

Chapter 4

CUTANEOUS CONDITIONS MIMICKING CHILD ABUSE



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Introduction

Cutaneous lesions are the most common presenting manifestation of child abuse¹. Many diseases affecting the skin may be mistaken for child abuse. Such misdiagnoses may be due to an unusual presentation of a disease, the presence of a rare disorder, or because of the physician's unfamiliarity with the disease. A high-risk social situation may also lead to the misdiagnosis of abuse². Thus, it is of vital importance to become familiar with a number of skin conditions that mimic child abuse and the features that differentiate them from true child abuse. A thorough medical history and physical examination in addition to laboratory testing in certain conditions are the most important skills used to differentiate such conditions. However, it is important to remember that children with conditions mimicking child abuse may also be victims of abuse.

In this chapter, the skin conditions mistaken for abuse are divided into those mistaken for bruises and those mistaken for burns. A few conditions may be mistaken for both bruises and burns depending on the stage of the lesion. We will focus on the characteristic features that differentiate these conditions from abuse.

Skin conditions mistaken for abusive bruising

Accidental injuries

Trauma resulting in the appearance of bruises may be accidental in nature and play-related in active children. These bruises are typically small and non-specific in configuration. Important 'mimics' of abusive bruises are those caused by accidents (see Chapter 2, Bruises) (189). It is important to remember that abusive bruises differ from accidental bruises in that accidental bruises are generally located on bony prominences: the shins, knees, hips, spinous process of the vertebral column, chin, forehead, elbows, and extensor surfaces of the forearms^{2,3} (190–192). Some accidental injuries may be patterned or simulate child abuse (193). However, these injuries usually have a mechanism of causation that is consistent with the clinical findings. In addition, bruises, abrasions, and sometimes bullae resulting from tight clothing, socks, or friction marks from shoes and sandals are other findings that may mimic physical abuse (194–197). Abrasions resulting from shoes and sandals may be mistaken for burns (198). A thorough history of how the injury occurred and having the caregiver bring in the clothing in question are necessary to establish the diagnosis (199).



189 Accidental bruises in an active 3-year-old boy. Notice the nonspecific, nonpatterned bruises on bony prominences (both shins). Photograph courtesy of Earl R. Hartwig.

190 An active 4-year-old child with bruising over his left hip and a history of falling in the playground. The diagnosis was accidental trauma. The bruising is consistent with the fall and is located over a bony prominence. Photograph courtesy of Dena Nazer.

191 A child with bruising of her forehead. The diagnosis was head banging. Photograph courtesy of Mary E. Smyth.



192 A 4-year-old boy with a nose abrasion sustained when he fell while playing on a carpeted floor. Photograph courtesy of Dena Nazer.

193 A patient with a lesion resembling a bite mark. Further history revealed he fell off his bicycle and the handle of his bicycle caused the bruising. Photograph courtesy of Earl R. Hartwig.

194 A 6-year-old girl referred by protective services for evaluation of sexual abuse due to suspected suction marks noticed on her neck. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Stephen Messner.

195 The same child as described in 194. Notice how the straps from the backpack aligned perfectly with the lesions. When the child walked, the straps rubbed against her neck. The diagnosis was friction-induced petechiae. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Stephen Messner.





196 A 4-year-old child with constriction marks from tight elastic in his socks. Photograph courtesy of Earl R. Hartwig.

197 An infant with bilateral hyperpigmented circumferential marks on his legs. These constriction marks resulted from tight elastic from his socks. Photograph courtesy of Howard Fischer.

198 A 5-month-old infant with abrasions on the inner ankles after a day with the babysitter. It was suspected that he had been burned with a cigarette. Further history revealed the infant had a new pair of sandals and was rubbing the instep of his sandal over the medial malleolus of the contralateral foot. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Howard Fischer *et al.*

199 An infant with bilateral pressure bullae on his big toes from shoes. Photograph courtesy of Tor A Shwayder.

Mongolian spots

Mongolian spots are gray or blue-gray hyperpigmented macules of irregular shape and size¹. They are most often located on the back, buttocks, and sacral region, but can be seen virtually anywhere on the body (200–202). They are caused by a relative overabundance of melanocytes in the skin in these locations. Mongolian spots can be mistaken for bruises due to their gray-blue color and their distribution on the lower back and buttocks, a common area of abuse. Distinguishing features in the history include their presence at birth. On physical examination, they are nontender and do not evolve in color, in contrast to bruises which are tender and evolve over days. They usually disappear by 4 to 5 years of age. On occasion, they may persist into adulthood^{3,4}. If physical abuse is still a concern, the child can be re-examined in 7–10 days. Mongolian spots will still be present; bruises should be resolving or resolved by that time. If the lesions are extensive or in unusual locations, document the findings in the child's record and obtain photographs. This may spare parents future accusations.

