



Review

Suspension torture and its physical sequelae

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ABSTRACT

Suspension torture is one of the most common and widespread methods of torture. The objective of the study is to conduct a systematic literature review and produce an overview of suspension torture and its health implications, thus improving the diagnosis of suspension torture victims and documentation of their injuries. The review includes the prevalence, geographical distribution and description of variations of suspension torture. Physical sequelae like nerve injuries, e.g. brachial plexus injuries, scars, joint dislocation and possible causes of death will be described in detail. The results of the review are discussed resulting in recommendations on torture identification and documentation practices and possible future research questions.

1. Introduction

Torture is prohibited under international law. However, Amnesty International reported ongoing systematic use of torture during the past 5 years in 141 countries.¹ Identification and documentation of torture are necessary to secure the torture victim's right to redress, which entails *restitution, compensation, rehabilitation, satisfaction and guarantees of non-repetition*.² Identifying the methods of torture as well as the injuries the person has suffered is essential in order to offer the correct treatment and rehabilitation. With regards to prosecution of perpetrators, documentation of physical signs makes the process of verification of facts easier, because physical evidence supports a legal case significantly.

Not all torture leaves physical evidence such as fractures and gross scarring, and whereas some perpetrators take steps not to leave marks, others act as if they will have complete impunity.^{3,4}

Furthermore, there is a risk of victims of torture not revealing the torture they experienced due to distrust or other reasons such as fear or shame. As emphasized in the Istanbul Protocol chapter V, the absence of physical evidence cannot be taken to mean that torture did not occur,⁵ but understanding the inflicted torture in detail and the related clinical signs and symptoms is vital in order not to misinterpret or overlook whatever few indications of abuse there are.⁶

Suspension torture is part of a larger complex of torture methods called positional torture. Along with suspension, positional torture includes prolonged immobilization often in unnatural positions, e.g. confined in a small cage.^{5,7,8}

Suspension is a widely used method of torture, but the number of studies focusing exclusively on suspension and its health consequences

is limited. The aim of this study is therefore to conduct a systematic review of suspension torture, including information on prevalence, geographical distribution, variations of suspension and their physical sequelae with the overall aim of drawing attention to the specific aspects of this torture method and thereby improving its identification and documentation.

2. Methods

A literature search was conducted using the database Pubmed. The following search lines were used: "suspension AND torture" yielding 19 results (on the 15-02-2020), "hanging torture" yielding 15 results and "parrot torture" yielding 2 results. The relevant articles were read in their entirety and their respective lists of references were checked for additional articles of relevance.

Articles were included in this literature review if they for either the entire article or only a part thereof investigated any medical aspect of description, identification and documentation of suspension or physical health consequences thereof. The possible use of diagnostic imaging techniques was also found relevant for the current review.

Studies and article extracts that solely investigated the mechanisms of injury of other methods of torture, or dealt with acute and long-term health consequences for torture victims that did not report having been subjected to suspension of any kind were excluded.

