Child Abuse

18

Case Study

Accompanied by her boyfriend, a 22-year-old mother presented at an outpatient clinic with her 3-year-old son who, she reported, had fallen from a climbing frame on a playground the day before, hitting the edge of the sandpit and then striking his head on a slab of stone. Although the child had only cried a bit at the time, large contusions were now visible. Striped red marks were visible on the somewhat lachrymose child's left cheek, as well as two parallel red striae about 1 cm apart on his back. When questioned, the mother reported that her son had struck his back on the sandpit and his cheek on the slab of stone. However, she admitted that she had not been present at the time, but rather her boyfriend had been looking after the child. The 27-year-old boyfriend claimed to have been looking away at the time of the fall. The forensic expert called to the case classified the injuries as a strike on the back with, e.g., a belt, and the striped red marks on the cheeks as a slap with an open hand, while the vomiting was the result of concussion caused by these blows. The treating physician informed the mother (who had sole custody of the child) in confidence that there were grounds to suspect child abuse. The mother was indignant at this claim and wanted to leave the outpatient clinic immediately. The physician insisted on further inpatient tests, in particular to exclude the possibility of intracranial bleeding.

18.1 Introduction

Varying degrees of violence against children and adolescents is an age-old phenomenon in many countries and cultures. The boundary between acceptable violence in the context of so-called necessary educational measures by parents or as part of accepted tradition, such as genital mutilation, and unacceptable violence leading to death or severe injury is not always clear. The association between chronic suffering in adults as a result of abuse suffered in childhood and adolescence (WHO 2002) is well known. A definition of child abuse could be formulated as follows:

Child abuse is non-random physical and/or mental damage inflicted on a child, either wilfully or through neglect, within the family or institutions, which causes injury and/or impaired development and which, in individual cases, may cause death.

Although the term "battered child" is often used to describe physical child abuse, the recent literature refers to non-accidental injury (NAI) and abusive or inflicted injury. The spectrum of violence against children covers blunt force (blows), thermal injury (burns, scalds), particular forms such as shaken baby syndrome, as well as the effects of psychological violence and neglect. The forensic clinical examination of children and adolescents (including the preservation of evidence) is subject to the same requirements as those for the examination of adults. Although police criminal statistics in numerous countries show several thousand cases of child abuse every

R.B. Dettmeyer et al., *Forensic Medicine*,
DOI 10.1007/978-3-642-38818-7_18, © Springer-Verlag Berlin Heidelberg 2014

year, the number of unknown cases is estimated to be far higher. This raises the question of which factors should arouse the suspicion of child abuse. Infants aged between 2 and 4 years are at particular risk, as well as unwanted, developmentally impaired, handicapped, and neglected children. "Actively" abusive perpetrators are usually young adults, predominantly fathers, stepfathers, mothers' partners, or uncles, while women tend to commit "passive" abuse. However, violence against children—including sexual abuse—is found at all social levels!

Abused children are often conspicuous by their behavior in hospital: some may be hyperactive or aggressive, showing antisocial or destructive behavioral patterns, while others are abnormally anxious, inhibited, and passive, enduring medical care without complaint. Some abused children appear insecure and tense with a sad facial expression, referred to as "frozen watchfulness." Other *indications of child abuse* can be inferred from the overall circumstances in combination with medical findings:

- The patient history and/or alleged sequence of events do not correspond to injury findings.
- Injuries other than those for which the patient primarily presented are found.
- Information on the preceding events varies and/or is vague.
- Details on patient history gathered from several carers vary considerably.
- The accident alleged to be responsible for the pattern of injuries seen does not correspond to the child's age.
- Medical care is sought only after a significant time delay.
- Visits are made to several physicians and/or hospitals.
- The child's injuries are alleged to be self-inflicted or to have been inflicted by a sibling.
- The child has been an inpatient in the past due to nonspecific disorders (e.g., failure to thrive, refusal to eat).
- Abnormally high incidence of "accidents."
- Vague or implausible explanations for severe injuries, such as fractured ribs in an infant.
- Previous contact with governmental child protection bodies.
- Abnormal social or family history; carers also have a history of domestic violence and abuse.
- Carers have a history of alcohol and drug abuse.

In cases where children are injured in genuine accidents, medical care is almost always sought immediately, and the accident represents a plausible explanation for the injuries. Injury to the following sites (typical of non-accidental injury) arouses the suspicion of child abuse:

- Inner lip
- Lip and tongue frenulum
- Gum and cheek mucosa
- Retroauricular, hairy scalp, and buttocks

The typical localization of injuries following abuse compared with fall-related injuries is shown in Fig. 18.1.

In addition to injury localization, injury type, e.g., parallel striae, can also arouse the suspicion of child abuse. The requirements for a comprehensive clinical examination in the case of suspected physical child abuse are given in Table 18.1.

Depending on findings, instrument-based or imaging investigations can be considered for further diagnostic testing:

- X-ray skeletal screening in all children <2–3 years with suspected physical abuse (possible repeat investigation after 14 days) and in unexplained deaths.
- In principle, the following can be used (with limitations): Ultrasonography of the head, conventional X-ray, skeletal scintigraphy, cerebral computed tomography (CCT), and magnetic resonance tomography (MRT), as well as funduscopy and laboratory investigations.

The diagnostic reliability of injuries in terms of identifying possible child abuse varies (Table 18.2).

As with other injuries, fractures need to be seen in the context of the overall picture before the question of child abuse is addressed. Even when fractures are detected in a child, these can have varying degrees of reliability in terms of identifying child abuse (Table 18.3).

It is particularly important in the case of fractures to ask for detailed information about an accident or the circumstances of an incident and assess whether the account is plausible in terms

