

## Skin lesions, differential diagnosis and practical approach to potential survivors of torture

Clarysse, Karlijn; Grosber, Martine; Ring, Johannes; Gutermuth, Jan; Kivlahan, Coleen

*Published in:*

Journal of the European Academy of Dermatology and Venereology

*DOI:*

[10.1111/jdv.15439](https://doi.org/10.1111/jdv.15439)

*Publication date:*

2019

*Document Version:*

Final published version

[Link to publication](#)

*Citation for published version (APA):*

Clarysse, K., Grosber, M., Ring, J., Gutermuth, J., & Kivlahan, C. (2019). Skin lesions, differential diagnosis and practical approach to potential survivors of torture. *Journal of the European Academy of Dermatology and Venereology*, 33(7), 1232-1240. <https://doi.org/10.1111/jdv.15439>

### Copyright

No part of this publication may be reproduced or transmitted in any form, without the prior written permission of the author(s) or other rights holders to whom publication rights have been transferred, unless permitted by a license attached to the publication (a Creative Commons license or other), or unless exceptions to copyright law apply.

### Take down policy

If you believe that this document infringes your copyright or other rights, please contact [openaccess@vub.be](mailto:openaccess@vub.be), with details of the nature of the infringement. We will investigate the claim and if justified, we will take the appropriate steps.

## REVIEW ARTICLE

# Skin lesions, differential diagnosis and practical approach to potential survivors of torture

K. Clarysse,<sup>1</sup> M. Grosber,<sup>1</sup> J. Ring,<sup>2</sup> J. Gutermuth,<sup>1,\*†</sup> C. Kivlahan<sup>3,†</sup>

<sup>1</sup>Department of Dermatology, Universitair Ziekenhuis Brussel, Vrije Universiteit Brussel, Brussels, Belgium

<sup>2</sup>Klinik und Poliklinik für Dermatologie und Allergologie am Biederstein, Klinikum rechts der Isar, Technische Universität München, München, Germany

<sup>3</sup>University of California San Francisco Health System, San Francisco, CA, USA

\*Correspondence: J. Gutermuth. E-mail: jan.gutermuth@uzbrussel.be

**Linked article:** A. Morrone. *J Eur Acad Dermatol Venereol* 2019; **33**: 1199–1200. <https://doi.org/10.1111/jdv.15724>

## Abstract

As the international refugee crisis has reached new proportions (BMJ, 355, 2016 and i5412), survivors of torture increasingly present in treating physicians with an array of acute or chronic skin lesions. Physicians should be aware of common presentations and likely differential diagnoses in order to avoid mislabelling or under-recognizing torture. Survivors of torture also frequently suffer from psychological sequelae, such as post-traumatic stress disorder, and appropriate referrals are essential in order to improve recovery trajectory. Skin sequelae are the most common physical findings of torture. Not all skin lesions seen in tortured survivors are due to perpetrator inflicted injuries, and many dermatological conditions can mimic lesions typical of torture, as can scars as a result of folk remedies or cultural practices specific to geographical regions. Medical documentation of torture includes injury and lesion description. While forensic dermatology and other forensic specialties use an injury description taxonomy, and the standard dermatologic taxonomy uses an anatomic description, they are complementary sciences for lesions inflicted by torture. This results in an opportunity for learning across disciplines in order to improve evidence documentation for survivors of torture. This article describes features of common skin lesions consistent with torture, including their clinical appearances, differential diagnoses, patterns of injury and appropriate clinical descriptions.

Received: 15 May 2018; Accepted: 3 December 2018

## Conflict of interest

All authors declare no conflict of interest.

## Funding source

None.

## Introduction

Acts of torture are detrimental to physical and psychological integrity and are among the most serious violations of a person's human rights. Torture and physical abuse or assault may be confusing terms. In both cases, the perpetrators intentionally hurt their victims. Physical abuse or assault is usually inflicted within a relationship of trust between the perpetrator and the victim, and is often seen in elderly and children.<sup>1</sup> Torture was defined in 1984 by the United Nations as follows: 'Any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person . . . by or at the instigation of or with the consent or acquiescence of a public official or other person acting in an official capacity . . .'.<sup>2</sup>

Due to the rising number of armed conflicts around the globe and the resulting international refugee crisis,<sup>3</sup> physicians worldwide are confronted with a new population of patients who may have experienced torture and present with resulting skin signs. As skin lesions may be the only visible sign of torture, physicians must be aware that the differential diagnoses should include dermatological, systemic diseases and those resulting from physical torture. As most physicians are not trained in recognizing typical patterns of torture, survivors may be under-recognized. In addition, lack of adequate psychological care may result in undertreatment of severe psychological disorders such as post-traumatic stress disorders (PTSD).<sup>4</sup> Not all skin lesions seen in clinical settings in which patients allege torture should be considered as a consequence of torture. Many dermatological skin conditions, cultural

<sup>†</sup>Senior authors contributed equally.

habits and folk remedies can mimic skin lesions of torture. Therefore, a minimum knowledge of these differential diagnoses is indispensable for all physicians.