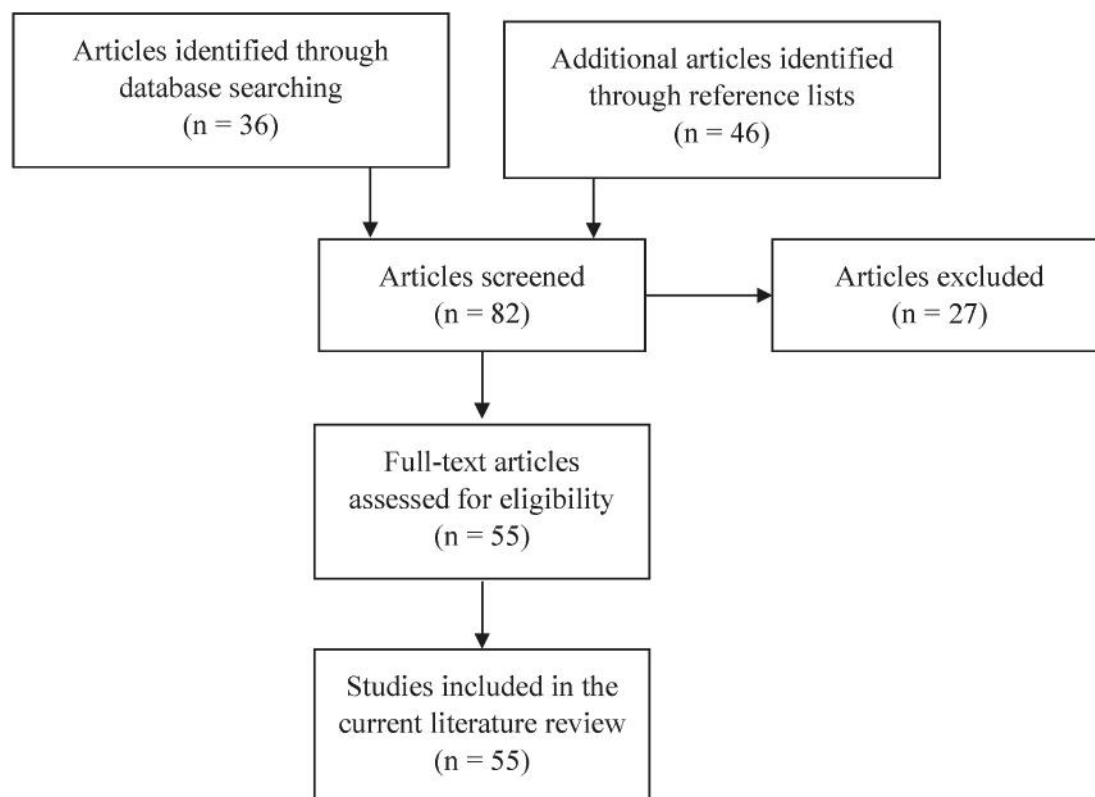
No study was excluded based on the study design. Articles describing single case studies and cross-sectional studies, literature reviews, comments and letters were all included in this review. However, the quality of every article was evaluated, and limitations and strengths will be

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discussed below. No studies have been excluded from this review based on when they were published. Studies written in English, Danish, Swedish, Norwegian, German and Italian have been included. No studies of relevance were found in other languages.

The flowchart below illustrates the key literature search process:



We also conducted a broader search for additional key papers using the search terms “torture consequences” yielding 185 results. No additional studies were identified through this broader search.

3. Results

3.1. Prevalence of suspension torture

Positional torture, of which suspension is a part, is by Busch et al. listed as the second most reported method of torture after blunt trauma.⁹ The geographical distribution is wide but with varying prevalence across countries and time. In the same study by Busch et al. (2015), the prevalence of positional torture was registered as following: 72% in the Middle East and North Africa, 58% in Asia incl. Pakistan and Afghanistan, 33% in Europe and 31% in Sub-Saharan Africa (n = 154).⁹ Napoli et al. (2005) found a generally lower frequency but a similar geographical distribution of suspension torture and other positional tortures: 21,2% in the Middle East, 20,0% in Northeast Africa, 6,3% in Northwest Africa, 3,2% in Sub-Saharan Africa, 0% in East Europe and 0% in Latin America (n = 354).¹⁰

Only some studies distinguish suspension torture from other types of positional torture. The average prevalence of people reporting suspension varies between 15 and 63% amongst torture survivors (Table 1). Moisanter et al. reported the highest isolated suspension frequency amongst a subgroup of Bangladesh refugees population of 73,5% (n = 53).¹¹ In the study by Rasmussen et al. 25% of the 200 victims of torture reported suspension torture as one of the methods. Almost half of these

specifically experienced the variant known as the Parrot Perch.