200 A 6-month-old baby girl brought for examination by child protective services due to bruising noted at a child care facility. Further history revealed the lesions noted were present from birth. Examination reveals numerous large areas of hyperpigmentation to the buttocks and lower back, as well as extremities. There was no swelling or tenderness noted and the edges exhibited a 'soft margin' which gradually blended with surrounding skin. No other lesions were noted. The diagnosis was Mongolian spots. Photograph courtesy of Earl R. Hartwig.

201 The same infant as described in 200. Notice the hyperpigmentation around the ankle. The diagnosis was Mongolian spots. Photograph courtesy of Earl R. Hartwig.

202 The same infant as described in 200. Notice the hyperpigmentation around the wrist. Photograph courtesy of Earl R. Hartwig.



Vasculitis

Henoch–Schönlein purpura (HSP) is a small-vessel vasculitis resulting in a characteristic purpuric rash and may involve multiple organ systems⁵. There may be a prodrome of fever, headache, and malaise lasting a few days. A rash typically located on the legs and buttocks follows and may occur in crops. Patients may also have abdominal pain and arthritis. The illness can last from one to several weeks and there may be recurrences. The most notable physical examination finding in HSP is the classic purpuric rash. It begins with pink or red macules and papules, which become purpuric over time, with the color changing to purple and brown as the lesions fade. The rash typically begins on the lower extremities and buttocks, but subsequent crops may involve other areas of the body. There may be accentuation of the rash in dependent areas, such as the scrotum, or over pressure points, such as the feet, wrists, and ankles giving an appearance suggestive of bruises, and may be confused with those resulting from physical restraints (203–205). The diagnosis of HSP is clinical. Differentiation from physical abuse is made primarily through the history and clinical presentation and the associated systemic involvement in HSP.

Erythema multiforme is a self-limited erythema thought to be due to a skin reaction to infectious agents, such as herpes simplex and mycoplasma, or drugs, such as penicillin and sulfonamides³. There may be a history of cold sores. The child may have systemic findings in the form of low-grade fever and myalgia. Skin lesions are erythematous, symmetric, and fixed papules that darken. They are predominantly acral, but may develop in any area of the body and evolve into the characteristic target lesions (206). Severity ranges from a minor self-limited form to a major form (Stevens–Johnson syndrome), which involves mucous membranes and has serious systemic consequences. The sudden appearance of these ecchymotic lesions with no history of trauma leads to the misdiagnosis of child abuse³.

Disorders of blood vessels

Hemangiomas are vascular malformations. They may be mistaken for bruises. The lesions grow

rapidly during the first 6 months of life, plateau in growth rate for the next 6–12 months, then regress. Maximum regression is usually reached between 5 and 10 years of age.

Common locations include the scalp, head, neck, and facial structures, such as the eyelids and lips. Less commonly they are seen on the sacrum, vulva, clitoris, and hymen⁶. Bleeding lesions on areas such as the lip have been mistaken for lesions produced by trauma associated with physical abuse (207–209). Hemangiomas on the genital area have also been confused with bruising, raising a suspicion of sexual abuse (210, 211). Any lesion that might be confused with a lesion produced by abuse should be documented in the child's primary medical record and followed on subsequent physical examinations.

Coagulation disorders

Bruising or persistent bleeding may result from coagulation disorders. These disorders include congenital disorders, e.g. von Willebrand disease, hemophilia, and acquired disorders, such as immune thrombocytopenic purpura (ITP) and vitamin K deficiency². The resulting bruises and bleeding may be diagnosed as nonaccidental in nature. These lesions can be differentiated from abuse by a thorough history, physical examination, and laboratory evaluation. Children with coagulation defects may have a personal and a family history of easy bruising. Some patients with hemophilia may have a history of prolonged bleeding at circumcision or at cord separation. Those with von Willebrand disease have mild to moderate bleeding tendencies resulting in easy bruising, nose bleeds, and prolonged bleeding after dental procedures. On physical examination, petechiae may be present in addition to bruises in patients with ITP (212–214). The configuration, but not the severity, of bruising is consistent with the mechanism of injury in patients with clotting factor deficiencies (215). Laboratory studies include a complete blood count, platelet count, prothrombin time, and partial thromboplastin time. In certain cases where a clotting factor deficiency is suspected, a full coagulation profile and additional studies may be needed.