### **Epidemiology of torture and individual risk factors**

It is impossible to ascertain the exact number of those experiencing torture annually, because torture is underreported due to fear, humiliation, shame, lack of support from attorneys and physicians, or risk of deportation and exposure to further harm or death.

Organizations such as Amnesty International and the International Rehabilitation Council for Victims of Torture (IRCT) are actively involved in reporting, documenting events and the rehabilitation process of survivors of torture. Amnesty International has reported torture in 141 countries with an estimated prevalence of about 400 000 survivors of torture living in the European Union.<sup>5</sup> The Centre for Victims of Torture (CVT) estimated that there are about 1.3 million torture survivors in the United States alone, which is most likely an underestimation.<sup>6</sup> As most survivors of torture may seek political asylum in Western countries after fleeing from perpetrators in their country of origin, Western physicians will be increasingly confronted with physical and mental health problems related to torture and detention. However, it should be emphasized that not only Western physicians can observe these injuries, but physicians working all over the world. Physicians play a crucial role in identifying and documenting this evidence of torture by following the WHO Istanbul Protocol, an international guideline for medical documentation of torture.<sup>7</sup>

The most frequent risk factor for torture is living in a political unstable country, where survivors may be arrested, detained or killed. Other major risk factors include poverty, skin of colour and protracted civil wars. Nevertheless, no one is immune from the risk of torture and it has been reported in virtually all countries. It is important that clinicians consider the possibility of torture as an aetiology of skin lesions, and if suspected, address the victim with open-ended questions during the history or physical examination, such as: ‘Some people in your situation have experienced difficult conditions in their countries; What happened for you?’ ‘While in detention, please describe any events during which you experienced mental or physical suffering caused by another person.’<sup>8</sup>

### **Clinical appearance and patterns of skin lesions due to torture**

As part of a comprehensive examination of torture survivors, a complete skin examination is essential. Knowledge of patterns of injury and clues to distinguish skin lesions due to torture from other skin conditions is an important clinical skill.

In the context of torture documentation, forensic medicine and dermatology are often complementary sciences. A minimum knowledge of forensic terminology is useful in order to describe

the process and mechanisms of injury resulting in the acute or healed skin signs of torture. Dermatologic description of primary and secondary skin lesions delivers additional information and clues to diagnoses.

In forensic science, lesions are described by their appearance as well as the reflection of the history regarding the manner or mechanism of injury as well as lesion pattern. Typically, forensic description is further categorized by type of force used such as blunt or sharp force as well as those injuries caused by non-kinetic forces. Common wound or lesion descriptions include lacerations, abrasions, contusions, incisions, bites and burns.<sup>9</sup> Complementary dermatologic nomenclature includes lesion type or morphology, configuration, distribution, colour and categorization into primary (macules, papules, nodules, etc) and secondary (scale, crust, erosion) skin lesions. Lesions such as ecchymosis, bullae, abscesses, erosions or ulcerations are often seen in acute settings of torture survivors (Table 1), while scars or pigmentary changes are often seen in healed or more chronic settings (Table 2).

### **Common acute skin lesions due to torture**

The most common injuries from torture include beatings and kicks, forced positions, electric shocks, burns and sexual violence. Most physicians do not see these patients acutely, but for those who do, there are several common physical findings.

Ecchymoses or bruises are common acute skin findings secondary to blunt force trauma in torture survivors. Patterns may be present and are an important clue for differentiating inflicted injuries when they reflect the shape of the instrument applied to the skin, such as round fingerprint bruises, parallel tramlines or bite marks<sup>10</sup> (Fig. 1). Falanga is the repeated beating of the soles of the feet which may cause contusions, swelling of the feet and purpura of the lower legs. When seen acutely, it can be a very specific sign of torture, and acute surgical intervention may be required to prevent compartment syndrome.<sup>11</sup> Torture findings can be seen on the face, in the mouth, ears, on the buttocks, soles of the feet or back of the torso or genitalia, and may present as patterned injuries.<sup>12,13</sup>

A variety of instruments are used to cause burns during torture; however, the injuries are rarely seen in their acute stages of healing. Burns can be inflicted from cigarettes, electricity, caustic substances and other thermal causes such as heated metal rods. Acute lesions following electrocution may or may not reflect the shape of the causative instrument. Patterns of injuries may be observed as the current follows the lowest resistance. Picana (electrodes shaped as needles) typically leave linear lines, erythematous 1–2 mm maculae and crusts in the involved area.<sup>14</sup> These should be differentiated from scratch marks and insect bites. Burns from immersion into hot water or other heated substances may present in a characteristic pattern consistent with the patient’s history.<sup>13</sup> In detention settings without medical treatment, burns can result

