2%) of the victims suffered from psychological maltreatment. An estimated 1,760 children died due to child abuse or neglect. The overall rate of child fatalities was 2.35 deaths per 100,000 children. More than 30 percent (34.1%) of child fatalities were attributed to neglect only, physical abuse also was a major contributor to child fatalities. More than three-quarters (75.7%) of the children who died due to child abuse and neglect were younger than 4 years old. Infant boys (younger than 1 year) had the highest rate of fatalities, at 18.85 deaths per 100,000 boys of the same age in the national population; and infant girls had a rate of 15.39 deaths per 100,000 girls of the same age. In 2007, nearly 80 percent of perpetrators of child maltreatment (79.9%) were parents, and another 6.6 percent were other relatives of the victim. Women comprised a larger percentage of all perpetrators than men, 56.5 percent compared to 42.4 percent. Nearly 75 percent (74.8%) of all perpetrators were younger than age 40. Of the perpetrators who were child daycare providers, nearly 24 percent (23.9%) committed sexual abuse. Of the perpetrators who were parents, nearly 90 percent (87.7%) were the biological parent of the victim.[5]

In the UK, 1-2% of children are abused each year.[6] In the USA, a similar percentage is maltreated (16.2 in 1000), of whom 9.2 per 1000 are physically, emotionally or sexually abused.[7] Surveys from both the USA and the UK indicate that 1 in 1000 children is seriously injured and 1 in 10,000 dies.[6-8] Self reporting surveys indicate that 1 in 10 UK adults has been subjected to some form of sexual abuse at the hands of an adult before the age of 16 years.[9] One-half had been subject to non-contact exposure, 1 in 200 had experienced full sexual intercourse and 1 in 400 incest. Approximately 1% of American children will experience some form of sexual abuse each year. Prevalence estimates in community surveys range from 6% to 62% for girls and from 3% to 16% for boys.[10]

In sexual abuse, more reported cases involve girls (female-male ratio=2.5:1). Although the risk of sexual abuse rises in preadolescence, children less than 6 years old constitute 10% of all victims. Case reports show a disproportionate representation in children from lower socioeconomic groups, but retrospective community surveys show neither class nor ethnic differences.[11] Approximately one in six physically abused and one in seven sexually abused children have suffered both kinds of abuse.[12]

Emotional abuse and neglect may precede or accompany other forms of abuse and they may result in impaired development.[2,13] In 2001, it was estimated that of 903,000 abused children, neglect was the most common type of abuse with the percentage of 57%. Seven percent of children were psychologically maltreated and 2% had medical neglect.[14]

Child labor is an important problem in some countries, such as India and Turkey. Different forms of abuse are also prevalent in street children. They have been exposed to general abuse, health abuse, verbal abuse, physical abuse and psychological abuse.[15,16] Besides physical, mental and sexual abuse, these children have anemia, gastrointestinal tract infections, vitamin deficiencies, respiratory tract infections and skin diseases along with a high prevalence of malnutrition.[17]

RISK FACTORS

Child abuse seldom results from one cause; rather, many risk factors usually interact.[18,19] Factors such as child's disability or a parent with depression predispose children to maltreatment.[20,21] Within a family, intimate partner violence increases children's risk of abuse. In communities, factors such as dangerous neighbourhoods or poor recreational facilities increase risk.[22] Societal factors, such as poverty and associated burdens contribute substantially to risk of maltreatment. However, children in all social classes can be maltreated, and physicians need to guard against biases toward low-income families.[23]

Known risk factors for physical abuse are teenage pregnancy, unwanted pregnancy, prematurity, developmental disorders and/or chronic illness, twin pregnancy, substance abuse, poverty, lack of knowledge of parenting, child health and development.[24] Child characteristics are also important in child abuse. Age, a previous history of abuse and comorbid conditions belonging to the child. About 71% of children are abused between the ages of 1 and 12. Children under

the age of 4 are at the greatest risk of severe injury, and account for 79% of child maltreatment fatalities, with infants under 1 year accounting for 44% of deaths. An abused child has a 50% chance of experiencing recurrent abuse and a 10% chance of death if abuse is not detected at the initial presentation. Children with learning disabilities, conduct disorders, chronic illnesses, mental retardation, prematurity, or other handicaps are at increased risk of incurring abuse.[25]

CUTANEOUS SIGNS OF PHYSICAL ABUSE

Up to 90% of victims of physical abuse present with skin findings.[26,27] Cutaneous manifestations of physical abuse include bruises, lacerations, abrasions, burns, oral trauma, bite marks and traumatic alopecia.[26]

Bruises, lacerations and abrasions

Although bruising is the most common physical sign of abuse, it is also a frequent finding in any active child.[28] Accidental bruising most commonly occurs over the knees and anterior tibial area.[29] It can also be seen over any bony prominence, such as the forehead, hips, lower arms, and spine. Bruising over relatively protected sites such as the upper arms, medial and posterior thighs, hands, trunk, cheeks, ears, neck, genitalia, and buttocks should raise suspicion of abuse, especially if the bruises are extensive and of varying age.[26,30] In practice, ageing of bruises is imprecise. The best that can be said is that bruises less than 24 h old do not show yellow coloration but red coloration may persist for a week.[2] Bruising of the genitalia and ears is highly suspicious for abuse. Accidental bruising of the head and face is uncommon in preambulatory infants as well as in school aged children, but it is more common in toddlers, as they are not yet steady on their feet.[31] Bruises are extremely rare in babies <6 months of age, as they are not yet mobile. Any single soft tissue injury in a preambulatory infant has a high correlation with abuse. Another helpful factor is the shape of the bruise, which can reflect the shape of the object used to inflict it. Pattern bruising is a strong indicator of abuse.[26] Paddles, belts, hands, sticks, shoes, electrical cords, kitchen implements and other instruments leave specific marks [Figure 1].[2,4,25] The most commonly used "instrument" is the hand. In Figure 2, bruises occured with belt are seen.