Malignancies

Neuroblastoma is a malignancy of the peripheral sympathetic nervous system. Many infants and children present with a mass, often in the chest or abdomen, frequently with metastases to lymph nodes or other sites. Abdominal pain may be the chief complaint. Symptoms related to metastases include fatigue, fever, weight loss, irritability, bone pain, subcutaneous blue nodules, peri-orbital ecchymoses, and proptosis. Patients who present with peri-orbital ecchymoses and swelling, especially

if no mass is easily identified, have been mistaken for victims of child abuse (216). Associated symptoms of neuroblastoma, physical examination, laboratory and imaging studies help differentiate it from abuse. Leukemia and other oncologic conditions resulting in thrombocytopenia may also present with petechiae, ecchymoses, and bleeding after minor trauma. Clinical presentation, physical examination, and a complete blood count assist in initial evaluation.



203 A child referred to the child protection team for suspicion of physical abuse and ligature marks around the wrists and ankles. The diagnosis was Henoch–Schönlein purpura (HSP) with bruising around constriction marks from the clothes as a result of vasculitis. Photograph courtesy of Mary E. Smyth.

204 The same child as described in 203 with bruising around the wrists. The diagnosis was Henoch–Schönlein purpura (HSP). Photograph courtesy of Mary E. Smyth.

205 The same child as described in 204. Once the child was undressed, the purpuric rash was visible over the posterior thighs and buttocks. The diagnosis was Henoch–Schönlein purpura (HSP). Photograph courtesy of Mary E. Smyth.

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206 A child who presented with fever and a rash. The diagnosis was erythema multiforme. Notice the characteristic target lesions. Photograph courtesy of Earl R. Hartwig.

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207 A child who presented with bleeding and suspected oral trauma. Further history and examination revealed a hemangioma of the lower lip which was friable and bled easily. Photograph courtesy of Mary E. Smyth.

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208 A 4-day-old baby with an ulcerated hemangioma on his hand. Photograph courtesy of Tor A. Shwayder.

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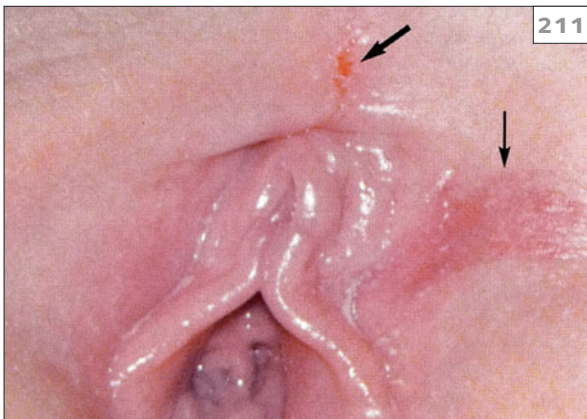
209 An infant with a vascular malformation. Photograph courtesy of Earl R. Hartwig.



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210 A 4-year-old with a suspected bite mark. Parents stated the lesion has been present since birth. The diagnosis was congenital vascular lesion. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Laura Mankley *et al.*

211 A 12-month-old with a suspected genital abrasion referred to child protective services. Further history revealed the lesion has been present since birth. The diagnosis was hemangioma. The thick arrow points to a small anterior commissure fissure probably created by traction during the examination. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Laura Mankley *et al.*

212 An 11-year-old girl with petechiae and bruises. Laboratory studies revealed thrombocytopenia. The diagnosis was immune thrombocytopenic purpura (ITP). Photograph courtesy of Earl R. Hartwig.

213 The same child as described in 212. Notice the petechiae on her tongue. The diagnosis was immune thrombocytopenic purpura (ITP). Photograph courtesy of Earl R. Hartwig.

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214 A child with immune thrombocytopenic purpura (ITP) and history of trauma to her face when she walked through revolving doors. Photograph courtesy of Earl R. Hartwig.

215 An 11-month-old baby with a bruise overlying his anterior superior iliac crest after he started crawling. The diagnosis was hemophilia B. Notice how even with minor trauma the bruises still occurred in typical locations over the bony prominences. Photograph courtesy of Earl R. Hartwig.

216 An infant presented with bilateral peri-orbital swelling and ecchymoses. The diagnosis was neuroblastoma. Photograph courtesy of Mary E. Smyth.