Most studies on suspension are conducted on male dominant populations. In a single epidemiological cross-sectional study, 43% of the Ugandan torture survivors were women. In this study, females were to a greater extent used as slave laborers and/or prostitutes and were rarely victims of suspension.¹¹ In 1994, Montgomery conducted a study on a

population of 74 refugees from Middle Eastern countries, where almost 30% reported torture episodes but none of 43 female refugees, of which 4 reported torture had experienced suspension torture.²⁴ The same tendency is seen in a study comparing 28 women and 28 men from Central and South America, where 3 women and 12 men reported “hanging” as a torture method.²³

3.2. Types of suspension, equipment used and duration

A wide span of methods of suspension is reported in the existing literature. Most methods include the torture victim being suspended by the extremities with ligature. The ligature can be of any material that can be tied and hold the weight of a person, e.g. soft cotton cord or turban cloth, chains, ropes, wire or handcuffs.^{3,23,26} The victim is suspended either with the rope looped over a bar, a tree branch (India), hooks or pulleys (Turkey, Iran) on the walls or in the ceiling.^{13,27} In some cases additional weight is added to the suspended victim by either perpetrators pulling down his legs or weights attached to his feet.^{7,13} The duration of suspension varies from minutes to hours or even days.^{3,28}

One of the most well described variants of suspension is reverse suspension. The victim has both wrists, forearms, elbows or thumbs tied together with the arms stretched or elbows flexed 90° behind the back, thereby placing the shoulder joints in full extension and inwards rotation (See Fig. 1, illustration A). One study describes reverse suspension differently, with only one arm extended backwards and the other flexed forwards.²⁹ Reverse suspension is also referred to as ‘Palestinian’ hanging, reverse hanging, akrab, Corda, strappado and scorpion

Table 1
Suspension frequency.

Author	Population origin	Suspension frequency	Details	Population
Perera, 2007 ¹²	Sri Lanka	60%	Torture victims	N = 100
Laws, 2002 ¹³	Punjab, India	63%	Torture victims	N = 192
Petersen, 1985 ¹⁴	Greece	63%	Torture victims	N = 22
Forrest 1995 ¹⁵	Sikh, India	58%	Torture victims	N = 31
Dokuzoguz 1999 ¹⁶	Turkey	40%	Torture victims, examined at Ankara Treatment and Rehabilitation Center	N = 67
Hougen, 1988 ¹⁷	Lebanon	33%	Refugees, examined at a Forensic dep.	N = 12
Moisander 2003 ¹¹	Mixed: Bangladesh Turkey Iran Peru Syria Uganda	55% avg. 73,6% 68% 47,6% 43,8% 37,5% 28,6%	Torture victims, examined at Centre for Trauma Victims, Stockholm	N = 160
Leth, 2005 ¹⁸	Mixed – 15 countries, but mostly Middle East and Africa	54%	Torture victims, examined at the Department of Forensic Medicine, Aarhus	N = 59
Rasmussen, 1990 ¹⁹	Mixed – 18 countries, mostly Chile, Greece and Spain.	25%	Torture victims, examined at the Danish Research Center for Torture Victims	N = 200
Williams, 2010 ²⁰	Mixed - 42 countries, mostly DRC, Turkey, Eritrea, Iran, Ethiopia and Iraq.	15%	Torture victims	N = 178
Edston, 1999 ²¹	Mixed – 33 countries, mostly Iran, Syria, Uganda, Bangladesh, Turkey, Peru, Zaire and Kosovo.	40%	Refugees, referred to torture examination	N = 201
Masmas, 2008 ²²	Mixed – 33 countries, mostly Middle East.	30%	Refugees	N = 142
Allodi, 1990 ²³	Mixed – 6 countries in Central or South America	27%	Torture victims	N = 56

position.³⁰

Suspension by the wrists with one or both arms tied in front of the body is known as Butchery suspension (See Fig. 1, illustration B).⁷ Alternates include suspension by the thumbs, neck or hair.^{13,19,31}

Other methods of suspension include cross suspension, where the victims have their wrists, upper arms and/or shoulders fixated in a spread position to a horizontal bar (See Fig. 1, illustration C).⁷

Inverted suspension with the ankles fixated upwards and the body extended downwards is known as Reverse Butchery suspension (See Fig. 1, illustration D). Inverted suspension can also occur by the toes, regularly the first toe.¹²

One of the more complex examples of suspension methods that are mentioned in the literature is the Parrot Perch. The individual is commonly placed over a dowel/bar with the knees flexed and the bar applying pressure in the popliteal region. The arms are passed in front of the body along the outside of the lower extremities under the bar and the wrists are then tied together over the knees (See Fig. 1, illustration E). An aggravated version of the Parrot Perch is where the individual is first suspended and then revolved around the pole, while receiving blunt force assaults.²⁸ The Parrot Perch is known under a number of synonyms