Multiple bruises in clusters, uncommon location, bruising away from bony prominences, bruises in a child under 9 months of age, bruises in a defined pattern, or different stages of healing, additional injuries and abrasions can provide valuable information for the distinction between inflicted and accidental injuries [Table 1].[25,32] Low light Wood's lamp may assist in identifying tissue injury.[2]

In addition to differentiating between accidental and nonaccidental bruises, dermatologic mimics of ecchymoses must also be taken into consideration when evaluating skin lesions. The differential diagnosis of ecchymoses includes Mongolian spots, blue naevi, angioedema, bleeding disorders, hypersensitivity vasculitis, infections, chilblains, connective tissue disorders, erythema nodosum, phytophotodermatitis, hemangiomas, purpura fulminans of meningococcemia and incontinentia pigmenti.[2,25]

Bite marks

All bite marks should raise suspicion of abuse and lead to full examination of the skin.[26] Bite marks are a form of abusive injury, and are of particular concern because of their potential for infection.[33] It is important to document the shape, color, and diameter of a bite mark to help identify possible perpetrators. Bite marks should be suspected when ecchymoses, abrasions, or lacerations are found in an elliptical or ovoid pattern. They typically have a central area of ecchymoses. They may be visualized more clearly at 2 to 3 days after the injury because of decreased edema and surrounding erythema. Human bite marks are typically superficial, whereas animal bites may cause

Table 1: Characteristics of inflicted injuries differentiating from accidental injuries[25]

Bruises, lacerations and abrasions
Uncommon location (typically protected areas, such as the buttocks, back, trunk, genitalia, inner thighs, cheeks, earlobes, or neck)
Bruises in a child <9 months of age who is not independently mobile
Bruising away from bony prominences
Multiple bruises in clusters
Patterned injuries
Burns
Burns that look older than the history would suggest
The existence of other injuries
Symmetricaly distributed burns
Burns localized to the perineum and buttocks, doughnut pattern
Burns suggestive of immersion: no splash marks, clear tide levels, and demarcated outline of the contacted surface, stocking-or glove-pattern burn
Wounds necessitating skin grafting or intensive care
Sparing or flexor creases
Burns of posterior head or back
Multiple burn sites
Patterned burns

deep punctures or lacerations. Adult bite marks can be differentiated from those of a child by findings such as maxillary intercanine distance of more than 3 cm and the tooth pattern. Individual tooth marks may not be distinguishable.[25]

Bite marks should be photographed with and without a ruler and with the lens of the camera focused perpendicular to the surface of the skin to prevent distortion. It is also useful to sample the alleged perpetrator's saliva for DNA testing. Prior to any cleansing, all bite marks should be swabbed with a sterile cotton swab moistened with sterile saline, which is then dried, placed in an envelope, and sent to a forensic laboratory for analysis. A second swab used as a control should be obtained from an unharmed area of the child's skin.[26,34]

Burns

Abuse by burning comprises approximately 6% to 20% of all child abuse cases.[35] Thermal injuries constitute about 10% of injuries to physically abused children and 5% of those who are sexually abused. Injuries may be inflicted in 1-16% of all children with burns or scalds; difficulty in diagnosis means that this form of abuse is probably under-reported and under-recognized.[2] Burn abuse appears to be more common in children under 3 years of age.[26]

It includes scalds, pattern burns because of contact with various household appliances, flame burns, cigarette burns, and electrical/chemical burns. Scalds are the most frequent form of burn abuse. Up to 14% of all pediatric scalds are due to abuse and more specifically 28% to 45% of scalds due to tap water are abusive.[36] Scalds are divided into immersion and splash/spill burns. Forced immersion burns tend to be symmetrical and have clear lines of demarcation, often called tide marks.[37] They tend to have uniform burn depth and commonly involve the buttocks, perineum and lower extremities. Characteristic features of forced immersion include stocking and glove distribution, zebra stripes, and donut hole sparing.[38] Stocking and glove burns occur when a child's hands and/or feet are forcibly immersed in hot water, resulting in symmetrical, circumferential, and well demarcated burns. Zebra stripes are due to sparing of the flexural creases secondary to the body's flexed position in the hot liquid. Donut-hole sparing occurs when the child buttocks are pressed against bathtub which is relatively cooler than the water in it. Accidental burns typically have irregular borders and nonuniform depth as the patient is struggling to escape the hot liquid. This thrashing also causes splash marks which, although they may sometimes be found in forced immersion, are more characteristic of accidental immersion.[26] Simultaneous scald burns to buttocks, feet, perineum and well-demarcated burns around the buttocks or bilateral symmetric glove and stocking burns are highly suspicious for physical abuse.[39] Burns inflicted with hot cement and lighter can be seen in Figures 3 and 4, respectively.