Collagen synthesis defects

Ehlers–Danlos syndrome is a rare connective tissue disease associated with skin lesions that may mimic physical abuse². Patients with this syndrome have skin hyperelasticity, easy bruisability, and joint hypermobility (217, 218). The skin after minor injury and healing is described as ‘cigarette paper thin’. The skin of children affected with this syndrome is hyperelastic, velvety, and fragile. Children with Ehlers–Danlos syndrome may present with gaping scars and a history of multiple lacerations with poor healing resulting from minor trauma¹. Recurrent joint dislocation may result from the joint hypermobility. A detailed family history and physical examination may help differentiate this condition from abuse. Osteogenesis imperfecta (OI) is a heterogeneous disorder characterized by abnormality in quantity or quality of type 1 collagen synthesis. Type 1 OI is associated with easy bruising, blue sclerae, hearing impairment, and osteopenia (219). Child abuse may be suspected due to the bruising and the fractures, especially when caused by minor trauma^{7–9}.

217 A 2-year-old with hyperelastic skin and very pliable ears. The diagnosis was Ehlers–Danlos syndrome. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Alexander C. Leung *et al.*

218 A 2-year-old with hyperelastic skin and hyperextensible joints. The diagnosis was Ehlers–Danlos syndrome. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Alexander C. Leung *et al.*

219 A 3-year-old boy who presents with blue sclera, a history of tibial fracture following a short fall, and easy bruisability. The diagnosis was osteogenesis imperfecta type 1B. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Daniele Pacaud *et al.*



Cultural practices

There are several cultural practices that one must be aware of because they may produce findings confused with child abuse. While these practices are not intentionally abusive, they may result in skin conditions mimicking bruises or burns. It is important, however, to be sensitive to cultural practices and ask the parents about such practices in a non-judgmental way to obtain the needed history^{10–12}. Coining is a southeast Asian cultural remedy¹¹. It is used to treat a variety of symptoms including fever, headaches, seizures, and vomiting. The edge of a coin or other object is rubbed over oiled skin resulting in ecchymoses and petechiae from the rubbing and stroking. Ecchymoses are usually linear due to the downward linear way the coin is rubbed on the skin. Spooning, similar to coining, is another folk remedy resulting in bruising. Water is applied to the neck, shoulders, back, chest, or forehead. The area is then pinched or massaged until it reddens and is then rubbed with a porcelain spoon until ecchymotic lesions appear. Cupping is an Eastern European, Latin American, and Asian cultural remedy. It is used to treat various symptoms, for example, fever, pain, and poor appetite¹⁰. A glass is heated to create a vacuum and applied to the skin. A circular bruise or a cluster of petechiae result from the suction created by the vacuum. Burns may also result from this practice.

Other conditions

Systemic infections may be associated with ecchymoses and petechiae that may mimic child abuse. A careful history of associated symptoms, systemic symptoms, and laboratory tests help point towards an infectious etiology of such lesions. Dermatitis may result in pigmented lesions resembling bruises or healed burns. It may be subdivided into different types based on etiology: photocontact dermatitis, irritant contact dermatitis, contact urticaria, allergic contact dermatitis, and reactions to pharmacologically active agents.

Phytophotodermatitis is an exogenous chemical phototoxic reaction resulting from the activation of certain plants' furocoumarin (psoralen) by sun exposure after the plants or their products contact the skin.^{13–19} Causative plants include lime, lemon, figs, parsnip, and celery¹³. Phytophotodermatitis typically results in hyperpigmented lesions as a chronic reac-

tion, but may initially result in bullae and visible inflammation mistaken for burns. Lesions may be streaky with hyperpigmentation in the shape of a hand and may be mistaken for bruises (220, 221). In suspected cases, a history of exposure to a psoralen-containing plant followed by sun exposure may assist in diagnosis. Lesions are also uniformly deep-brown in color in contrast to the multiple hues in healing bruises¹³. Redness develops within the first 24 hours followed by development of vesicles that coalesce into bullae over subsequent days. They lack the color variations of bruises. In cases where lesions blister, they may be confused with abusive burns especially when no history is elicited^{14–19}. Because these lesions mimic burns and occur with no reported history of injury, a diagnosis of nonaccidental burn may be incorrectly made.

Irritant contact dermatitis is a condition caused by direct injury of the skin. An irritant is any agent that is capable of producing cell damage in any individual if applied for sufficient time and in sufficient concentration. Allergic contact dermatitis is a type IV hypersensitivity reaction only affecting previously sensitized individuals. An example of allergic contact dermatitis is the allergic reaction to plants, such as poison ivy, poison sumac, and poison oak.