- some are specific to a region, some are more globally known, e.g. the Helicopter, the Chicken (roasted, fried, barbeque) and the Bar.^{30,32}

The Crapaudine or the banana tie is a variation of a common positional torture method that is not usually associated with suspension. However, the two methods of torture are sometimes combined. In the banana tie the victims' arms and legs are drawn together behind the back, hyperextending the body. Victims can then be suspended by the rod and dropped repeatedly.³²

Only one study by Perera subdivided the frequency of suspension torture into the frequencies of the above-mentioned variations. Of a cohort of 100 torture victims in Colombo, Sri Lanka, almost 2/3 reported hanging torture of which 19% had experienced Butchery suspension either by thumbs or wrists, 13% reverse suspension, either by thumbs or wrists, 12% reverse Butchery suspension either by the big toes or ankles, 16% Parrot Perch.¹²

3.3. Associated methods of torture

Around 80% of suspension torture victims are victims of combinations of 3–10 physical, psychological and/or sexual methods of torture,

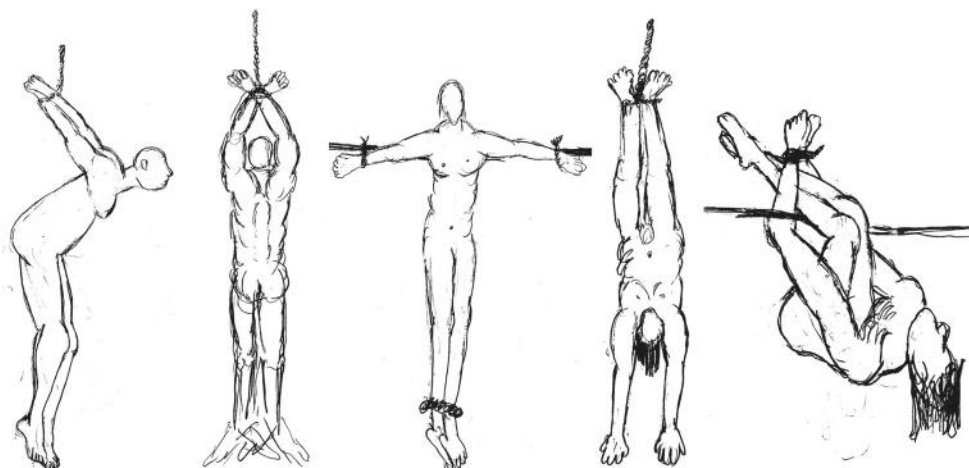


Fig. 1. A: Reverse suspension, B: Butchery suspension, C: Cross suspension, D: Reverse butchery suspension, E: Parrot perch.

which greatly exacerbate its impact.¹² Suspension is often seen in combination with other methods of torture, e.g. beating, deprivation of light and stimulus with blindfolds or hooding, forced nudity and/or falanga.^{8,19,24} Electrical torture is also commonly applied either to the ear, tongue or genitals or, as during the Parrot Perch, to the metal pole from which the victim is suspended. Also, depending on the position of suspension, various forms of blunt trauma occur upon contact with the ground after the victim is abruptly released from suspension.²⁸

3.4. Physical sequelae

3.4.1. Loss of consciousness

The substantial strain that the victims experience often affect their level of consciousness. It has been described that already after a few minutes of full suspension the victims lose consciousness due to the intense pain and only regain consciousness by use of cold water or the like.^{3,24}

Possible causes of loss of consciousness during suspension include venous pooling resulting in cerebral hypoxia, as has been described for climbers, restriction of inspiratory effort due to the position and head injury added to the suspension.^{33–35}