Splash and skill burns are scalds resulting when a hot liquid is thrown at or poured over a child. They often occur accidentally when a child spills a hot liquid and are not a frequent form of abuse. These burns are generally more superficial than immersion burns because the liquid rapidly cools and the time of contact with the skin is short. Distinguishing between accident and abuse in this type of a burn can be difficult. Both inflicted and accidental splash and spill burns have irregular margins and variable depth. Inflicted splash and spill burns are more frequently found on the buttocks and perineum. In accidental splash and spill burns, the head, neck and trunk are commonly involved as the hot liquid is pulled or knocked over from a higher surface and spilled over by the child.[26] Certain burns have shapes suggestive of the objects used to inflict them. Accidental contact burns are often patchy and superficial as the child quickly withdraws from the hot object. Inflicted contact burns are deeper, may be multiple, and have well demarcated margins. They are commonly due to hot irons, radiators, hair dryers, curling irons, and stoves. Several marks of abusive burn are presented in Figure 5.[4]

Cigarette burns represent a common form of burn abuse. Inflicted cigarette burns appear as 7 to 10 mm round, well-demarcated burns that have a deep central crater. They commonly appear grouped on the face, hands, and feet.[40,41] Microwave oven burns are a more unusual manifestation of abuse, but can occur when a small child is placed in an operating microwave oven. Partial or full-thickness burns occur on the skin surfaces closest to the device emitting the radiation. Subcutaneous fat is characteristically undamaged.[25] Children with abusive burns may have additional evidence of maltreatment, such as bruises, fractures, evidence of neglect, as well as a history of prior burns. Studies have shown that if there is a delay of >2 hours in seeking medical care for scalds, the injury is more

likely to be abusive.[26] The characteristics of inflicted burns differentiating from accidental ones were summarized in Table 1.

Potential mimickers of burns include cellulitis, sunburn, fixed drug eruption, contact dermatitis, phytophotodermatitis, dermatitis herpetiformis, staphylococcal scalded skin syndrome, toxic epidermal necrolysis, epidermolysis bullosa, bullous impetigo and congenital insensitivity to pain.[2,25,42] Mimickers of physical abuse were summarized in Table 2.

Oral injuries

Oral cavity may be a central focus for physical abuse because of its significance in communication and nutrition. A careful and thorough intraoral and perioral examination is necessary in all cases of suspected abuse and neglect. Oral injuries may be inflicted with instruments such as eating utensils or a bottle during forced feedings, hand, fingers, or scalding liquids or caustic substances. The abuse may result in contusions, burns, or lacerations of the tongue, lips, buccal mucosa, palate, gingiva; fractured, displaced or avulsed teeth; or facial bone and jaw fractures.[43,44] In a study performed by Naidoo, the lips were the most common site for inflicted oral injuries (54%), followed by the oral mucosa, teeth, gingiva and tongue.[45] Trauma to the lip occasionally produces large, dome-shaped hematomas instead of macular ecchymoses.[46]

Accidental injuries to the mouth are common and must be distinguished from abuse by judging whether the history, including the timing and mechanism of injury, is consistent with the characteristics of the injury and the child's developmental capabilities. Multiple injuries, injuries in different stages of healing, or a discrepant history should arouse a suspicion of abuse. Consultation with the dentist may be helpful in oral and dental injuries. Oral cavity is also a frequent site of sexual abuse in children.[43] Unexplained erythema or petechiae of the palate, especially at the junction of the hard and soft palate, may be evidence of forced oral sex. Tears of the labial or lingual frenulum can be a sign of a blow to the mouth, forced feeding, or forced oral sex. A torn frenulum has been said to be diagnostic of abuse, but can occasionally be seen when child falls on his or her face.[26]

Table 2: Cutaneous mimickers of child abuse[42]

Mimickers of physical abuse	Mimickers of sexual abuse
Linear eruptions	Lichen sclerosus et atrophicus
Inflammatory linear verrucous epidermal nevus	Anogenital warts
Allergic contact dermatitis	Perianal streptococcal cellulitis and streptococcal vulvovaginitis
Stretch marks	Genital herpes zoster
Phytophotodermatitis	Vulvitis circumscripta plasmacellularis
Non-linear eruptions	Perianal and vulvar Crohn's disease
Mongolian spots	
Hemangiomas	
Henoch-Schönlein purpura	
Urticaria pigmentosa	
Dermatitis artefacta	
X-linked icthyosis	
Bullous impetigo	
Congenital blistering diseases	
Acquired blistering diseases	
Neuroblastoma	

Other types of injuries

Inflicted fractures, head trauma, intraabdominal injuries and alopecia may be classified as other types of injuries. The most common cause of death from physical abuse is intentional head trauma. If an infant presents with coma, convulsions, apnea or increased intracranial pressure intentional head injury should be considered. Intra-abdominal injuries are the second most common cause of death in battered children. Affected children may present with recurrent vomiting, abdominal distention, absent bowel sounds, localized tenderness, or shock. Because the abdominal wall is flexible, the overlying skin may be free of bruises.[4]

Alopecia in a child can be traumatic origin as seen when a parent pulls the child's hair or uses the hair to grab the child. Pulling of hair may lead to petechiae at the site of the pulled hair roots. The scalp may be boggy, a sign of subgalael hematoma because of lifting of the scalp off the calvarium.[26] The differential diagnosis includes tinea capitis, traction alopecia, trichotillomania, loose anagen syndrome, and alopecia areata. Traumatic alopecia can often be difficult to distinguish from trichotillomania, but distinguishing characteristics of child abuse typically include signs of trauma with underlying scalp hematoma, hemorrhage, tenderness, and irregular outlines of localized hair loss.[25]