**Table 1** Acute typical skin lesions of torture and selected differential diagnoses

| Clinical classification of skin lesions<br>Dermatological nomenclature | Pathomechanistic classification of skin lesions<br>Forensic nomenclature | 'Mimickers of torture'                         |   |
|--|--|--|---|
|  |  | Differential diagnoses of common skin diseases | Patterned skin lesions common in Folk remedies/Cultural practices |
| <b>Ecchymoses</b>  | Bruises with pattern†  | Accidental ecchymoses                          | Coin rolling  |
|  | Fingerprint bruises  | Naevus of Ota, Ito and Mongolian spots         | Press-stroking  |
|  | Bite marks   | Drug-induced pigmentation‡                     | Cupping/Hejamat   |
|  | Round contusions on extremities  | Erythema multiforme minor                      |   |
|  | Parallel contusions  | Senile and steroid purpura                     |   |
|  | Contusions on plantar surface of feet                                    | Henoch–Schonlein purpura                       |   |
| <b>Bullae/Abscess</b>  | Cigarette burns  | Accidental friction blisters or burns          | Moxibustion   |
|  | Immersion burns  | Bullous impetigo                               | Maquas  |
|  | Electrical burns   | Severe contact dermatitis                      | Cupping   |
|  | Thermal injuries   | Insect bites                                   |   |
|  | Picana   | Stevens–Johnson syndrome                       |   |
|  | Secondary infections from injuries or insect bites                       | Auto-immune blistering                         |   |
| <b>Genital erosions/lesions</b>  | Traumatic genital ulcerations/lacerations                                | Allergic contact dermatitis                    | Female genital cutting/mutilation                                 |
|  | Female genital cutting/mutilation  | Lichen planus                                  |   |
|  | Sexually transmitted diseases scabies/lice                               | Vaginal/urinary infections                     |   |
|  | infections fingerprint or patterned ecchymoses§                          |  |   |

†Suspicious location: face, ears, genitalia, buttocks, soles and back; size: >5 cm. ‡Minocycline, phenothiazines, amiodarone or antimalarials. §Suspicious location: inner thighs.

**Table 2** Chronic typical skin lesions of torture and selected differential diagnoses

| Clinical classification of skin lesions<br>Dermatological nomenclature | Pathomechanistic classification of skin lesions<br>Forensic nomenclature | 'Mimickers of torture'                         |  |
|--|--|--|--|
|  |  | Differential diagnoses of common skin diseases | Patterned skin lesions common in Folk remedies/ Cultural practices |
| <b>Scars/Pigmentary changes</b>  | Patterned scars†   | Accidental cutting                             | Scar tattoo  |
|  | Scars from cigarette burns   | Varicella                                      | Tribal marking   |
|  | Scars from scabies   | Acne   | Wet cupping or Hejamat   |
|  | Keloids from electrocution   | Abscesses                                      |  |
|  |  | Chondrodermatitis helicis                      |  |
|  | Circular/oval bite marks   | Plant dermatitis                               |  |
|  |  | Self-inflicted linear scars                    |  |
| <b>Alopecia</b>  | Ligatures wrist/ankle  | Trichotillomania                               | Traction alopecia‡   |
|  | Burns  | Alopecia areata                                |  |
|  | Traumatic alopecia   | Tinea capitis                                  |  |
|  |  | Chronic discoid lupus erythematosus (CDLE)     |  |
|  |  | Other cicatricial alopecias                    |  |
|  |  |  |  |
| <b>Genital erosions/lesions</b>  | Chronic scabies infection  | Lichen sclerosus                               | Female genital cutting   |
|  | Vaginal/rectal fistulae  | Lichen chronicus simplex                       |  |
|  |  | Lichen planus                                  |  |
|  |  | Squamous cell carcinoma                        |  |

†e.g. tramline patterns from blunt trauma. ‡From long braids, cornrows or tight scarves.

in secondary infections and subsequent scarring, appearing similar to any non-torture-related lesion which becomes secondarily infected. It should be noted that sequelae of poor hygienic conditions, prolonged detention and no access to

medical care can lead to lesions such as scabies which may mimic acute findings of torture.

Many torture survivors are sexually violated by their perpetrators. The range of assault includes verbal threats, shaming and



**Figure 1** 'Pattern injury' reflecting the shape of a baton. 4 cm × 6 cm contusion with underlying oedema and/or haematoma formation and a series of 4 parallel linear abrasions that correspond to the ridges of a baton.

forced nudity to vaginal/anal penetration. These psychologically devastating assaults may leave no physical trace, or may result in acute lacerations, contusions, ulcerations or infections. In acute settings, both a thorough examination of genital areas and a general skin examination should be done. Non-genital ecchymoses during sexual violence can include injuries such as burns or bruises on the inner thighs, buttocks, arms and mouth. Acquired sexually transmitted infections (STI) and erosive ulcerations should also raise suspicion.

#### Chronic skin lesions due to torture

Most patients will present for medical care weeks, months or years after they have been detained or tortured. In this case, physical findings may be limited to scars or changes in pigmentation.

Burn scars present with a wide variety of appearances. Scars from cigarette burns are a common physical finding consistent with torture. The scars are typical: circular, 5–10 mm in size, round, with indistinct peripheral hyperpigmentation and central hypopigmentation. The clue to distinguish them from other scars, such as healed abscesses, is the peripheral narrow rim of hyperpigmentation.<sup>15</sup> Secondarily infected cigarette burns with inadequate treatment can result in chronic pruritic nodules and atypical scars.