Popsicle (ice lolly) panniculitis is a benign cold-induced subcutaneous fat necrosis of the cheeks. It occurs in young children as a result of sucking on frozen confections^{20, 21}. It may also be caused by ice packs or cold air. It appears as red, painless, indurated nodules or plaques on one or both cheeks. Similar lesions may develop on any skin surface. The lesions may be confused with bruises, especially with the lesions usually appearing 1–3 days after the cold exposure. Parents may not correlate the cold etiology with the lesions (222). A careful history of exposure to cold, asking about cold remedies for teething, and a diet history may help establish the diagnosis. In addition, the color variation of bruises differentiates physical abuse. It is best to re-examine the child if doubt still exists. Discoloration of a child's skin may mimic bruises, especially when resulting from dye from fabric, such as denim. Diagnosis is made by a history of contact with a dyed fabric that became wet and 'ran'. Patients may present with self-inflicted injuries such as tattoos, burns, scratch marks, and scars (223).



220a, b A child with phytophotodermatitis. Notice how the marks resemble handprints after the baby was held by his mother (220a). His mother also had similar lesions (220b). Photographs courtesy of Tor A. Shwayder.

221 This teenager had rapidly developing dark spots over her hands after handling limes and lemons

while preparing 'Margaritas.' She then went to the beach. The lesions lasted 3 weeks and slowly faded without treatment. They could easily be confused with small burns, insect bites or inflammatory/pigmentation disorders had the history not been obtained regarding the exposures.

222 A 7-month-old who came to her mother's custody after a visit to her father. Her mother was concerned about a bruise on her left cheek. Further history revealed a history of eating popsicles (ice lollies) while at the father's house. The diagnosis was popsicle panniculitis. Photograph courtesy of Earl R. Hartwig.

223 A child with deformity of his nose as a result of nose picking. Photograph courtesy of Tor A. Shwayder.

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Dermatitis artefacta is the deliberate and conscious production of self-inflicted skin lesions to satisfy an unconscious psychological or emotional need (224). Patients are most commonly adolescents or young adults. They may have associated chronic dermatologic conditions, such as acne. History usually reveals stress, family history of psychiatric illness, and patients may disclose a childhood history of abuse or neglect. On physical examination, lesions are in areas accessible to the patient and have bizarre and variable presentations, depending on the mechanism of injury. Patients with certain diseases and syndromes may also exhibit self-injury, e.g. Lesch–Nyhan syndrome (225).

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224 Self-inflicted scratch marks in a teenager. The diagnosis was dermatitis artefacta. Photograph courtesy of Tor A. Shwayder.

225 A 14-year-old boy with Lesch–Nyhan syndrome and chronic scarring of the lip as a result of self-mutilating behavior that characterizes this syndrome. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Deepak Kamat.

Skin conditions mistaken for burns

It is important to differentiate burns from other disorders that can mimic them. Conditions that may be mistaken for burns include impetigo, staphylococcal scalded skin syndrome, and epidermolysis bullosa.

Skin disorders

Blisters resulting from several dermatologic conditions may mimic burns and lead to the suspicion of physical abuse. Cellulitis results in erythema and sometimes bullae and may mimic burns (226, 227).

Atopic dermatitis may mimic burns if superinfected and extensive (228). Other infections may result in blisters mimicking burns. Epidermolysis bullosa has different subtypes with various presentations. The resulting blisters may be mistaken for those of burns (229–231). Toxic epidermal necrolysis may also result in blisters mimicking burns (232, 233). Mastocytomas (urticaria pigmentosa) appear early in childhood and may appear anywhere on the skin. Rubbing may cause them to redden, swell, and sometimes blister as their histamine is released (234).

Diaper/nappy dermatitis may mimic burns from child abuse, especially when severe. Rashes resulting from infections with *Candida* species are intensely erythematous with sharp margins and satellite lesions. Contact diaper dermatitis usually begins as acute erythema on the convex skin surfaces of the pubis and buttocks. The skin folds are characteristically spared. Impetigo is a superficial bacterial skin infection affecting infants and children. Impetigo lesions are irregular, crusted, superficial, and heal without scarring. It is commonly seen on the face, trunk, and extremities (235). Impetigo is usually caused by *Staphylococcus aureus*. Group A beta-hemolytic *Streptococcus* is a frequent secondary invader. There are two types: bullous and nonbullous impetigo, which is the more common type. In nonbullous impetigo, lesions start as a macular erythema evolving into pink erosions with straw-colored fluid and subsequently crusted erosions with golden-yellow crusts. In bullous impetigo, the macular erythema vesiculates and expands into fragile bullae that break, leaving a collarette of scales surrounding the normal skin (236). Most cases require treatment with topical or oral antibiotics. When blisters rupture, they may leave a shallow circular ulcer that may appear like a burn^{2,3}. Bullous impetigo may resemble an infected cigarette burn; however, it is more superficial and heals completely with antibiotic therapy. Both may occur in crops. Cigarette burns are usually in crops and occur commonly on the face, hands, and feet. They are usually deep, well-demarcated lesions with a central crater and they heal with scarring. Lesions are 7–10 mm in diameter. Frostbite from improper use of icepacks and cold therapy may present with swelling, pain, and discoloration of the affected area (237).