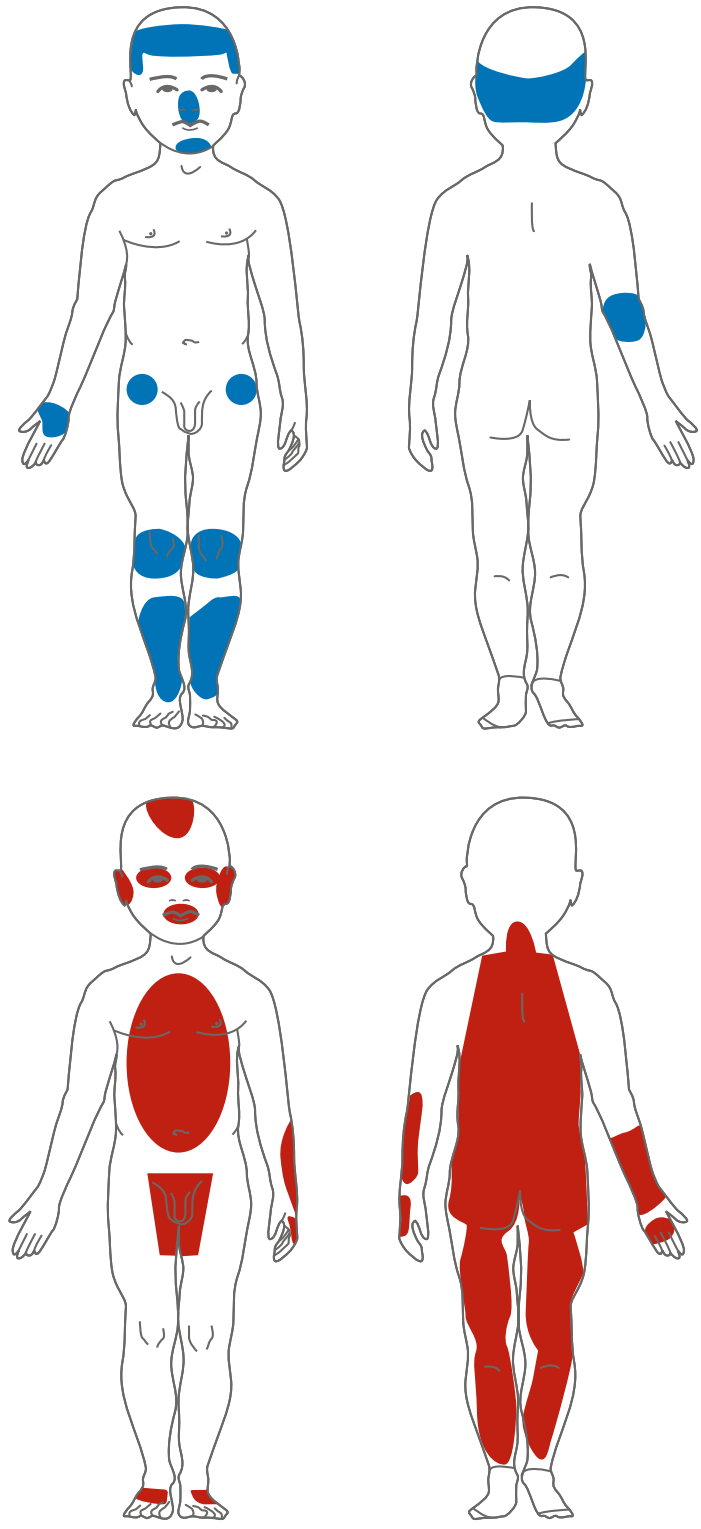

Fig. 18.1 Localization of injury or bruising in accidents (*blue*) and abuse (*red*) (From Herrmann et al. (2010))

Table 18.1 Clinical examination in the case of suspected physical child abuse

Finding/parameter	Measures
Growth parameters	Assess height/length, weight, head circumference, percentiles
Whole-body examination	Thorough physical examination, including anogenital region, of fully undressed child, neurological examination, including attention to predilection sites
Description and documentation of findings	Localization, type, color, size, form or shape, grouping, signs of wound healing. All injuries should be measured and photographically documented with a reference scale on the images (overview and detailed images); annotate all sketches with measurements
Fresh bite marks	Sterile swab for forensic DNA evidence; allow to air-dry
Behavior/statements	Avoid all suggestive questions! Document statements verbatim!
Siblings	Where necessary, siblings should be examined due to increased risk of abuse

From Hermann et al. (2010)

Table 18.2 Specificity of injuries in the identification of non-accidental causes (excluding fractures)

High reliability	
CNS	Subdural hematomas with retinal bleeding and brain damage, retinal bleeding, retinoschisis, vitreous hemorrhage
Skin	Bite wounds, contusions of particular shape (hand and finger marks, striae, belt and strap marks, loop configurations, stick marks) Burns of particular shape (cigarette, stove, iron, heater, etc.), immersion injuries (glove or stocking pattern)
Abdomen	Intramural duodenal hematomas, hollow organ perforation
Medium reliability	
CNS	Subdural hematomas (over the convexity in particular, interhemispheric, subarachnoidal)
Skin	Multiple contusions (unusual localization), contusions in infants, retroauricular contusions, torn frenulum of the lip or tongue, burns/scalds to hands, feet, anogenital region
ENT	Hypopharynx perforation
Abdomen	Injury to the left liver lobe, kidneys, and pancreas, pancreatic pseudocysts
Other	Recurrent apnea (ALTE, apparent life-threatening event)
Low reliability	
CNS	Epidural hematomas
Abdomen	Spleen injury
Skin	Multiple contusions on "leading" areas of the body at toddler age, contusions of varying color, burns/scalds in irregular "spray" or "droplet" pattern
It is always important to verify a plausible accident or preexisting disease on a case-by-case basis!	

Modified from Herrmann (2002)

of the child's age. Inconsistencies in an account or an unclear mechanism of injury even in the case of long bone fractures should prompt child abuse to be considered (Fig. 18.2). Protrusions or evidence of bony calluses are occasionally found in the case of previous or old rib fractures, while evidence of periosteal calcification (Fig. 18.3) should similarly suggest child abuse in the past.

18.2 Blunt Force and Child Abuse

Blunt force, particularly in the form of blows, is the predominant form of child abuse seen in routine forensic practice. Fractures are seen mainly in children <3 years; in addition, subperiosteal hematomas are more frequently seen in this group due to the ease with which the periosteum is separated from underlying bone. Skull fractures in infants cannot generally be caused by a fall from up to 150 cm, although an accident should always be considered in the differential diagnosis. Injuries vary according to the type of blunt force used.

Table 18.3 Radiological specificity of fractures in the identification of child abuse

Specificity	Findings
High specificity	Classic metaphyseal fracture, rib fractures (in particular dorsal), as well as scapula, spinous process, and sternal fractures. Fractures in the first 6 months of life and in premobile infants
Medium specificity	Multiple, in particular bilateral, fractures, fractures of varying age, Salter-Harris fractures, vertebral body fractures or subluxation, finger, hand, or foot fractures, complex skull fractures, mandibular fractures, periosteal reactions, fractures in infants
Low specificity	Clavicular fractures, long bone shaft fractures, simple linear skull fractures, diaphyseal fractures
It is always important to verify a plausible accident or preexisting disease on a case-by-case basis!	

From Herrmann et al. (2010)

Fig. 18.2 Left upper arm fracture with displacement of the lower fracture segment towards the body following a blow with a blunt object, as well as a contusion on the outer side of the upper arm at the level of the fracture (4-month-old boy)

18.2.1 Blows and Parallel Contusions

Parallel rows of linear contusions on the skin of a child are the result of blows from a stick or rope, for example. These marks represent anemic impact marks, pale in the central region and bordered by thin parallel contusions. Marks or this kind can be found following similar blows in adults.

It is not unusual to find multiple parallel contusions, particularly on the buttocks, back, shoulders, upper arms, and backs of the legs. Patterned injuries from specific objects used to inflict a blow, such as belt buckles, may be seen on the skin (Fig. 18.4).