3.4.2. Pain: Location and pathogenesis

The development of pain syndromes post torture is determined by the severity, extent and repetition of the method of torture. The association between shoulder pain and suspension by the arms is described in multiple studies.^{8,13,36,37} However in a study of 178 cases by Williams et al. this possible association between suspension by the arms and shoulder pain was investigated, but the association was not found to be significant neither between suspension and shoulder pain nor shoulder and arm pain (OR = 0,52 and 0,49). The median time between the inflicted torture and date of interview was 13 months. It is not specified in the study how the victims were suspended - by one or both arms or another body part entirely.²⁰

The pain related to suspension torture can either be ascribed to localized peripheral nerve lesions, more diffuse and generalized musculoskeletal pain due to central pain modulation both at spinal and supraspinal levels and joint pains due to traumatic injury of joint components as e.g. capsules and ligaments.²⁰ Amris et al. suggests that strain secondary to joint overload also is a significant component in the pain syndrome.³⁶

The neuropathic pain is a constant, superficial, burning or stinging pain. The victims of suspension by the arms localize the pain primarily to their shoulders and arms in the dermatomes C4-T1-2, with an intermittent spontaneous shooting feeling or electric shock, described as a combination of pain and reflex muscle cramps.^{28,29} In some cases the symptoms progress to complex regional pain syndrome.^{8,38}

3.4.3. Nerve and vascular damage

The mechanism of nerve fiber damages is a combination of traction and compression with concomitant ischemia.^{8,26} The results of magnetic root stimulation, needle EMG and nerve conduction studies indicate that there is a dominance of segmentally demyelinating lesions and variable degrees of axonal loss. This pattern of injury resembles that of acute compression neuropathies.³⁹ The peripheral nerve damage can result in acute or chronic motor, sensory and reflex dysfunction.⁵

With regards to neurologic damage following tight ligation of extremities the literature is sparse. However, similar ischemic and compression damage to peripheral nerves is seen and researched with regards to compression bandages and inflatable cuffs used in orthopedic surgery. Such studies found examples of consequent upper extremity paralysis and dysesthesias or loss of sensation after 40 min to 2 h. Most examples of tourniquet paralysis resolved spontaneously.^{40–42} Similarly, overtightened handcuffs have been shown to cause neuropathies.⁴³ In one study by Grant et al. 50% had abnormal electrodiagnostic tests supporting their complaints of hand sensory or motor dysfunction

following around 1,5 h of handcuffing.⁴⁴

3.4.3.1. Brachial plexus. Suspension by the upper extremities and especially reverse suspension can cause severe lesions to the brachial nerve plexus. The traction of the arms is in these cases exacerbated by concurrent posterior extension and rotation.²⁶ Thomsen et al. examined 18 adult male torture victims with continued severe pain complaints. Of the victims that had experienced reverse suspension, more than half were found to have partial brachial plexus injury. All who reported shoulder dislocation had subsequent brachial plexus injury.⁸

The exact location of injury varies. However, the literature suggests two potential compression points when in suspended position, which are at the distal end of the intervertebral foramen and the edges of the scalene muscles.³⁹ The most susceptible part of the brachial plexus to traction injury during reverse suspension is the lower trunk (C8-T1) and secondly the middle trunk (C7). During cross suspension, where the upper extremity is abducted up to 90°, the primary traction force is on the middle plexus, thereby causing damage first here. The plexus injury is unilateral in more than half of the cases. Due to the superficial location of sensory fibers in nerves, sensory deficits are much more common than paresis.^{6,8,39}

3.4.3.2. Axillary nerve. Up to 54% of all traumatic non-torture related shoulder dislocations are complicated by axillary nerve injury resulting in paralysis in 5–10%.⁴⁵ Similar damage can be expected to be found when the shoulder has dislocated due to suspension torture. The axillary nerve runs closely to the neck of the humerus and the lower part of the shoulder joint capsule. Therefore, dislocations and/or compression of this area can result in nerve affection and subsequent symptoms like pain, sensory deficits of the upper arm and shoulder and atrophy and weakening of the deltoid musculature. However, these patients often recover completely within 3–7 months with nonsurgical treatment.^{45,46}