Xeroderma pigmentosa is a rare autosomal recessive condition characterized by decreased ability to repair DNA. Patients present with history of severe sunburn following minimal sun exposure (238). Burns resulting from this condition may mimic

inflicted burns, especially when the history of sun exposure is minimal and there is no documented mechanism of injury (239). Hair tourniquet or thread tourniquet syndrome occurs when thread or hair wraps tightly around an infant's digit¹. The area of the digit distal to the constriction becomes painful, edematous, and discolored (240). This may result in this condition being misdiagnosed as a nonaccidental burn. This condition is relatively common and involves the fingers, toes, or external genitalia and may mimic burns, cellulitis, or trauma. It is important when suspecting a hair tourniquet syndrome to carefully examine the area for the constricting material.

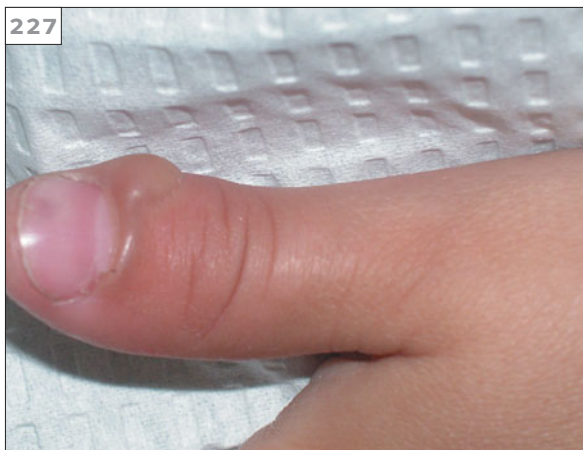
Lesions from spider bites may have characteristics simulating burns, but, unlike burns, victims report minimal discomfort immediately after the bite²². The bite will appear red, and a central punctum or vesicle may be seen (241, 242). Within a few hours, the bite site will become painful. In 12–24 hours, as the reaction to the toxin progresses through vasodilatation, vasoconstriction, and thrombosis, the lesion demonstrates the 'red, white, and blue sign' of color changes. Severe lesions may progress to cellulitis and frank necrosis (243). Because clinical laboratory tests are not readily available, the diagnosis of spider bites is often presumptive.

A geographic tongue may appear to be a burn but is simply nontraumatic loss of filiform papillae on the tongue. Lesions appear as reddish plaques surrounded by an irregular white border, commonly on the lateral sides and dorsum of the anterior two-thirds of the tongue²³. Most patients are asymptomatic, although they may occasionally have a burning sensation in the tongue or sensitivity to hot and spicy food. Lesions of a geographic tongue may be mistaken for burns, especially if the condition is not recognized by the physician (244). This condition runs in families. The tongue findings are migratory and lack the eschar and tissue coagulation of a burn.

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226 A patient with fever and painful erythema of her proximal thigh. The lesion is warm to touch and exquisitely tender, erythematous, and nonblanching. The diagnosis was cellulitis with suspected necrotizing fasciitis. Photograph courtesy of Earl R. Hartwig.

227 A 5-year-old boy with blistering dactylitis. Photograph courtesy of Tor A. Shwayder.

228 A child with infected atopic dermatitis. Photograph courtesy of Tor A. Shwayder.

229 An infant with epidermolysis bullosa simplex. Photograph courtesy of Tor A. Shwayder.

230 An infant with junctional epidermolysis bullosa. Photograph courtesy of Tor A. Shwayder.



231 A 17-year-old with epidermolysis bullosa. Photograph courtesy of Tor A. Shwayder.



232 Toxic epidermal necrolysis. Photograph courtesy of Tor A. Shwayder.



233 A 15-year-old girl with an erythematous vesicular rash on the face 2 months after she started taking lamotrigine for a seizure disorder. The diagnosis



was toxic epidermal necrolysis. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Waldo Nelson Henriquez Barraza.