Cultural behaviors

Folk health remedies can produce characteristic skin lesions, such as petechiae, purpura, and hyperpigmentation, which often mimic physical abuse. Proper evaluation is necessary, because the use of cultural practices does not exclude the potential for child abuse. Some common cultural methods used to treat various illnesses include cupping, coining, spooning, moxibustion, caida de mollera and salting.[25]

Cupping has been used as a form of therapy to treat pain, poor appetite, fever and congestion in Middle Eastern, Asian, Latin American and Eastern European cultures. Circular burns, central ecchymosis and petechiae can be mistaken for abuse.[47] Coining, coin rubbing, or cao gio is a Vietnamese folk remedy using to treat fever, headache and chills. Linear erythema, petechiae, purpura and burns can be seen. Quat sha, also known as spooning, is similar to coining and is used in China. This method can result in a linear ecchymosis.[25,26] Moxibustion is used in Asian cultures for healing fever and abdominal pain. The lesions of moxibustion appear as a pattern of small discrete circular, target like burns. It may be confused with cigarette burns.[48] Caida de mollera is another cultural practice used for poor feeding, irritability and diarrhea in some Mexican-American subcultures. Salting, defined as the application of salt to the skin, is a Turkish cultural behavior thought to improve the health of a newborn's skin and to prevent sweat odour. This practice can cause epidermolysis and hypernatremia.[49] In Turkey, there is another cultural behavior applying in Muslim festival of Sacrifices. Blood of the sacrificial animal has been rubbed on the forehead of the child. It is believed that this folk remedy protects the child from badnesses.

CUTANEOUS SIGNS OF SEXUAL ABUSE

Sexual abuse includes any activity with a child, before the age of legal consent, that is for the sexual gratification of an adult or a significantly older child. Sexual abuse includes oral-genital, genital-genital, genital-rectal, hand-genital, hand-rectal or hand-breast contact, exposure of sexual anatomy, forced viewing of sexual anatomy, and showing pornography to a child or using a child in the production of pornography. Sexual intercourse includes vaginal, oral or rectal penetration. Sexual mistreatment of children by family members (incest) and nonrelatives known to the child is the most common type of sexual abuse. The least common offender is a stranger.[4]

Sexual abuse of children is often accompanied by no physical signs. Children's reports are often truthful and higher education is no protection.[2] Although physical examination holds an important place, it is the history that sets the gold standard in cases of sexual abuse.[25]

The presenting complaints may be nonspesific, such as sleep disturbances, abdominal pain, enuresis, encopresis, or phobias.[50] The first step to examination is an understanding of the normal pediatric genitalia and its anatomic variants.[51] The evaluation of sexual abuse requires a multidisciplinary approach. The clinician must have an understanding of the appropriate interview technique, childhood developmental milestones, normal and abnormal childhood sexual behaviors and normal pediatric anatomy.[52]

The risk factors of child sexual abuse include presence of a stepfather, children living without one or both natural parents, maternal disablement or absence, poor or punitive parenting.[53]

Specific findings of child sexual abuse are: a) The presence of semen/sperm/acid phosphatase/foreign DNA in the vagina, anus or external genitalia, b) pregnancy, positive evidence of *Chlamydia trachomatis*, gonorrhoea or syphilis in the absence of perinatal transmission, c) HIV infection not perinatally acquired or via transfusion of blood products, d) clear evidence of penetrating anogenital trauma, without accidental explanation, namely acute hymenal injury, laceration/bruising, transection, absence of tissue in the posterior sector, perianal lacerations or scarring extending deep to the external sphincter or beyond the anal margin.[2,25,54]

Findings that are highly suspicious are composed of evidence of other sexually transmitted diseases in the absence of perinatal acquisition, cleft extending through >50% of the posterior hymenal rim, rapid reflex anal dilatation without medical reason, especially if accompanied by irregularity of the orifice, acute abrasions and lacerations of genitalia, bites or suction marks on genitalia or inner thighs, repeated and frequent exhibition of sexualized behavior. Repeated perineal symptoms such as pain, itching, moderate reflex anal dilatation, recurrent urinary tract infections, refractory constipation, psychiatric disturbances such as mutism, anorexia and attempted suicide, recurrent psychosomatic illness and inappropriate behaviors with other children or adults are less specific findings of sexual abuse.[2]

Differential diagnosis of child sexual abuse

Normal congenital variations leading to misdiagnosis include periurethral bands, intravaginal ridges, midline perianal skinfolds, perineal grooves, diastasis ani, smooth wedge-shaped areas in the midline of the anal verge, abnormalities of the bulbocavernosus

muscle and a white linea vestibularis.[55,56] Accidental trauma, a variety of dermatologic conditions such as lichen sclerosis et atrophicus, seborrheic dermatitis, atopic or contact dermatitis, scabies, lichen simplex chronicus, lichen planus, psoriasis, hemangiomas, bullous pemphigoid, perianal streptococcal