18.2.2 Fist Blows

Blows to the face from a fist can result in monocle or spectacle hematomas of varying degree (Fig. 18.5) and may cause eye injury. Blows with a fist to the mouth area produce hematomas in the oral mucosa, as well as mucosal lacerations when the child's teeth have represented a point of abutment. Fist blows or kicks to the abdominal area can cause intra-abdominal organ laceration involving injury to the liver, spleen, pancreas, and gastrointestinal tract.

Blows from the flat of a hand can leave striped finger marks, particularly on the cheeks. Retroauricular bruising as well as ruptured eardrums may also be seen, in which case a child should be examined additionally by an ear, nose, and throat specialist if abuse is suspected. Blows from the knuckles of a clenched fist may produce a row of roundish contusions.

18.2.3 Other Forms of Blunt Force

Depending on the object used to strike a blow (belt, ashtray, etc.), patterned contusions corresponding to the object in question may be seen; however, extensive bruising is also seen (typically on the back and buttocks). Older children sometimes show self-defense or "parrying" injuries to the extensor surface of the lower arm.

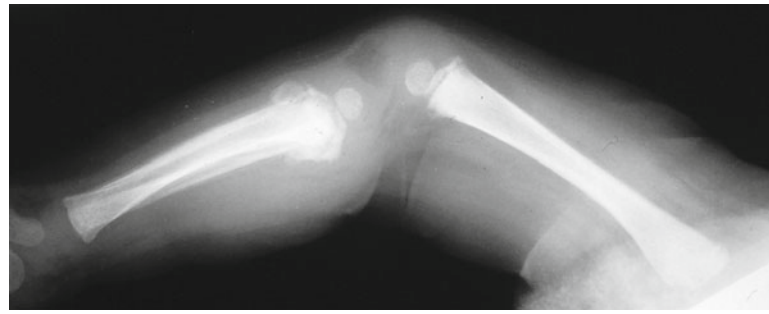

Fig. 18.3 Status following old bony trauma with periosteal calcification and metaphyseal chipping in an 8-month-old boy

Fig. 18.4 Multiple parallel contusions with central paleness following blows from a piece of cord

Blows to the head cause contusions, lacerations, and corresponding scarring. A kick from a shod foot may leave a recognizable shoe imprint. However, it should be noted that, although blows and kicks to the abdominal wall of clothed victims do not necessarily produce outwardly visible signs of injury, serious internal injury and hemorrhage may nevertheless be present!

Blunt force to the upper abdomen (a blow to the solar plexus) can cause intra-abdominal injury including laceration of the left hepatic lobe and/or pancreatic head, as well as duodenal hemorrhage (Fig. 18.6); child abuse-related rupture of the stomach wall (Fig. 18.7) and tearing or laceration of the intestinal wall (Fig. 18.8) are less commonly seen. In cases where a child is seized or handled, hand marks can be seen; these are often symmetrical contusions on the upper arms—often thumb marks on the inner side of the upper arm or hand marks on the chest of the

Fig. 18.5 Incomplete monocle hematoma resulting from a blow to the face

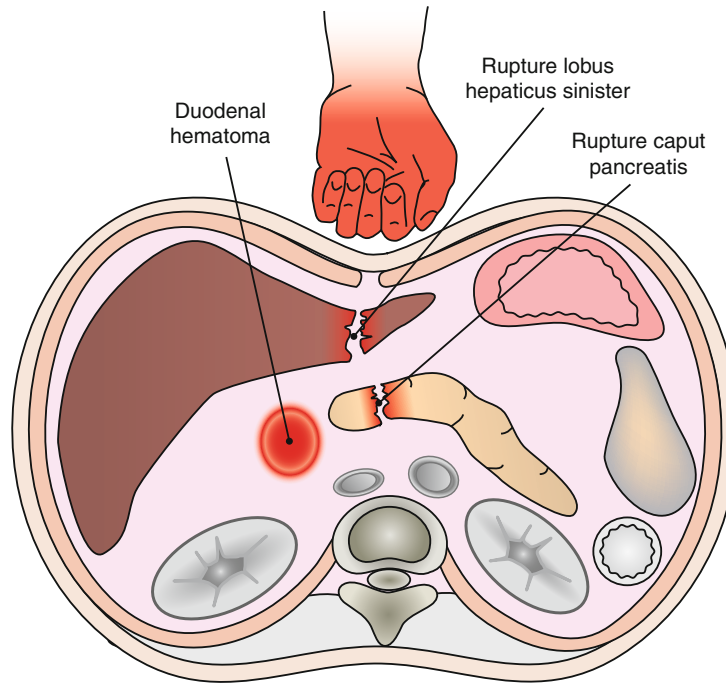

Fig. 18.6 Abdominal injuries frequently resulting from child abuse (From Herrmann et al. (2010))

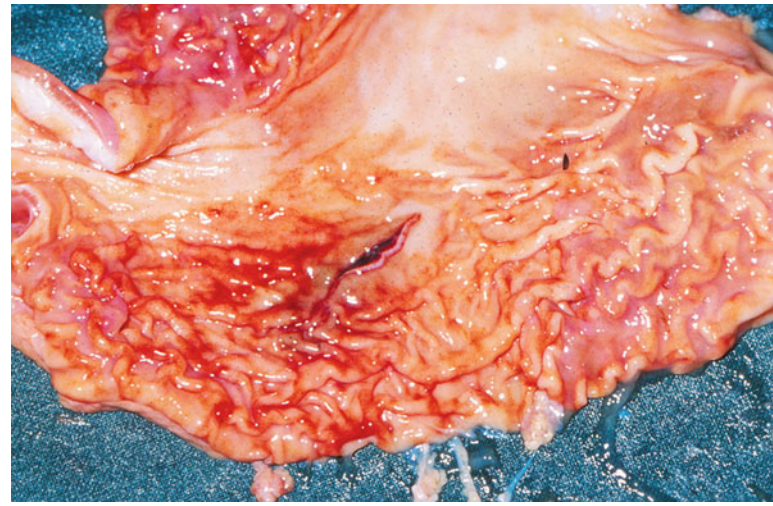

Fig. 18.7 Ruptured stomach wall following a kick to the upper abdomen in a 21-month-old boy

infant or toddler in the context of shaken baby syndrome. Pinching can produce uncharacteristic contusions, occasionally also involving abrasions from fingernails. Contusions around the base of the ear or on the ear suggest pulling or tearing of the ear, while bald patches on the skull suggest pulling out of hair (epilation). Signs of restraint are typically found on the wrists and ankles in the form of circular/linear skin lesions of varying width and severity.

18.2.4 Bite Marks

Small contusions and teeth marks running in a curved line and forming an oval or half-moon pattern are suggestive of bite marks. Occasionally, fresh bite marks even demonstrate the position of individual teeth in relation to one another. In the majority of cases, however, marks are already partially faded (Fig. 18.9a). Bite injuries inflicted post-mortem are rare (Fig. 18.9b). Measuring the

diameter of contusions and the distance between each one indicates whether an adult or a sibling—as occasionally alleged—is responsible for the bite injury.