Many other heated objects are used to burn survivors of torture. As more energy is transferred through these objects, the scars are typically atrophic, but still surrounded by the same narrow peripheral hyperpigmentation as in cigarette burns.

Electrocution causes a variety of scars as the wounds heal. One example is cross-shaped, hyperpigmented keloid scars of 6–8 mm which may be characteristic for the type of electrodes used in the torture (Fig. 3). Many types of injuries can result in keloid formation. Several skin types, mainly Fitzpatrick skin types IV–VI, are more predisposed to develop keloids, and can occur after both inflicted and accidental injuries.

Circular or oval scars with a teeth pattern are typical for bite marks. The size of the scar, number of teeth marks and the depth of the scar can give an impression of the perpetrator's teeth and help distinguish between a human or animal bite. As animals

tend to tear flesh, deeper wounds and irregular scars are seen compared to those from human bite marks.<sup>16</sup>

While some acute injuries resulting in haematomas may not leave scars, when there is significant force on the skin surface, characteristic scars such as 'tramlines' may be present, as well as large areas of hyperpigmentation. Other common healed lesions are the linear, slightly hypertrophic appearances of whipping injuries, with central hypopigmentation surrounded by a hyperpigmented peripheral rim.<sup>10</sup> Late findings from falanga can include flattening of the soles, but the examination may also be completely normal just months after a history of severe beating of the feet.

Scars often also result from penetrating, sharp or lacerating trauma, such as injuries caused by knives, and may heal in a typical pattern.<sup>10</sup>

Some survivors experience areas of alopecia after torture. The location of alopecia is important in the determination of its cause. Torture survivors are often handcuffed or ligated very tightly around the hands and feet, which can cause a linear circular zone of alopecia at the wrists or ankles.<sup>17</sup> In addition, torture survivors commonly suffer from alopecia patches as a result of burn wounds. However, if single or multiple patchy areas of alopecia are located solely on the scalp, additional clues are necessary to determine the cause.

Most sexual violence impacting the genitalia results in minimal physical findings present after several weeks; however, a complete genital examination is always indicated regardless of the length of time since the event. Vaginal and rectal fistulae can be a chronic consequence of severe genital infections and penetrating trauma.<sup>18</sup>

#### Differential diagnosis of common skin lesions due to torture

Not all skin lesions in patients alleging torture or ill treatment are due to their treatment in detention (Tables 1 and 2). A comprehensive history is essential in order to differentiate inflicted from non-inflicted injuries. Physical findings must be correlated with the history and other evidence. Knowledge of folk remedies and cultural practices is useful to avoid mislabelling those physical findings as abuse (additional photographs, see online repository material).

#### Acute ecchymoses

Not all contusions or bruises should raise suspicion, as they are extremely common accidental findings in all ages, including in active toddlers<sup>19</sup> or in older adults, where the fragility of atrophic skin combined with medications such as anticoagulants leads to an increased risk of contusions.

Blue coloration of the skin can be drug-induced or hereditary. Drug-induced side-effects are typically seen after treatment with minocycline, phenothiazines, amiodarone or antimalarials and may leave a blue macula on the face.<sup>20</sup> Hereditary causes, such as



**Figure 2** Naevus of Ota mimicking black eye. Female with blue discoloration around left eye, which has been present from birth and has gradually darkened.

naevus of Ota, Ito and Mongolian spots, might not always be clearly visible at birth as they are predominantly seen in darker skin types such as in Asian and Latino populations. Naevus of Ota is typically located around the eyes and often mistaken for an inflicted contusion of the eye following abuse<sup>21</sup> (Fig. 2). Mongolian spots are typically located on the back and buttocks and the distribution is similar to bruises from abuse. Clues to differentiate them from bruises are as follows: indistinct borders, lack of inflammatory erythema and absence of typical colour changes associated with ecchymoses.<sup>22</sup>

Other dermatologic conditions that may cause ecchymoses and mimic torture findings include erythema multiforme minor which may be mistaken for inflicted multiple small bruises if seen in the early stages. The self-limited erythema is thought to be a hypersensitivity reaction to certain infectious agents such as herpes simplex and mycoplasma. It starts as a cutaneous macular or papular rash, which can appear as ecchymoses, and later progress into the typical target lesions with central clearing.<sup>23</sup>

There are several common harmless types of purpura that can also mimic inflicted injuries. Senile purpura, typically located on chronic sun-exposed areas, appears on the extensor surface of forearms. Steroid purpura is a direct consequence of skin atrophy due to prolonged intake or topical use of glucocorticoids. In both of the above, purpura is limited to the area of exposure, which makes it less likely to be mistaken for an inflicted injury.