234 A 7-week-old with a blistering mastocytoma. Photograph courtesy of Tor A. Shwayder.

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235 An infant with atopic dermatitis complicated by impetigo. Photograph courtesy of Tor A. Shwayder.

236 A 3-year-old boy with superficial blistering of his skin over the previous 3–4 months with scaling and crusting. The diagnosis was bullous impetigo. Reproduced with permission from *Consultant for Pediatrics*, photograph courtesy of Kirk Barber.

237 A 6-year-old boy who presented with increased pain, swelling, and skin discoloration. The child had a history of fall on the right arm and had fallen asleep with an icepack on his forearm. The diagnosis was frostbite. Reproduced with permission from *Consultant for Pediatrics*, photograph courtesy of Abu Khan *et al.*

238 An infant who presented with a blistering sunburn, conjunctivitis, and photophobia. He was in the shade of a large umbrella for a few minutes. The diagnosis was xeroderma pigmentosa. Reproduced with permission from *Consultant for Pediatrics*, photograph courtesy of Kirk Barber.



239 This infant has the same condition as the infant described in 238. Notice the line of demarcation of the burn as a result of clothing, which may mimic immersion burns. The diagnosis was xeroderma pigmentosa. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Kirk Barber.



240 An infant who presented with swelling and redness of the third and fourth toes. The diagnosis was hair tourniquet syndrome. Photograph courtesy of Earl R. Hartwig.



241 A patient who presented with erythema after a presumptive insect bite. The diagnosis was cellulitis. Photograph courtesy of Earl R. Hartwig.



242 A female who presented with painful swelling of her toe. The diagnosis was presumptive spider bite. Photograph courtesy of Mary E. Smyth.

Cultural practices

Cupping and coining are discussed above. ‘Maquas’ are burns that are inflicted with hot metal spits or coals near an area of illness or pain. It is part of Bedouin (Arabic), Russian, and Druse cultural practices (245–247). Moxibustion is an Asian cultural practice that involves the application of heat to the skin, most commonly with a burning object, such as incense²⁴. Moxa is an aged form of mugwort, *Arsensia vulgaris*, a herb that is commonly burned in the area of the illness as part of this traditional practice. Burns resulting from moxibustion may be full or partial thickness and are usually small and circular. Herbs and complementary medical treatments may result in chemical burns mimicking those burns resulting from abuse. Garlic has been reported to cause burns in patients when crushed and applied directly to the skin (248)^{25–28}.

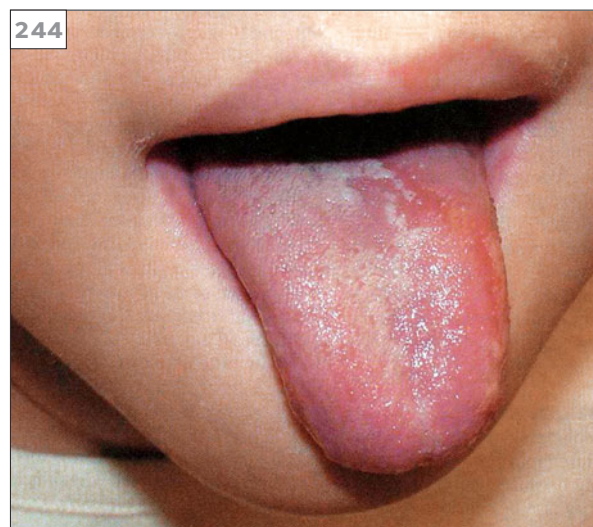
A variety of conditions may be mistaken for burns of the anus and genitalia. Accidental ingestion

of senna may present with erythema and blister formation (249). This typically has an overall diamond shape with linear borders and sparing of the peri-anal area and the gluteal cleft². Lichen sclerosis et atrophicus is a chronic dermatologic inflammatory condition seen most often in postmenopausal women and prepubertal girls^{29,30}. It occurs 10 times more often in females than in males, suggesting that hormones may play a role; however, a specific etiology is unknown. Girls most often present with anogenital involvement. The chief complaint is often intense genital itching or burning, and pain with urination. Constipation is also a frequent presenting sign and is due to withholding secondary to the pain associated with defecation. Bleeding may be reported. Vaginal discharge can precede development of the skin lesions in some cases. The classic finding on physical examination is parchment-like atrophic plaques in a figure-of-eight distribution around the vulva and anus (250). The skin is extremely friable. Intraep-



243 A child who presented with redness and painful swelling of her buttocks. An abusive burn was suspected. Further history and disclosure from the child suggested the presumptive diagnosis of a spider bite. Photograph courtesy of Mary E. Smyth.