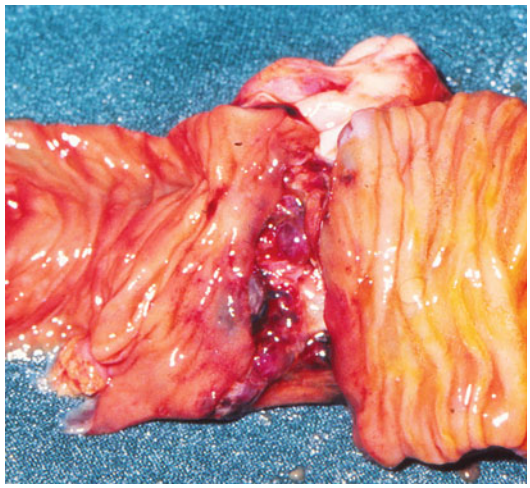

Fig. 18.8 Torn small intestine following a kick to the upper abdomen in a 21-month-old boy

18.2.5 Throwing or Dropping an Infant or Toddler

When an infant or toddler is thrown against a solid object or strikes the floor or an object, extensive bruising is usually caused. Fractures are also possible in some cases, whereby cranial bones are most commonly involved. In the case of gross blunt trauma, suspected fractures, and substantiated suspicion of repeated child abuse, radiological investigations are indicated; these findings may require assessment particularly in terms of whether a fracture is accident related.

18.3 Thermal Injuries and Child Abuse

While injuries resulting from sharp or penetrating trauma play a minor role in child abuse, abuse-related burns and scalds are seen relatively often. Cold-related injuries, e.g., due to confinement in

Fig. 18.9 (**a**) Old bite marks on the outer side of the right thigh in a 16-month-old boy. (**b**) Bite marks inflicted post-mortem adjacent to the right eye in a 6-year-old girl

a cold room or immersion in cold water, are rare and seen primarily in the context of neglect. In the case of burns and scalds, it should be noted that significantly shorter exposure times are sufficient to damage young skin compared with adult skin. Typical objects used to inflict contact burns include cigarettes, cigars, cigarette lighters, irons, heaters, hairdryers, curlers, car hoods, hot plates, and ovens.

Scalds: Exposure to moist heat, usually a hot liquid, most commonly water. Preservation of skin appendages, e.g., hair, is characteristic.

Burns: Exposure to dry heat, i.e., contact burns.

Direct exposure to flames is infrequently seen in the context of child abuse. Additional damage to hair and skin appendages is seen in the case of dry heat.

Accidental thermal injury also needs to be considered in the differential diagnosis of burns (Table 18.4).

Abuse-related scalding in children often involves the hands (Fig. 18.10), feet, or buttocks (Fig. 18.11) and shows conspicuous water-level demarcation lines. Splashes of hot water sometimes come in contact with the eyes in the course of an incident (Fig. 18.12).

In the case of accidental scalding, on the other hand, irregular, splash-like injuries

Table 18.4 Differential diagnosis of accidental vs. abuse-related thermal injuries

Accidental scalds/burns	Abuse-related scalds (immersion) and burns
Irregular splash-like distribution of injuries, possibly also flow marks	Injury pattern, often including water-level marks
No clear demarcation from healthy skin	Sharply demarcated from healthy skin
Scalding: arrow-like configuration on the chest	Contact traces are absent in the case of forced immersion of the face
Irregular, splash-like distribution of scalds on the extremities	Stocking or glove pattern of scalds following hand/foot immersion
Unclear demarcation of hot contact surfaces	Often clear pattern of the hot object applied: cigarette, iron, hotplate, hairdryer
Smaller injuries of varying depth since the body or the object is not fixed in mechanisms of accidental injury	Relatively homogenous injury depth due to pressure on or fixation of the object or the child's body

Modified according to Yeoh et al. (1994)

Fig. 18.10 Scald injuries (seen here postoperatively) on the hands of an infant following forced immersion in hot water with clearly identifiable watermark lines (*arrows*)

Fig. 18.11 Clearly delineated scald injuries to the buttocks after the child was seated in hot water

Fig. 18.12 Abuse-related scald injuries including involvement of the left eye

showing flow lines and a less symmetrical distribution over the body are seen, typically, for example, when a child tips a saucepan of hot water off the stove and the hot water pours down one side of the child's body (Fig. 18.13a–c).

18.4 Shaken Baby Syndrome

Up to 95 % of severe head injuries in the first year of life are believed to be the result of abuse. Of particular note here is shaken baby syndrome (SBS), a specific form of gross blunt trauma; impact injuries to the head (shaken impact syndrome) in this context may also explain skull fractures.

SBS primarily involves infants but may also be seen in children aged up to 2 years. An infant's peak crying phase between the ages of 2 and 5 months represents a predisposing factor. An infant may be seized by the arms or around the chest (Figs. 18.14 and 18.15), also occasionally by the shoulders or extremities.

Gripping tightly around the chest can cause paravertebral rib fractures, while the head is shaken backwards and forwards in a whiplash-like action.