Some types of vasculitis can mimic bruising in early stages. One important, and not uncommon, type of vasculitis is Henoch–Schonlein (H-S) purpura, which is often seen after an upper respiratory infection. Clues to distinguish the condition from bruises include that in H-S purpura, the purpura is palpable and typically located on the extensor surfaces of extremities and buttocks.<sup>21</sup>

Physicians should be aware of the most commonly used alternative medicine, folk remedies and cultural practices in order to not inappropriately label resulting skin lesions as assault. Coin rolling (Cao gio) is a commonly used practice in South-East Asia to clear the body of ‘bad winds’. Medicated coins are rubbed onto the skin until petechiae and purpura occur. Currently, it is a widely accepted form of alternative medicine practised across

the world as a remedy against various diseases.<sup>24,25</sup> A similar practice is deployed in China using a sponge (Cheut sah or auat sha). Gua Sha (press-stroking) is a traditional Chinese healing practice used for indications such as pain, colds and many more. It is characterized by a rather unusual pattern of ecchymosis and scratch-like marks due to repeated scraping over the skin.<sup>26</sup> Cupping has been used worldwide for centuries and is now used in Olympic athletes, relaxation therapies and many other forms of alternative medicine. The act of cupping or drawing blood to the skin surface is thought to clear the body of toxins. In dry cupping, vacuum cups are placed on the back for 3 min after which circular ecchymosis lesions appear. In wet cupping, small linear incisions are made, after which vacuum cups are placed for another 3 min to draw blood to the surface (Hejamat).<sup>27,28</sup>

### Acute burns

In acute settings, some skin diseases can be mistaken for inflicted cigarette burns. The most important cutaneous infections caused by *S. aureus* and/or *Streptococci*, which can mimic burns, are bullous impetigo, characterized by fragile bullae, erosions and honey-coloured crusting.<sup>23</sup>

The stocking and glove pattern seen in feet/hand hot water immersion burns in torture can be mimicked by a severe contact dermatitis due to rubber shoes, stockings or gloves. Generally, severe pruritus typical in allergic contact dermatitis can help distinguish between these aetiologies. Accidental friction blistering is a very common and harmless accidental finding. Stevens–Johnson syndrome or auto-immune blistering disease should also be distinguished from acute burns.

Cupping, as mentioned above, can cause severe burn wounds due to the inflamed cups that are applied to the skin to create a vacuum. In ‘Moxibustion’, lighted moxa herb is applied to the skin, and in ‘Maquas’, hot metal spits are pressed onto the skin. Severe localized burns result and are believed to heal illnesses in these two ancient folk remedies.<sup>16,29</sup>

### Scars

Scars present with a wide variety of appearances and result as a part of natural wound healing processes. Clinicians must identify differential diagnoses of scars that mimic lesions caused by torture. For example, scars from varicella, scabies or other infections or secondary to acne can appear similar to cigarette burns. If scars are located on the calf, they should be differentiated from skin alternations due to venous insufficiency. Keloid scars following electrocution can be mistaken for a chondrodermatitis helicis, which is more painful and pale compared to postelectrocution scars<sup>30</sup> (Fig. 3). Plant dermatitis can resemble linear scar patterns seen in inflicted scars; however, in plant dermatitis, the scars are often shorter, linear scars with narrow hyperpigmentation and not hypertrophic. Small parallel linear and superficial scars on the wrists and forearms are typically self-inflicted scars, especially in the non-dominant arm. Self-inflicted scars can



**Figure 3** Cross-shaped scars following electrocution by electrodes. Cross-shaped, hyperpigmented keloid scars of 6–8 mm are characteristic for the type of electrodes used in torture.

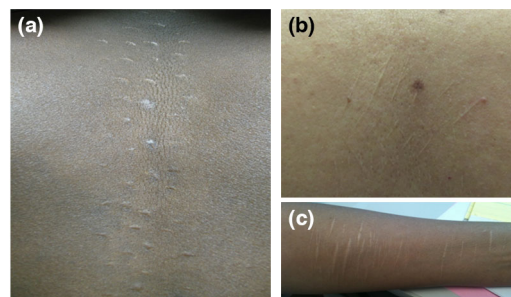


**Figure 4** Striae distensae from skin bleaching. These scars can be confused with tramline or laceration scars.

appear in both the torture survivor and those patients with significant distress or dermatitis factitia. Striae distensae should not be confused with tramline or laceration scars (Fig. 4). Striae are harmless, incidental findings, which are the result of stretching of normal skin. They typically appear on buttocks, hips, lower back and shoulders and often present as symmetrical, irregular, atrophic and hypopigmented linear scars.<sup>10</sup>

In some countries, knives or razor blades may be used to create scar tattoos, typically located on the neck, back or chest (Fig. S1, Supporting information). This may be done for healing purposes, tribal marking or body art and should be distinguished from similar hypertrophic scars following torture. Ultrasound can be used to evaluate the depth of the scar if needed.<sup>31</sup> Tribal marking is typically symmetrical and bilateral using parallel lines and patterns, and the patient's history supports this aetiology.

As described above, in the ancient cultural practice of wet cupping or 'Hejamat' (Fig. 5), linear incisions are made on the back and these typically heal as linear parallel fine scars. This typical pattern should be recognized in order not to wrongly identify them for torture.



**Figure 5** 'Hejamat' to promote healing vs. self-inflicted incisions. (a) Bilateral, regular small scars from neck to the lumbar spine placed by a family member during an illness to promote healing. (b) Fine diagonal healed scars from the practice of Hejamat. (c) Self-inflicted regular linear incisions on the lower arm.