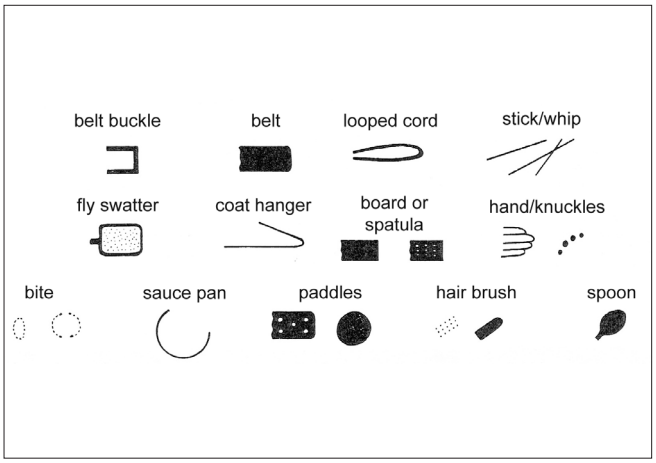

Figure 1: Patterns of bruising[4]

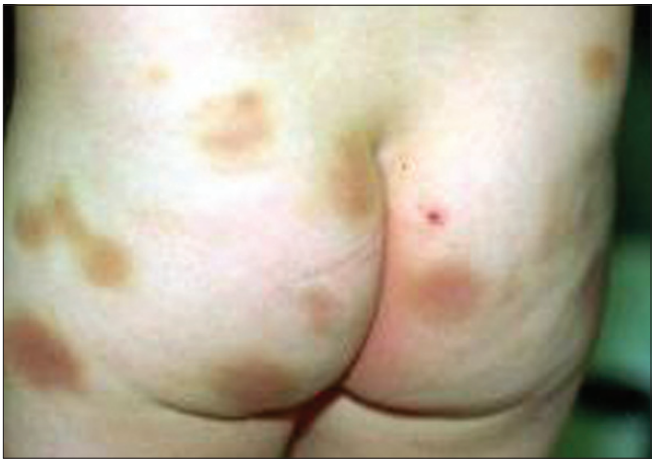

Figure 2: Bruises inflicted with belt[67]

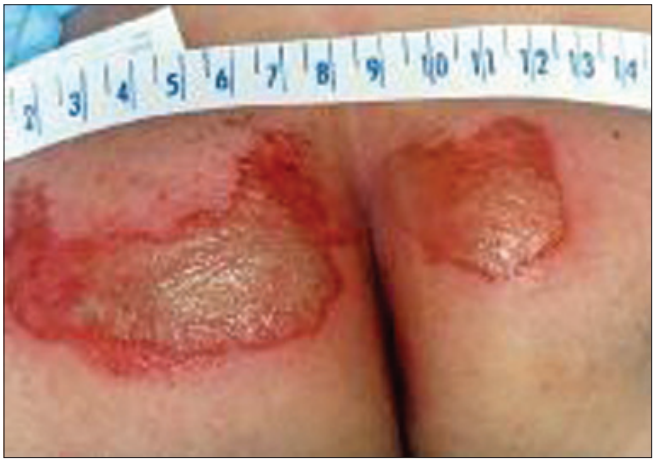

Figure 3: Burn inflicted with hot cement[67]

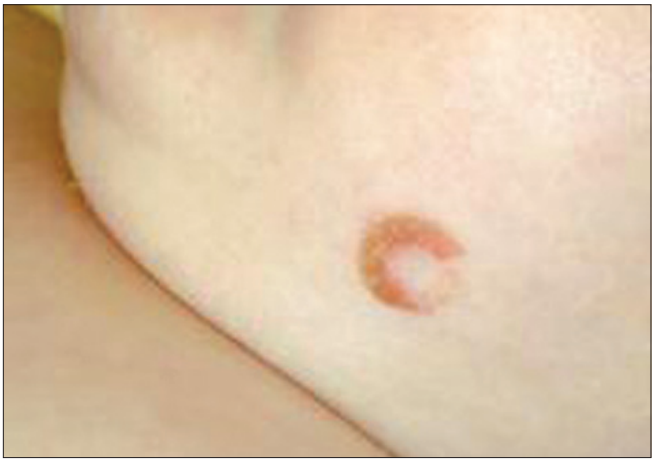

Figure 4: Burn inflicted with lighter[67]

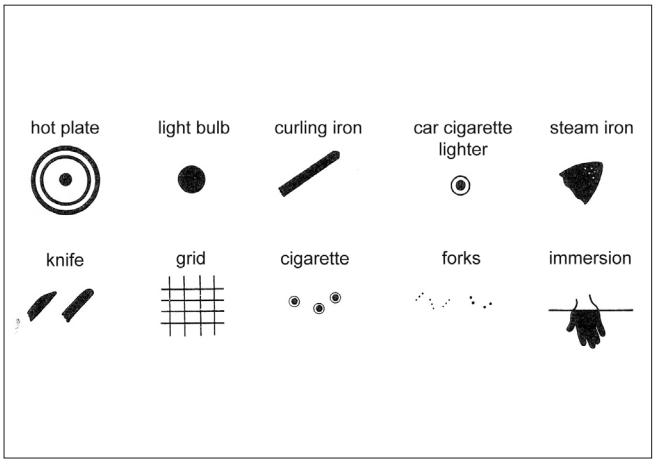

Figure 5: Burn marks of heated objects[4]

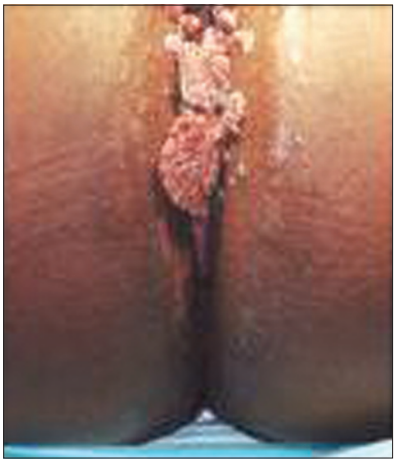

Figure 6: Anal condyloma accuminata[67]

dermatitis, vulvovaginitis, Behçet's disease, Kawasaki syndrome, threadworm infestation, foreign bodies and masturbation, labial adhesions, urethral caruncle and prolapse, Crohn's disease, haemolytic uraemic syndrome and neurogenic anus can be confused with child sexual abuse [Table 2].[2,25]