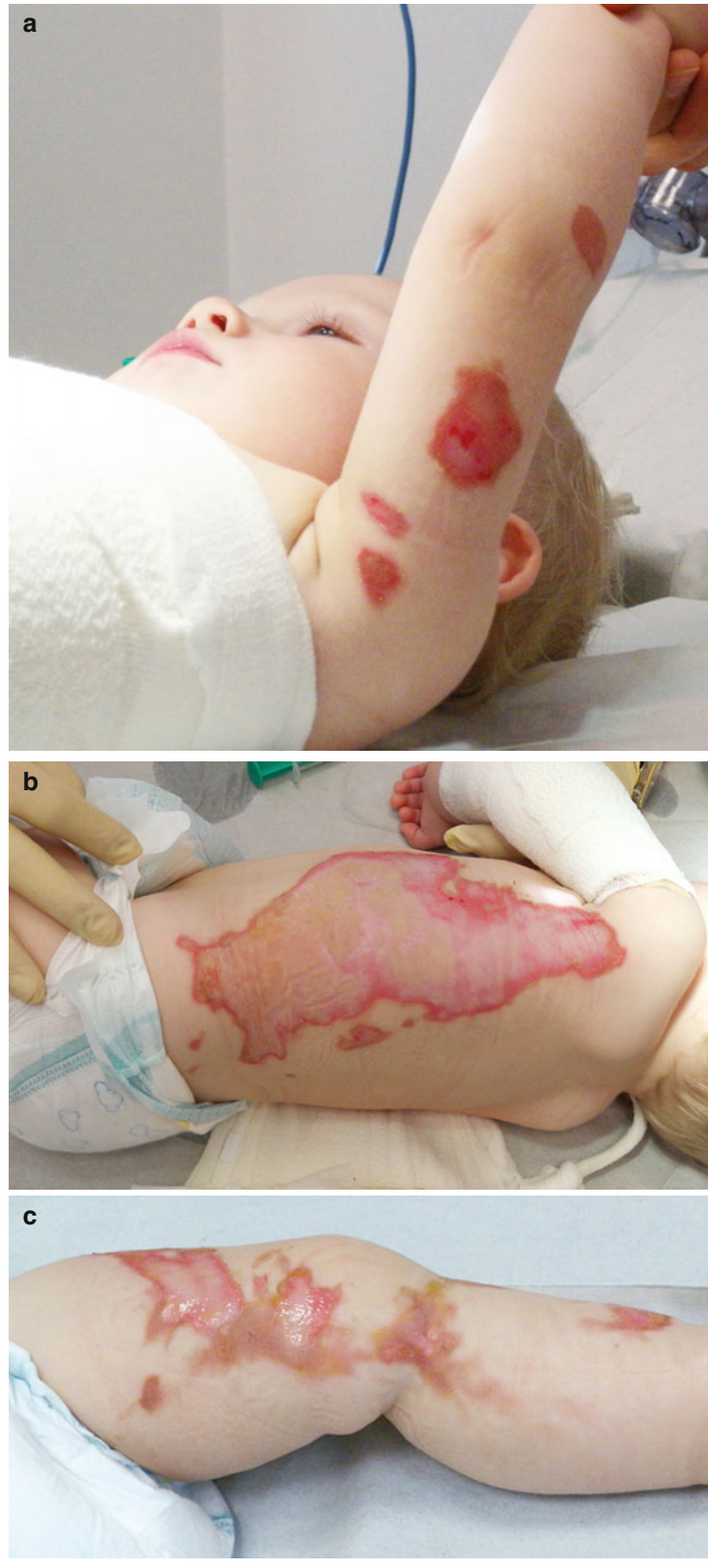

Fig. 18.13 (**a**–**c**) Irregular distribution of accidental scald injuries showing a splash-like pattern with flow marks on the left upper arm (**a**), trunk (**b**), and left leg (**c**) of a toddler who tipped a saucepan of boiling water off the stove

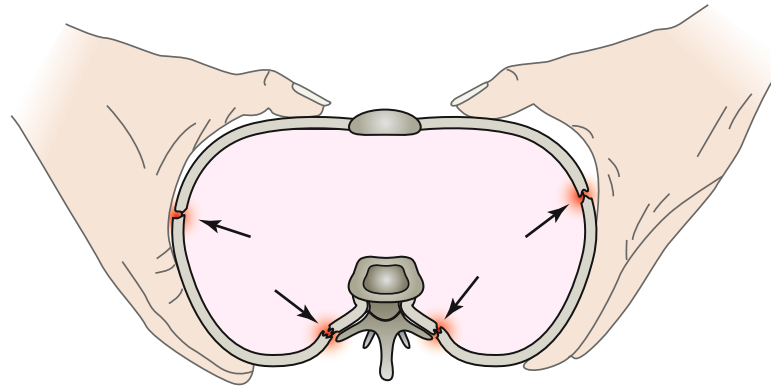

Fig. 18.14 Grip position around the chest in shaken baby syndrome with serial rib fractures due to tightness of grip

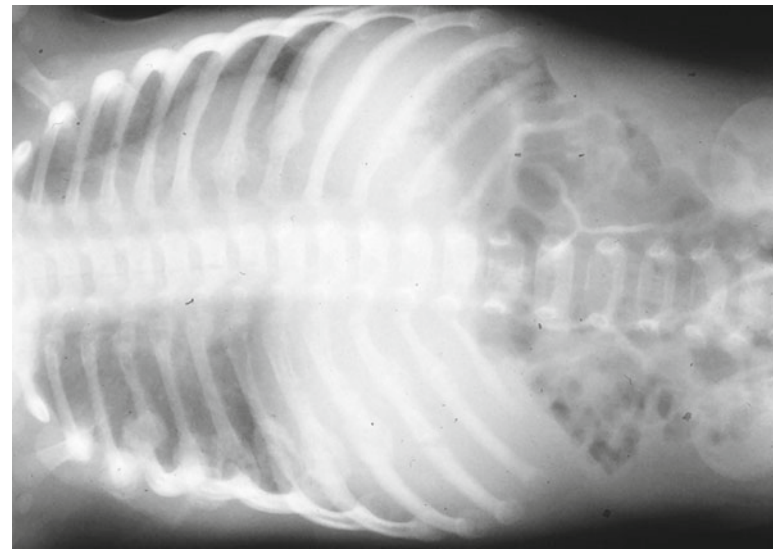

Fig. 18.15 Old serial rib fractures, 8-week-old female with typical callus formations

Important: Shaken baby syndrome is of such severity that even individuals with no medical knowledge cannot help but be aware of the damaging and life-threatening outcome of violent shaking of this kind.

Violent shaking results in clinical symptoms and injuries. In general, there is no, or only a very short, interval free of neurological symptoms. Clinical signs of non-accidental head injury may be evident in shaken baby syndrome:

- Poor general condition
- Weak feeding, unwillingness to feed
- Refusal to feed
- Irritability
- Drowsiness
- Vomiting (intracranial pressure!)
- Muscular hypertonia
- Cerebral seizures
- Apnea
- Impaired temperature regulation
- Bradycardia
- Somnolence, apathy, coma, death

Clinical symptoms vary; moreover, severe neurological symptoms may be present despite the absence of externally visible injuries. Internal injuries of varying degrees of severity can include:

- Subdural (Fig. 18.16) and subarachnoid hematoma, often of a non-space-consuming nature
- Uni- or bilateral retinal hemorrhage (Fig. 18.17)
- Retinal detachment
- Optic nerve hemorrhage (Fig. 18.18)
- Vitreous hemorrhage

- Hand marks (upper arms, chest)
- Fractures, including dorsal serial rib fractures
- Diffuse axonal injury (DAI) with extensive damage to cerebral parenchyma
- Possible impact injuries to the head
- Subperiosteal bleeding at the base of the clavicle/neck muscles due to tearing forces

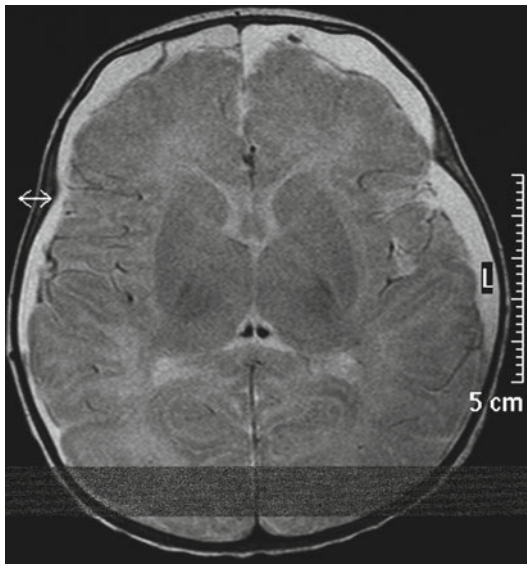

Fig. 18.16 Acute subdural hematoma (*double-ended arrow*) seen on MRI in a case of shaken baby syndrome; no relevant intracranial mass (From Herrmann et al. (2010))

Important: An ophthalmological examination is mandatory in the case of suspected shaken baby syndrome, particularly in infants <4 years. As a rule, cerebral seizures, coughing fits, and resuscitation do not cause retinal hemorrhage.