### Alopecia

Comprehensive history, trichoscopic examination and skin biopsy of the scalp should aid to differentiate between inflicted and inflammatory causes, which are further distinguished into non-cicatricial or cicatricial alopecia.

Traumatic alopecia due to physical abuse, by pulling or grabbing hairs, can be clinically similar to self-inflicted trichotillomania if no other findings are present. Typical in trichotillomania is the variation of lengths of the cracked hairs due to repetitive pulling at different times. This is in contrast to other non-cicatricial alopecias such as alopecia areata, where exclamation mark hairs of the same length are typical, and tinea capitis, where black dots or millimetre hairs are observed. KOH preparations can be used to confirm the latter diagnosis and Wood's light can further distinguish between endothrix and ectothrix infections, as only ectothrix infections illuminate. Another clue to distinguish traumatic alopecia from alopecia areata is concurrent alopecia of eyelids, which are usually too small to pull actively.<sup>32,33</sup> Scars from burns should be differentiated from cicatricial alopecia, which needs immediate treatment in order to avoid further permanent, hair loss. The two main cicatricial types are as follows: chronic discoid lupus erythematosus, characterized by well-demarcated atrophic plaques with active erythematous and scaling borders, and lichen planopilaris, which can cause typical violaceous discoloration of the scalp.<sup>25</sup>

In dark skin types (IV–VI), braids are the main reason for traction alopecia. Chronic traction due to heavy braids leads to specific patterns of alopecia, typically at the hair margins (Fig. S2, Supporting information). It is important to recognize these patterns and to further prevent permanent scarring which can occur within 3–5 years. Similar patterns may be seen in women who wear tight scarves for religious reasons.<sup>34</sup>

### Genital erosions/lesions

Genital findings from torture can present as acute findings (lacerations, ulcers, ecchymoses, fissures, etc) or chronic findings

(anal dilation, vulvar laceration scars, fistulae). Several dermatological diseases such as lichen planus, lichen chronicus simplex or allergic contact dermatitis can also cause severe pruritus and erosions in the genital area and should be differentiated from the above. In chronic settings, caution is required not to overlook a squamous cell carcinomas when erosive mucosal lesions are long-lasting and non-pruritic.<sup>35</sup>

Female genital cutting (previously known as genital mutilation or circumcision) is still widely practised, even though it is now illegal in many countries. There are 4 types of cutting, some more invasive than the others in which the clitoris itself and parts of the labia minora and or majora are removed.<sup>36</sup> Recognition of the genital appearance after these practices is important to avoid false diagnosis of other forms of sexual abuse or trauma. Female genital cutting may result in complications including chronic vaginal and urinary tract infections, bleeding and chronic pain.<sup>37</sup> Lichen sclerosus, which is often mistaken for genital trauma, is commonly misdiagnosed. In lichen sclerosus, fusion of labia majora and minora can occur and the clitoris can be fully covered, mimicking infibulation in female genital cutting.<sup>38</sup>

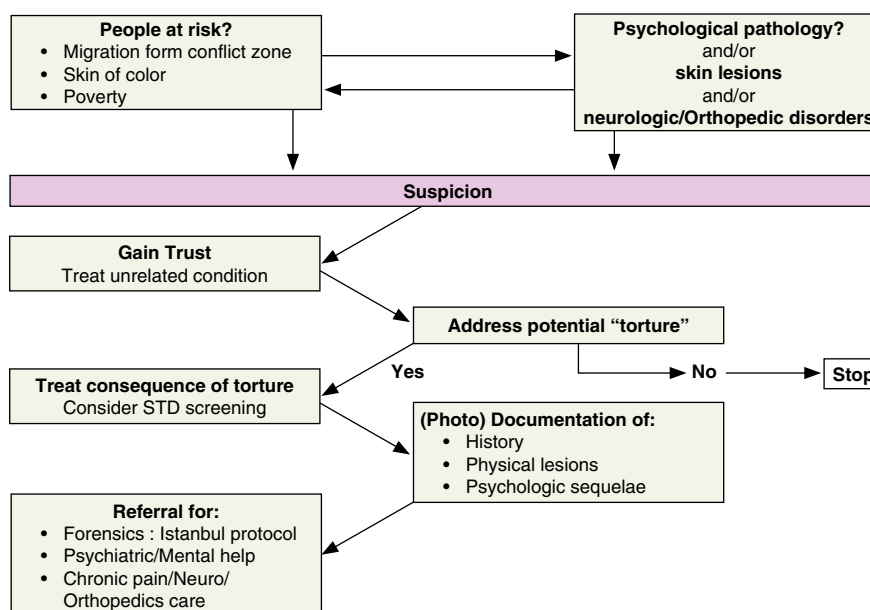
### Interventions and implications for clinical practice

It is likely that most physicians, without being aware of it, have cared for survivors of torture (Fig. 6). Cultural variables may affect the presentation of symptoms and the difference in behaviour of these patients can make it more difficult for physicians

to recognize those. However, physicians should be alerted when dealing with patients with one or more of the risk factors, such as skin of colour or poverty, as well as recent immigration from conflict zones. Also, in those presenting with unexplained psychological conditions, skin lesions and/or neurological or orthopaedic disorders, the suspicion of torture should be raised.