244 A 4-year-old girl referred by protective services for suspected inflicted burns on the tongue. Notice the red plaque on the tongue with a well-

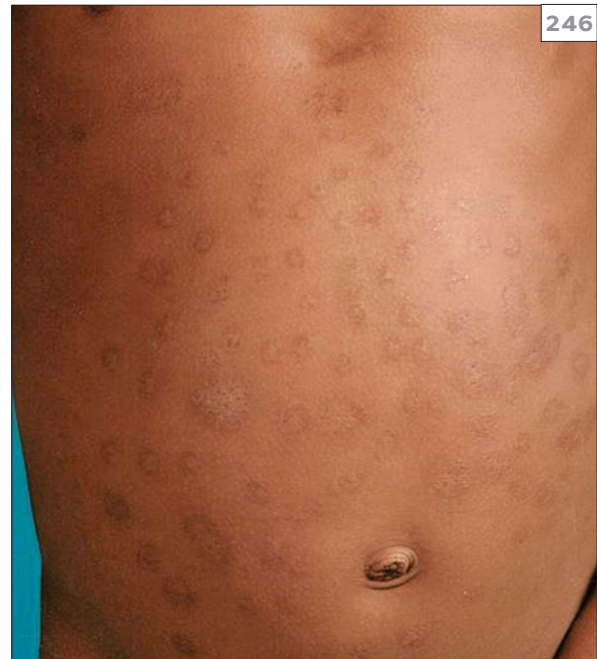


demarcated, irregular, white border. The patient's mother had a similar lesion. The lesion was also migratory, with longer-term presence, and had neither eschar nor signs of tissue coagulation as is seen in burns. The diagnosis was geographic tongue. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Sushma Nuthakki *et al.*



245 'Therapeutic' burns in a patient with glycogen storage disease. The diagnosis was maquas. Photograph courtesy of Hisham Nazer.

246 'Therapeutic' burns in a patient with recurrent abdominal pain. The diagnosis was maquas. Photograph courtesy of Hisham Nazer.



247 'Therapeutic' burns around the neck in a patient with celiac disease. The diagnosis was maquas. Photograph courtesy of Hisham Nazer.

248 A 16-month-old baby referred to the child protection team for suspected abuse due to a burn of unknown etiology. Further history revealed that the mother applied garlic to treat an insect bite. The diagnosis was garlic burn. Reproduced with permission from *Consultant for Pediatricians*, photograph courtesy of Dena Nazer *et al.*

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249 A 2-year-old presented with burns to her buttock and perineum. The history revealed accidental ingestion of sennosides (ExLax tablets) and resulting diarrhea. Notice that the burns extend up the back, consistent with the diarrhea. The diagnosis was senna burn secondary to accidental laxative ingestion. Reproduced with permission from *Consultant for Pediatrics*, photograph courtesy of Jaenlee F. Carver *et al.*

250 A child with a depigmented area around the labia, perineum, and anus. The diagnosis was lichen sclerosus et atrophicus. Photograph courtesy of Mary E. Smyth.

ithelial hemorrhages, purpura, and peri-anal fissures are common features. Diagnosis of lichen sclerosus is usually made on a clinical basis, but can be confirmed with a skin biopsy. In this condition, unexplained bleeding, vaginal discharge, or purpura that may look like bruises lead to a concern about sexual abuse. Group A beta-hemolytic streptococcal vulvovaginitis or peri-anal infection mostly affects girls aged 3–10 years. Symptoms include erythema, discomfort, dysuria, and vulvar discharge.³¹ Diagnosis is made by culture. Often there is a history of recent streptococcal pharyngitis or asymptomatic infection may be found. Other causes of vulvovaginitis are *Staphylococcus aureus*, *Hemophilus influenzae*, *Klebsiella pneumoniae*, and *Shigella flexnerii*.

Teaching points

- There are a variety of conditions that can be mistaken for bruises or burns.
- The physician should evaluate alternative explanations when abuse is being considered, especially when there are unusual lesions inconsistent with classic abuse patterns.
- In some cases, alternative explanations can be excluded based on history, physical examination, and basic laboratory findings; however, certain conditions may require sophisticated testing and referral to a consultant for definitive diagnosis.
- Some cultural practices are associated with inflicted (but not abusive) lesions; the degree of injury, presumed intent, and the cultural acceptability of the practice need to be considered in making an abuse assessment.