Shaken baby syndrome is associated with a mortality rate of 12–27 %. Two thirds of survivors are left with varying degrees of neurological damage including cerebral atrophy, subdural hygroma, multicystic encephalopathy, cerebral seizures, mental retardation, and optic nerve atrophy.

18.5 Special Forms of Child Abuse

Case Study

Due to persistent diarrhea in her infant, a mother sought consultation with her family physician and a hospital pediatrician. The ensuing inpatient investigations yielded no pathological findings, and the infant showed no signs of diarrhea during the inpatient period. When the mother reported renewed symptoms several weeks later, a chemical-toxicological investigation was carried out on a urine sample from the infant. This investigation showed that the infant had been given laxatives.

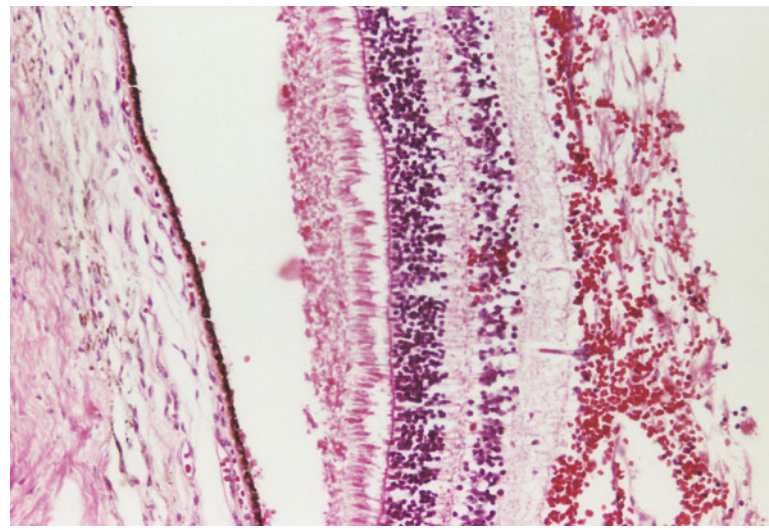

Fig. 18.17 Microscopically detected retinal hemorrhage in shaken baby syndrome (HE×200)

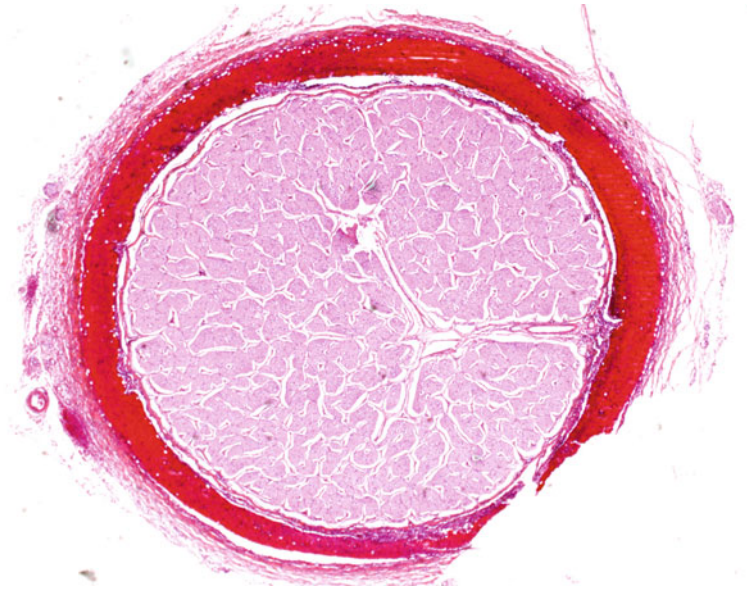

Fig. 18.18 Shaken baby syndrome with circular hemorrhages around the exit of the optic nerve (H&E×40)

A second mother presented with her infant reporting bloodied diapers. On inspection, the diaper was found to indeed contain blood, arousing the suspicion of hemorrhagic urocystitis; however, clinical and laboratory findings did not support this diagnosis. Molecular genetic analysis of the blood demonstrated that it had originated from the mother rather than from the child and that it had been placed in the diaper by the mother.

Special forms of child abuse comprising certain constellations of injuries or particular circumstances have been reported.

Munchausen Syndrome by Proxy (*MSbP*). In this particular syndrome, disease symptoms in a child are alleged and/or caused deliberately—almost always by the mother (see "Case Study" above). Existing diseases may also be exacerbated. MSbP has four characteristic features:

1. The clinical picture seen in a child has been simulated or caused by a parent or other person responsible for the child.
2. The child is presented for medical investigation and treatment frequently involving extensive and often invasive medical evaluations.
3. The person presenting with the child denies any knowledge of the actual cause(s) of the clinical picture.
4. Acute symptoms improve when the child is separated from the perpetrator.

The term "Munchausen syndrome by proxy" is considered by some to be inappropriate; "pediatric condition falsification" has been suggested as a more accurate designation for this phenomenon. The motive behind MSbP is not only the repeated medical evaluation of the child but also the mother's need for care and attention. The mother appears overly concerned, seeks contact with the nursing staff and physicians, and tries to obtain medical information. Numerous deliberate acts of harm are seen, such as the administration of medication or toxins, including in particular sleeping pills and tranquilizers, ipecac, laxatives, the use of pepper, salt intoxication, water intoxication, alcohol, drugs, and household chemicals. Even without foreign substance administration, life-threatening situations may be induced in MSbP, e.g., "smothering," whereby the external airways are covered with a soft object such as a pillow until near onset of irreversible damage or death is caused. The clinical classification of this phenomenon as apparent life-threatening event (ALTE) syndrome replaces the older designation of near-missed SIDS (sudden infant death syndrome).

Misdiagnoses in the case of death and incorrect classification as SIDS occur! Close attention should be paid to discrepancies between reports given by the mother and the clinical findings. Symptoms usually abate while the child is an inpatient. Clinical findings and diagnostic results that cannot be attributed to any known disease, as well as the supposed discovery of new or rare diseases, are suggestive of MSbP. This particular syndrome has hitherto been seen as a special form of child abuse rather

than as a maternal psychiatric disorder in its own right, although a personality disorder is assumed to a greater or lesser degree.

Tin Ear Syndrome: Here, a child's head is subjected to rotational acceleration produced by a strong slap. Clinical findings include an isolated ear contusion, ipsilateral subdural hematoma, retinal hemorrhage, and cerebral edema or diffuse axonal injury as seen in shaken baby syndrome. A fatal course has been seen in some cases.