The first step in care for these patients is to provide the necessary medical care for which they seek help, which is in most cases unrelated to the events of torture. In this initial contact, gaining the patients' trust is very important for proceeding with further steps.

The second step is to sensitively approach the patient with open-ended questions about their physical findings or psychological symptoms without being too direct, thereby addressing the potential events of torture. A full history of alleged events and comprehensive physical examination should follow and the history should be consistent with the physical examination. The next priority is to treat the medical consequences of torture and consider a STI screening. Although substantial evidence concerning the prevalence of STI's among survivors of torture is lacking, sexual assault is high among torture survivors and it can be shameful and humiliating for the patients to reveal, leading to underdiagnoses. A written and photo-documentation of these physical findings is also key in helping these survivors. As most physicians are not trained to complete the Istanbul protocol, which is the reference in forensic documentation of torture, prompt referrals to trained physicians in forensics should be



**Figure 6** Flow chart for clinical practice.



made accompanied by the above-described (photo)documentation. The Istanbul protocol can then be completed by a forensic physician and although initially created for the solely purpose of medical documentation of survivors of torture, it now also serves for legal purposes when applying for asylum.<sup>7</sup> Survivors with supporting medical documentation, such as the completed Istanbul protocol, are much more likely to be granted asylum compared with those who do not.<sup>39</sup>

The third step is to refer survivors to a mental health professional for adequate psychological diagnosis and treatment. This should be mandatory given the prevalence of anxiety, depression and PTSD. Mental health professionals are well trained in dealing with PTSDs and can provide individualized treatment options and therapies. Next, support groups for survivors of torture can help with further assimilation into new cultures and adaptation to their new homes.

At last, it is important not to overlook physical sequelae, such as chronic long-lasting pain. These tend to be overlooked by mental health professionals because not much is known about the management of post-torture pain and also because in most cases, these physical sequelae of torture will be recognized as a psychosomatic presentation of the well-known PTSD. Therefore, it is important to emphasize that more research is needed to address the physical sequelae in these torture survivors.<sup>40</sup> For now, we advise that specialty care should be provided to all patients suffering from chronic pain, neurological or orthopaedic complaints.

## Conclusion

Because of the number of active conflicts in the world, as well as the number of refugees and environmental disasters, increasing numbers of doctors will encounter torture survivors while delivering patient care. Doctors across multiple specialties should be trained to recognize skin signs of torture, as well as document the evidence of torture. This documentation is of utmost importance for clinical care, the epidemiology of inflicted injuries and legal purposes.