Sexually transmitted diseases of child sexual abuse

Diagnosis of sexually transmitted diseases in children outside the perinatal period raises the suspicion of child sexual abuse.[56] Perinatal transmission of *Neisseria gonorrhoeae*, Chlamydia, Trichomonas, syphilis, human papillomavirus (HPV) [Figure 6], herpes simplex virus (HSV), HIV and hepatitis B is well recognized. Fomite transmission and autoinoculation with HPV are recorded. Obtaining a history of abuse from a child with sexually transmitted disease may be difficult.[57]

The presense of sexually transmitted disease in a child less than 3 years of age is an indication for full exploration of the possibility of sexual abuse, including behavioral assessment, structured interview, medical examination and appropriate microbiology. The presence of one sexually transmitted disease is an indication to look for others.[2] Gonorrhoea, syphilis, Chlamydia trachomatis, Trichomonas vaginalis, herpes simplex virus infections, anogenital warts (HPV infections) and anogenital molluscum contagiosum must be interrogated by clinically and laboratory examinations.[58-64]

CUTANEOUS SIGNS OF EMOTIONAL ABUSE AND NEGLECT

Emotional abuse is defined as failure to meet a child's emotional needs such as subjecting children to verbal abuse, disparagement, critism, threat and ridicule resulting with impaired development.[2,12] Neglect can be described as the inability of a caregiver to provide for the basic needs of a child. It is chronic in nature and can involve inattention to a child's nutrition, clothing, shelter, medical care, dental health, safety, or education.[2]

Skin findings of neglect include marked subcutaneous wasting, severe dermatitis (often napkin dermatitis) and scaling of the skin caused by chronic avitaminosis and poor hygiene, often associated with pediculosis capitis. The child is typically not immunized and has multiple untreated injuries. When emotional abuse and neglect is suspected, full medical, developmental and psychosocial assessments are necessary.[2,25,30,43]

Other dermatological conditions, such as trichotillomania may rarely accompany emotional abuse. Hair loss is often frontoparietal in these children and their parents may be unaware that it is self-inflicted. Hair pulling is usually a sign of chronic social and emotional deprivation.[65]

Munchausen syndrome by proxy

This term is used to describe situations in which adults falsify their own symptoms in their own children. A parent, typically the mother, simulates or causes disease in the child. The parent may fabricate a medical history, cause symptoms by repeatedly exposing the child to a toxin, medication, infectious agent, or physical trauma, including smothering or alter laboratory samples or temperature measurements. Depending on the parent's sophistication, a variety of novel and exotic diseases may be simulated or created. Apnea and seizures are the two-common manifestations of Munchausen syndrome by Proxy.[4]

The clinical pattern is variable according to the agents. It includes forced ingestion of medications to cause vomiting and diarrhea; or injection of insulin with consequent seizures. The skin may be burned, dyed, tattooed, lacerated or punctured to simulate acute or chronic skin conditions. Infectious or toxic agents may be administered into any available orifice. Provision of intravenous lines during hospitalization may provide an opportunity for injection of infectious agents from feces, toxins and pharmacological agents. Urine and blood samples may be contaminated with foreign blood or stool. This syndrome may be associated with unexplained infant deaths.[66]

CONCLUSION

Since child maltreatment involves skin on several locations, cutaneous findings of child abuse is critical and important for a correct diagnosis. Multidisciplinary approach is necessary on evaluating the child abuse. Skin manifestations can be confused with normal variations, congenital disorders, infections and several systemic, and cutaneous diseases. History obtained from the child and parents is very important in addition to a comprehensive medical examination.

Child abuse also results with psychological effects, such as aggression, depression, anxiety, alcohol and drug abuse.

Clinicians, especially dermatologists, should be alert about the skin lesions of child abuse, because many of the physical findings of abuse are cutaneous. While performing medical examinations and interviews on the child, it should be behaved according to the legal and ethical rules.