Caffey Syndrome: The appearance of chronic subdural hematomas combined with generally multiple long bone fractures.

Shaken Impact Syndrome: This involves the violent shaking of an infant accompanied by head impact, thus producing significant acceleration–deceleration forces (whiplash) as well as severe injury, in particular skull fractures.

18.6 Differential Diagnoses

Depending on medical findings, a differential diagnosis may be necessary. Abnormal bruising is suggestive of a coagulation disorder, and a patient history should be taken:

- In the case of infants: Did vitamin K administration taken place after birth?
- Has there been previous surgery with bleeding complications?
- Does the child bruise unusually easily?
- Has there ever been unusually persistent bleeding following banal superficial wounds?
- Are there any indications of accidental ingestion of anticoagulants, e.g., Marcumar tablets at home, rat poison?
- Are there any indications of malabsorption or failure to thrive?
- Is a coagulation disorder present (hemophilia, von Willebrand syndrome (most common form), immune thrombocytopenic purpura (ITP), vitamin K deficiency bleeding (neonate late-onset form), hepatopathies, other coagulopathies)?
- Are there any indications of vasculitis? Most common: Schönlein–Henoch purpura

Occasionally, multiple contusions are seen in infants and children with coagulopathies, usually in localizations typical for an impact site, but also localized to sites typical of blows or falls, as well as unusual sites (Fig. 18.19).

A spectacle hematoma always arouses the suspicion of child abuse or impact trauma, primarily a blow from a fist. There are few alternative explanations for bruising of this kind. In rare cases, when a monocle or spectacle hematoma cannot be reasonably attributed to a reported incident or an established setting, a coagulation disorder needs to be considered (Fig. 18.20).

Injury due to birth trauma is occasionally the source of misunderstandings, particularly when contusions are seen at sites typical for blows, such as the buttocks (Fig. 18.21).

Fig. 18.19 Initial suspicion of child abuse: extensive bruising on the sole of the foot in clinically diagnosed coagulopathy

Fig. 18.20 Initial suspicion of child abuse on the basis of a spectacle hematoma due to a blow from a fist to the eyes in the setting of clinically diagnosed coagulopathy

Fig. 18.21 Extensive yet symmetrical and clearly demarcated contusion on the skin of the buttocks following protracted delivery due to breech presentation, initially incorrectly interpreted as child abuse

In the same way, genetic or congenital diseases that cause increased susceptibility to fractures, in particular osteogenesis imperfecta (OI), should be considered in infants, children, or adolescents with fractures of otherwise implausible origin. Cases of mistaken classification as child abuse are known. The incidence of all four types (according to Sillence) of OI is given as between four and seven cases per 100,000 births. OI is primarily a quantitative collagen synthesis disorder caused by a point mutation on the *COL1A1* and *A2* genes, which encode for type 1 collagen (90 % of the bone matrix). However, this is accompanied by a qualitative disorder caused by a decrease in collagen triple-helical twisting, which causes reduced bone stability. OI is a predominantly autosomal dominant disorder, while recessive in type III. Any suspicion of OI warrants taking a family history: Are there any known cases of bone diseases or bone deformities in biological relatives? Questions more targeted to OI include the following: Is there an increased incidence of fractures? Blue sclerae? Dentinogenesis imperfecta? Hearing impairments? Long bone deformities? Osteoporosis? Wormian bones?

In addition, abnormal skin findings that could initially be incorrectly interpreted as bruising, e.g., naevus fusco-caeruleus, should be documented. Unusual contusions may be attributable to traditional folk medical practices, such as the Asian practice of "coining" or "spooning" (Cao gio and quat sha, respectively). Rarely, infections may cause skin changes, e.g., multiform erythema in herpes or mycoplasma infections, which could be mistaken for child abuse in the differential diagnosis.

18.7 Child Neglect

Parental neglect of a child is defined not only as denying a child appropriate care, protection, and education but also denying affection, love, and acceptance, as well as allowing a child to suffer

physical deprivation such as starvation or poor nutrition.

A distinction is made between physical neglect and psychological neglect:

Physical Neglect: This form of neglect ranges from providing poor nutrition, insufficient attention to physical needs, and refusal to or delay in seeking medical care to total abandonment. Physical signs of neglect include nonorganic failure to thrive, the effects of severe malnutrition or starvation, as well as contracting preventable diseases such as rickets or infectious diseases as a result of failure to obtain vaccinations.

Psychological Neglect: This describes insufficient attention to and fulfillment of a child's developmental needs within the boundaries of social responsibility and decency. Psychological abuse manifests itself as a child's lack of involvement and interest, withdrawn behavior or overfamiliarity, and delayed social, emotional, and speech development.

18.8 Female Genital Mutilation

According to WHO data, there are approximately 100–150 million women and girls worldwide living with the effects of female genital mutilation (FGM; also referred to a female genital cutting, FGC, and female circumcision); every year, around three million girls are added to this figure. FGM is performed for a number of reasons considered to be wholly irrational in the Western world; nonetheless, it involves deeply ingrained cultural ideas held even—and in particular—by women who have suffered genital mutilation themselves. A differentiated explanation for the various forms of FGM is lacking. The causes of FGM lie in cultural and social customs, the main causes being deeply held traditional (up to 71.3 %) and religious (up to 91.4 %) practices. The need for FGM in girls is justified or explained more specifically by the following:

- The cultural ideas and traditional myths of individual ethnic groups
- A fundamental ignorance of biological and medical facts
- The incorrect interpretation of religious guidelines
- Patriarchal structures and the accompanying suppression of women
- Mutilation as a means to ensure against loss of virginity and promiscuity in marriage or to reduce women to the level of their role as child-bearers
- The threat of social isolation and reduced chances of marriage since non-mutilated women are often considered promiscuous or "wanton"

In some areas, the procedure is seen as a ceremonial act and is accompanied by the giving of gifts and rewards. According to the literature, further reasons for FGM consist in preparing a girl for adulthood and marriage insofar as FGM can represent a precondition for marriage, or it is assumed that a man will only marry a woman if she has been "circumcised." In addition, the intervention is believed to preserve virginity, ensure fidelity, and control a woman's libido and behavior.

FGM involves the partial of complete removal of the external female genitalia. The World Health Organization (WHO) classifies FGM into four major types (WHO 2008):

- Type I, clitoridectomy: Partial or complete removal of the clitoris
- Type II, excision: Partial or complete removal of the clitoris and the labia minora, with or without removal of the labia majora
- Type III, infibulation: Partial or complete removal of the external genitalia and sewing up of the vaginal opening, leaving only a small foramen
- Type IV: All other forms of FGM or alterations to the female genitalia for nonmedical purposes that do not classify as types I–III, including the following practices:
  - Pricking, piercing, incising, or other procedures intended to alter the clitoris
  - Stretching the clitoris and labia minora
  - Cauterizing the clitoris
  - Incising the external female genitalia
  - The insertion of painful substances or herbs (usually performed by adult females on themselves for cleansing purposes or to increase the partner's pleasure. The WHO considers this also to be a form of FGM, since it can pose a serious health risk or is the result of social coercion)

Although the procedure is usually performed without anesthesia and in poor hygiene conditions (in countries such as Egypt, Kenya, or Guinea), it is increasingly undertaken in hospitals with anesthesia.