## References

- World Health Organisation. The Toronto declaration on the global prevention of elder abuse. 2002. URL [http://www.who.int/ageing/projects/elder\\_abuse/alc\\_toronto\\_declaration\\_en.pdf](http://www.who.int/ageing/projects/elder_abuse/alc_toronto_declaration_en.pdf) (last accessed: 1 October 2016).
- United Nations of Human Rights. Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment. 1987. URL [www.ohchr.org/EN/ProfessionalInterest/Pages/CAT.aspx](http://www.ohchr.org/EN/ProfessionalInterest/Pages/CAT.aspx) (last accessed 15 November 2017).
- van Tulkeken A. Refugee crisis presents a humanitarian paradox. *BMJ* 2016; **355**: i5412.
- Johnson H, Thompson A. The development and maintenance of post-traumatic stress disorder (PTSD) in civilian adult survivors of war trauma and torture: a review. *Clin Psychol Rev* 2008; **28**: 36–47.
- Amnesty International. Overview torture. URL [www.amnesty.org/en/what-we-do/torture](http://www.amnesty.org/en/what-we-do/torture) (last accessed: 1 November 2017).
- Higson-Smith C. Updating the estimate of refugees resettled in the united stated who have suffered torture. 2015. [www.cvt.org](http://www.cvt.org)
- UN Office of the High Commissioner for Human Rights (OHCHR). Manual on the Effective Investigation and Documentation of Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (“Istanbul Protocol”). 2004. HR/P/PT/8/Rev.1. URL <http://www.refworld.org/docid/4638aca62.html> (last accessed 1 October 2016).
- Miles SH, Garcia-Peltoniemi RE. Torture survivors: what to ask, how to document. *J Fam Pract* 2012; **61**: E1–E5.
- Saukko P, Knight B. Knight’s Forensic Pathology, 4th edn. CRC Press, Boca Raton, FL, 2016.
- Danielsen L, Rasmussen OV. Dermatological findings after alleged torture. *Torture* 2006; **16**: 108–127.
- Reddy K, Lowenstein EJ. Forensics in dermatology: part II. *J Am Acad Dermatol* 2011; **64**: 811–824; quiz 25–6.
- Wiglesworth A, Austin R, Corona M *et al*. Bruising as a marker of physical elder abuse. *J Am Geriatr Soc* 2009; **57**: 1191–1196.
- Palmer M, Brodell RT, Mostow EN. Elder abuse: dermatologic clues and critical solutions. *J Am Acad Dermatol* 2013; **68**: e37–e42.
- Rasmussen OV. Medical aspects of torture. *Dan Med Bull* 1990; **37**(Suppl 1): 1–88.
- Petersen HD, Rasmussen OV. Medical appraisal of allegations of torture and the involvement of doctors in torture. *Forensic Sci Int* 1992; **53**: 97–116.
- Kos L, Shwyder T. Cutaneous manifestations of child abuse. *Pediatr Dermatol* 2006; **23**: 311–320.
- Danielsen L, Berger P. Torture sequelae located to the skin. *Acta Derm Venereol* 1981; **61**: 43–46.
- Bal Bhopal RS. Physical, mental and social consequences in civilians who have experienced war-related sexual violence: a systematic review (1981–2014). *Public Health* 2017; **142**: 121–135.
- Sugar NF, Taylor JA, Feldman KW. Bruises in infants and toddlers: those who don’t cruise rarely bruise. Puget Sound Pediatric Research Network. *Arch Pediatr Adolesc Med* 1999; **153**: 399–403.
- Granstein RD, Sober AJ. Drug- and heavy metal-induced hyperpigmentation. *J Am Acad Dermatol* 1981; **5**: 1–18.
- Mudd SS, Findlay JS. The cutaneous manifestations and common mimickers of physical child abuse. *J Pediatr Health Care* 2004; **18**: 123–129.
- Giardino A, Christian CW, Giardino ER. A practical guide to the evaluation of child physical abuse and neglect. Sage publications, Thousand Oaks, CA, 1997.
- Scales JW, Fleischer AB, Sinal SH, Krowchuk DP. Skin lesions that mimic abuse. *Contemp Pediatr* 1999; 137–144.
- Hansen KK. Folk remedies and child abuse: a review with emphasis on caida de mollera and its relationship to shaken baby syndrome. *Child Abuse Negl* 1998; **22**: 117–127.
- Otberg N, Wu WY, McElwee KJ, Shapiro J. Diagnosis and management of primary cicatricial alopecia: part I. *Skinmed* 2008; **7**: 19–26.
- Aprile A, Pomara C, Turillazzi E. Gua Sha a traditional Chinese healing technique that could mimic physical abuse: a potential issue with forensic implications. A case study. *Forensic Sci Int* 2015; **249**: e19–e20.
- Chen B, Li MY, Liu PD, Guo Y, Chen ZL. Alternative medicine: an update on cupping therapy. *QJM* 2015; **108**: 523–525.
- Cao H, Han M, Li X *et al*. Clinical research evidence of cupping therapy in China: a systematic literature review. *BMC Complement Altern Med* 2010; **10**: 70.
- Reinhart MA, Ruhs H. Moxibustion. Another traumatic folk remedy. *Clin Pediatr (Phila)* 1985; **24**: 58–59.
- Bork K, Nagel C. Long-standing pigmented keloid of the ears induced by electrical torture. *J Am Acad Dermatol* 1997; **36**: 490–491.
- Nancke-Krogh S. Kunsten på kroppen (The art on the body). Scandinavian Society for Prehistoric Art, Copenhagen, Denmark, 1985.
- Whiting D, Templeton SF, Solomon AR. Disorders of cutaneous appendages. In Barnhill R, ed. *Textbook of Dermatopathology*. McGraw-Hill, New York, NY, 1998: 201–231.

- 33 Whiting DA. Traumatic alopecia. *Int J Dermatol* 1999; **38**(Suppl 1): 34–44.
- 34 Hjorth N. Traumatic marginal alopecia; a special type: alopecia groenlandica. *Br J Dermatol* 1957; **69**: 319–322.
- 35 Chang AL, Wong JW, Endo JO, Norman RA. Geriatric dermatology: Part II. Risk factors and cutaneous signs of elder mistreatment for the dermatologist. *J Am Acad Dermatol* 2013; **68**: 533 e1-10; quiz 43-4.
- 36 Soneja S, Jiang C, Romeo Upperman C *et al.* Extreme precipitation events and increased risk of campylobacteriosis in Maryland, U.S.A. *Environ Res* 2016; **149**: 216–221.
- 37 Bishop JP. Modern liberalism, female circumcision, and the rationality of traditions. *J Med Philos* 2004; **29**: 473–497.
- 38 Smith YR, Haefner HK. Vulvar lichen sclerosus : pathophysiology and treatment. *Am J Clin Dermatol* 2004; **5**: 105–125.
- 39 Lustig SL, Kureshi S, Delucchi KL, Iacopino V, Morse SC. Asylum grant rates following medical evaluations of maltreatment among political asylum applicants in the United States. *J Immigr Minor Health* 2008; **10**: 7–15.
- 40 Baird E, Williams ACC, Hearn L *et al.* Interventions for treating persistent pain in survivors of torture. *Cochrane Database Syst Rev* 2017; **18**: 8.

### Supporting information

Additional Supporting Information may be found in the online version of this article:

**Figure S1.** Ritual scars to promote healing.

**Figure S2.** Tractie alopecia in skin type VI.