REFERENCES

1. Dubowitz H, Bennett S. Physical abuse and neglect of children. Lancet 2007;369:1891-9.
2. Larcher V. Physical and sexual abuse. 2nd ed. Textbook of Pediatric Dermatology. In: Harper J, Oranje A, Prose N, editors. Oxford: Blackwell Publ; 2006. p. 1850-66.
3. Heymann WR. Cutaneous signs of child abuse. J Am Acad Dermatol 2005;53:138-9.
4. Johnson CF. Abuse and neglect of children. 18th ed. Nelson Textbook of Pediatrics. In: Kliegman RM, Behrman RE, Jenson HB, Stanton BF, editors. Philadelphia: Saunders-Elsevier; 2007. p. 171-84.
5. U.S. Department of Health and Human Services, Administration on Children, Youth and Families. Child Maltreatment 2007. Washington, DC: US Government Printing Office; 2009.
6. Hobbs CJ. Physical abuse. Child Abuse and Neglect. In: Hobbs CJ, Hankes HGI, Wynne JM, editors. Edinburgh: Churchill Livingstone; 1993. p. 47-75.
7. Johnson CF. Inflicted injury versus accidental injury. Pediatr Clin North Am 1990;37:791-814.
8. Meadow R. ABC of child abuse. Epidemiology. BMJ 1989;298:727-30.
9. Baker AW, Duncan SP. The incidence and prevalence of intrafamilial sexual abuses of female children in Great Britain. Child Abuse Negl 1985;9:457-67.
10. Finkelhor D. Epidemiological factors in the clinical identification of child sexual abuse. Child Abuse Negl 1993;17:67-70.
11. Finkelhor D, Baron L. High risk children. Source Book of Child Sexual Abuse. In: Finkelhor D, Baron L, editors. Beverly Hills: Sage; 1986. p. 60-88.
12. Hobbs CJ, Wynne JM. The sexually abused battered child. Arch Dis Child 1990;65:423-7.
13. Hobbs CJ. Physical abuse. In: Hobbs CJ, Hankes HGI, Wynne JM, editors. Child Abuse and Neglect. Edinburgh: Churchill Livingstone; 1993. p. 47-75.
14. Tenney-Soeiro R, Wilson C. An update on child abuse and neglect. Curr Opin Pediatr 2004;16:233-7.
15. Mathur M, Rathore P, Mathur M. Incidence, type and intensity of abuse in street children in India. Child Abuse Negl 2009;33:907-13.
16. Mishra D. Domestic child labor in India reasons and responses. Indian Pediatr 2009;46:266.
17. Banerjee SR, Bharati P, Vasulu TS, Chakrabarty S, Banerjee P. Whole time domestic child labor in metropolitan city of Koklata. Indian Pediatr 2008;45:579-82.
18. Svedin CG, Wadsby M, Sydsjö G. Mental health, behaviour problems and incidence of child abuse at the age of 16 years. A prospective longitudinal study of children born at psychosocial risk. Eur Child Adolesc Psychiatry 2005;14:386-96.
19. Wu SS, Ma CX, Carter RL, Ariet M, Feaver EA, Resnick MB, *et al*. Risk factors for infant maltreatment: a population-based study. Child Abuse Negl 2004;28:1253-64.
20. Kendall-Tackett K, Lyon T, Taliaferro G, Little L. Why child maltreatment researchers should include children's disability status in their maltreatment studies. Child Abuse Negl 2005;29:147-51.
21. Wilson SL, Kuebli JE, Hughes HM. Patterns of maternal behavior among neglectful families: implications for research and intervention. Child Abuse Negl 2005;29:985-1001.
22. Korbin JE. Neighborhood and community connectedness in child maltreatment research. Child Abuse Negl 2003;27:137-40.
23. Lane WG, Rubin DM, Monteith R, Christian CW. Racial differences in the evaluation of pediatric fractures for physical abuse. JAMA 2002;288:1603-9.
24. Rivara FP, DiGuiseppi C, Thompson RS, Calonge N. Risk of injury to children less than 5 years of age in day care versus home care settings. Pediatrics 1989;84:1011-6.
25. Swerdlin A, Berkowitz C, Craft N. Cutaneous signs of child abuse. J Am Acad Dermatol 2007;57:371-92.
26. Kos L, Shwayder T. Cutaneous manifestations of child abuse. Pediatr Dermatol 2006;23:311-20.
27. Stephenson T. Bruising in children. Curr Paediatr 1995;5:225-9.
28. Chadwick DL. The diagnosis of inflicted injury in infants and young children. Pediatr Ann 1992;21:477-83.
29. Carpenter RF. The prevalence and distribution of brusing in babies. Arch Dis Child 1999;80:363-6.
30. Raimer BG, Raimer SS, Hebeler JR. Cutaneous signs of child abuse. J Am Acad Dermatol 1981;5:203-14.
31. Labbé J, Caouette G. Recent skin injuries in normal children. Pediatrics 2001;108:271-6.
32. Carpenter RF. The prevalence and distribution of bruising in babies. Arch Dis Child 1999;80:363-6.
33. Kini N, Lazoritz S. Evaluation for possible physical or sexual abuse. Pediatr Clin North Am 1998;45:205-19.
34. Jessee SA. Orofacial manifestations of child abuse and neglect. Am Fam Physician 1995;52:1829-34.
35. Peck MD, Priolo-Kapel D. Child abuse by burning: a review of the literature and an algorithm for medical investigations. J Trauma 2002;53:1013-22.
36. Renz BM, Sherman R. Child abuse by scalding. J Med Assoc Ga 1992;81:574-8.
37. Yeoh C, Nixon JW, Dickson W, Kemp A, Sibert JR. Patterns of scald injuries. Arch Dis Child 1994;71:156-8.
38. Stratman E, Melski J. Scald abuse. Arch Dermatol 2002;138:318-20.
39. Jain AM. Emergency department evaluation of child abuse. Emerg Med Clin North Am 1999;17:575-93.
40. Hobbs CJ. When are burns not accidental? Arch Dis Child 1986;61:357-61.
41. Silverman RA. Scald or pseudoscald? Arch Dermatol 2002;138:1615-6.
42. AlJasser M, Al-Khenaizan S. Cutaneous mimickers of child abuse: a primer for pediatricians. Eur J Pediatr 2008;167:1221-30.
43. Kellogg N. American Academy of Pediatrics Committee on Child Abuse and Neglect. Oral and dental aspects of child abuse and neglect. Pediatrics 2005;116:1565-8.
44. Vadiakas G, Roberts MW, Dilley DC. Child abuse and neglect: ethical issues for dentistry. J Mass Dent Soc 1991;40:13-5.
45. Naidoo S. A profile of the orofacial injuries in child physical abuse at a children's hospital. Child Abuse Negl 2000;24:521-34.
46. Fenton SJ, Bouquot JE, Unkel JH. Orofacial considerations for pediatric, adult, and elderly victims of abuse. Emerg Med Clin North Am 2000;18:601-7.
47. Hansen KK. Folk remedies and child abuse: a review with emphasis on caida de mollera and its relationship to shaken baby sendrome. Child Abuse Negl 1998;22:117-27.
48. Amshel CE, Caruso DM. Vietnamese "coining: a burn case report and literature review. J Burn Care Rehabil 2000;21:112-4.
49. Yercen N, Caglayan S, Yücel N, Yaprak I, Ogün A, Unver A. Fatal hypernatremia in an infant due to salting of the skin. Am J Dis Child 1993;147:716-7.
50. Finkelhor D. Current information on the scope and nature of child sexual abuse. Future Child 1994;4:31-53.
51. Botash AS. Examination for sexual abuse in prepubertal children: an update. Pediatr Ann 1997;26:312-20.
52. Lahoti SL, McClain N, Girardet R, McNeese M, Cheung K. Evaluating the child for sexual abuse. Am Fam Physician 2001;63:883-92.
53. Finkelhor D. Epidemiological factors in the clinical identification of child sexual abuse. Child Abuse Negl 1993;17:67-70.