Table 18.5 African countries where FGM is practiced

	Country	Year	Prevalence (%)
Northeast Africa	Egypt	2005	95.8
	Ethiopia	2005	74.3
	Djibouti	2006	93.1
	Eritrea	2002	88.7
	Somalia	2005	97.9
	Sudan, northern region (covering ca. 80 % of the population)	2000	90.0
East Africa	Kenya	2003	32.2
	Tanzania	2004	14.6
	Uganda	2006	0.6
Northwest Africa	Burkina Faso	2005	72.5
	Guinea	2005	95.6
	Guinea Bissau	2005	44.5
	Gambia	2005	78.3
	Mali	2001	91.6
	Mauritania	2001	71.3
	Senegal	2005	28.2
	Sierra Leone	2005	94.0
Southwest Africa	Benin	2001	16.8
	Ivory Coast	2004	41.7
	Chad	2004	44.9
	Central African Republic (MICS)	2005	25.7
	Nigeria	2006	2.2
	Ghana	2005	3.8
	Cameroon	2004	1.4
	Liberia	2007	45.0
	Niger	2006	2.2
	Togo	2005	5.8

Modified from WHO (2008)

Clitoridectomy and excision comprise around 80–85 % of all cases, for example, those seen in Senegal, Togo, and the Ivory Coast, while infibulation (15–20 % of all cases) is practiced predominantly in East Africa (Somalia, Ethiopia, Eritrea, but also Sudan). FGM, which is practiced in more than 28 countries, is seen primarily in central, western, and northeastern regions of Africa (see Table 18.5 for an overview) (WHO 2008).

Cases of FGM have also been reported in India, Indonesia, Malaysia, Yemen, the United Arab Emirates, and Iraq; however, no estimates on the number of women affected in these countries are available. Ethnic origin is the main decisive factor in terms of whether where (alone at home or in a group at a certain place) and how a circumcision is performed.

Data gathered from countries where information on forms of circumcision is available show that altogether approximately 90 % of affected women have undergone type I, II, and IV circumcision and 10 % type III (infibulation). It was found that infibulation is common in Northeast African countries in particular; in addition, FGM tends to be practiced in rural areas more frequently than in urban areas.

Although literature data on the average age at which girls are affected by FGM vary, it is clear that primarily minors are affected; at a rate of 0.1–3.8 %, FGM in adult women plays only a minor role. The point in time at which FGM is performed depends strongly on the local conditions and traditions of individual ethnic groups, with significant variations between countries. In Eritrea, for example, 62 % of procedures are performed before 1 year of age, while in Guinea approximately 48 % take place between the ages of 5 and 9 years and in Egypt around 49 % between the ages of 10 and 14 years. According to a WHO report, most procedures take place between the ages of 0 and 15 years.

Irrespective of type, FGM is associated with a multitude of acute and chronic health effects and complications, the most common among these being menstrual disorders. Difficulties during childbirth or sex, as well as psychological effects such as traumatic memories or fear of gynecological examinations or sexual intercourse, are also reported.

FGM increases the risk of complications during childbirth two- to threefold. These increased risks include cesarean section, postpartum hemorrhage, increased length of stay in hospital, the need for neonatal resuscitation, stillbirth, and/or premature death of a neonate. Health risks increase according to the extent of FGM. However, FGM brings not only physical but also psychological complications with it in the form of posttraumatic stress disorders, anxiety disorders, and affective disorders.

In November 2006, senior Islamic scholars at the Al-Azhar University in Cairo issued a

توصيـــات المؤتمـر

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بسم الله الرحمن الرحيم

انعقد "مؤتمر العلماء العالمي نحو حظر انتهاك جسد المرأة" في الأول والثاني من ذي القعدة ١٤٢٧ هـ الموافق ٢٢ – ٢٠٠٦/١١/٢٣م في رحاب الأزهر، وألقي فيه عدد من البحوث، وبعد مناقشات السادة العلماء والأطباء والمتخصصين والمهتمين من مؤسسات المجتمع المدني في مصر وأوربا وأفريقيا توصل المؤتمر إلى ما يلي :

١. كرم الله الإنسان فقال تعالى: ﴿وَلَقَدْ كَرَّمْنَا بَنِيٓ ءَادَمَ﴾ فحرم الاعتداء عليه أيًا كان وضعه الاجتماعي، ذكرًا كان أم أنثى.

٢. ختان الإناث عادة قديمة ظهرت في بعض المجتمعات الإنسانية، ومارسها بعض المسلمين في عدة أقطار تقليدًا لهذه العادة دون استناد إلى نص قرآني أو حديث صحيح يحتج به.

٣. الختان الذي يمارس الآن يلحق الضرر بالمرأة جسديًا ونفسيًا، ولذا يجب الامتناع عنه امتثالاً لقيمة عليا من قيم الإسلام، وهي عدم إلحاق الضرر بالإنسان، كما قال رسول الله صلى الله عليه وسلم "لا ضرر ولا ضرار في الإسلام" بل يُعد عدوانًا يوجب العقاب.

٤. يناشد المؤتمر المسلمين بأن يكفوا عن هذه العادة، تماشيًا مع تعاليم الإسلام التي تحرم إلحاق الأذى بالإنسان بكل صوره وألوانه.

٥. كما يطالبون الهيئات الإقليمية والدولية بذل الجهد لتثقيف الناس وتعليمهم الأسس الصحية التي يجب أن يلتزموا بها إزاء المرأة، حتى يقلعوا عن هذه العادة السيئة.

٦. يُذكّر المؤتمر المؤسسات التعليمية والإعلامية بأن عليهم واجبًا محتمًا نحو بيان ضرر هذه العادة، والتركيز على آثارها السيئة في المجتمع، وذلك للإسهام في القضاء على هذه العادة.

٧. يطلب المؤتمر من الهيئات التشريعية سن قانون يُحَرِّمُ ويُجَرِّم من يمارس عادة الختان الضارة فاعلاً كان أو متسببًا فيه.

٨. كما يطلب من الهيئات والمؤسسات الدولية مد يد المساعدة بكافة أشكالها إلى الأقطار التي تُمارَس فيها هذه العادة كي تعينها على التخلص منها.

Fig. 18.22 Statement from November 2006

statement declaring that the Qur'an contains no call for or mandate to perform FGM. The statement further adds:

> Genital circumcision is a deplorable, inherited custom… there are no written grounds for this custom in the Qur'an… The female genital circumcision practiced today harms women psychologically and physically. Therefore, the practice must be stopped in support of one of the highest values of Islam, namely to do no harm to another (Fig. 18.22).

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