54. Adams JA. Medical evaluation of suspected child sexual abuse. J Pediatr Adolesc Gynecol 2004;17:191-7.
55. McCann J. Use of the colposcope in childhood sexual abuse examination. Pediatr Clin North Am 1990;378:63-80.
56. Bays J, Chadwick D. Medical diagnosis of the sexually abused child. Child Abuse Negl 1993;17:91-110.
57. Paradise JE. The medical evaluation of the sexually abused child. Pediatr Clin North Am 1990;37:839-62.
58. Thomas A, Forster G, Robinson A, Rogstad K; Clinical Effectiveness Group (Association of Genitourinary Medicine and the Medical Society for the Study of Venereal Diseases). National guidelines for the management of suspected sexually transmitted infections in children and young people. Sex Transm Infect 2002;78:324-31.
59. Darville T. Genital warts. Pediatr Rev 1999;20:271-2.
60. Sinclair KA, Woods CR, Kirse DJ, Sinal SH. Anogenital and respiratory tract human papillomavirus infections among children: age, gender, and potential transmission through sexual abuse. Pediatrics 2005;116:815-25.
61. Sinal SH, Woods CR. Human papillomavirus infections of the genital and respiratory tracts in young children. Semin Pediatr Infect Dis 2005;16:306-16.
62. Simmons KJ, Hicks DJ. Child sexual abuse examination: is there a need for routine screening for *N. gonorrhoeae* and *C. trachomatis*? J Pediatr Adolesc Gynecol 2005;18:343-5.
63. Janniger CK, Schwartz RA. Molluscum contagiosum in children. Cutis 1993;52:194-6.
64. Gardner M, Jones JG. Genital herpes acquired by sexual abuse of children. J Pediatr 1984;104:243-4.
65. Verbov J. Hair loss in children. Arch Dis Child 1993;68:702-6.
66. Schreier HA, Libow JA. Munchausen syndrome by proxy: Diagnosis and prevalence. Am J Orthopsychiatry 1993;63: 318-21.
67. Giardino AP, Giardino ER. Child abuse and neglect, sexual abuse. Available from: http://www.emedicine.medscape.com. [last accessed on 2010 Jan 27].

Multiple Choice Questions

1. Which age group of children have the highest rate of victimization?
   a) Under 1 year of age b) 1-4 years of age
   c) 4-8 years of age d) 8-12 years of age

2. Which type of child abuse is the most commonly seen?
   a) Physical abuse b) Sexual abuse
   c) Psychological abuse d) Neglect

3. Which one belonging to child is not a risk factor for increased abuse?
   a) Learning disabilities b) Neonatal jaundice
   c) Chronic illnesses d) Mental retardation

4. Which one is the most common physical sign of abuse?
   a) Bruises b) Burns
   c) Bite marks d) Fractures

5. Which instrument is the most commonly used in physical abuses?
   a) Paddle b) Belt
   c) Hand d) Stick

6. Which one is wrong for differentiation of inflicted and accidental injuries?
   a) Multiple bruises in clusters, b) Bruising away from bony prominences,
   c) Bruises in a child older than 9 months of age, d) Different stages of healing

7. Which one is the most common cause of death from physical abuse?
   a) Fractures, b) Head trauma,
   c) Intraabdominal injuries d) Burns

8. Which one is the least common offender for sexual abuse?
   a) Father b) Neighbour
   c) Stranger d) Brother

9. Which one is not a mimicker of sexual abuse?
   a) Lichen sclerosus et atrophicus b) Perianal and vulvar Crohn's disease
   c) Perianal streptococcal cellulitis d) Diaper dermatitis

10. Which one is the mostly rensponsible from Munchausen syndrome by Proxy?
    a) Mother b) Father
    c) Brother d) Doctor

Answers
1. a, 2. d, 3. b, 4. a, 5. c, 6. c, 7. b, 8. c, 9. d, 10.a