3.4.3.3. Long thoracic nerve. Scapular winging is the consequence of long thoracic nerve injury, which can be caused by suspension. The associated pain is typically described as a neuropathic radiating pain from the shoulder and down the ipsilateral scapula and arm, which typically lasts weeks, but in most cases ceases within 24 months. Asymptomatic scapular winging may persist.^{47,48} Upon clinical examination, medial winging will be present at rest, and can be emphasized by having the patient perform the wall push test. If there is unilateral weakness of the scapula stabilizers or medial winging is observed upon inspection the test is positive.⁴⁹

3.4.3.4. Nerve and vascular compression injuries. The peripheral nerves most exposed to compression during suspension are the median, ulnar and tibial nerves following ligation of the wrists, elbows and ankles respectively.^{26,36} Such nerve damage is therefore suggestive but not conclusive of suspension torture.

Likewise, tight binding of the extremities can cause vascular damage, typically affecting the radial and/or ulnar arteries in the wrists. Obstruction of the arterial perfusion can lead to thrombosis, ischemia and progression to frank gangrene. Edema and blister congestion distally from the compression site are the clinical signs thereof.^{30,31,50}

3.5. Scars and stretch marks

Ligature applied to the wrists and/or ankles for long periods of time may leave scars in a linear zone extending circularly around the arm or leg. If the hair follicles suffered permanent destruction, the circular zone could also be alopecic. Upon examination, the scars following ligature use were mainly linear, superficial, pigmented, dull, and non-hypertrophied with normal skin margins. However, 1/3 of the scars did not have a linear appearance and ¼ were deep scars.^{18,25,31}

Parallel stretch marks over the front of the shoulders are suggestive

of reverse suspension. Besides the shoulder girdle, typical locations for stretch marks include the buttocks, hips and lower back indicating suspension by the lower extremities. The stretch marks are typically bilateral, symmetrical, parallel curvy lines with equal length and breadth.^{3,27}

In 2005, 32 suspension torture victims underwent examination at the Forensic Institute in Copenhagen, Denmark. All reported hematomas and abrasions immediately after suspension, but only 25% had lasting scars.¹⁸ In another study conducted of 100 case records of medicolegal examinations in Colombo, Sri Lanka, the frequency of scars in torture victims who had been tied with ligature was around 60%.²⁵

The development of scars following traumatic injury of the skin depends on the extent of the injury as well as multiple post-injury factors that influence size and visibility of the scar long-term. Both superficial and deep tissue injury cause inflammation and can especially in dark-skinned individuals result in extensive permanent scars and hyper- or hypopigmentation.⁵¹ Partial skin injuries typically heal fully within a few weeks, but infection, keloids and itching can prolong the healing process and increase the risk of permanent and more prominent scars.^{3,11} The frequency of scars among victims of torture has been found to differ from country to country, which by some is attributed to higher incidence of keloid and infection rates in some populations.¹¹ Other studies indicate that perpetrators in different countries may have different levels of awareness about the risks of leaving scars as evidence of torture.^{26,47}

When evaluating scars and stretch marks it is important to remember that there are many dermatological conditions, results of cultural practices specific to regions and folk remedies that can mimic torture lesions.³¹

3.6. Dislocations and ligaments injuries

Following suspension by the upper extremity, the typical acutely resulting injuries are traumatic synovitis, subacromial-subcoracoid bursitis, biceps and/or supraspinatus tendinitis, partial or complete tearing of the tendons and rotator cuff, calcification of the bursa and tendons, frozen shoulder, plexus brachialis lesions, and dislocation.¹⁶ The glenohumeral joint and its stabilizers are the most vulnerable. Furthermore, the sternoclavicular, acromioclavicular, and scapulothoracic joints can be damaged after recurrent long-lasting traumas.¹⁶

Anterior dislocations and subluxations of the glenohumeral joints can happen either uni- or bilaterally during reverse suspension, in particular because of the entire body weight providing pressure on the weaker anteroinferior capsule. Traumatic dislocation can result in humeral fractures, chronic joint instability, pain exacerbated by movement, paresis or reduced range of motion, reflex dystrophy, fear of repeated dislocation, and aggravated traction injury of the brachial plexus.^{6,8,13}

Upon physical examination, the torture victim will have impaired abduction and lateral rotation with accompanying pain in the shoulder during active and passive movement.⁷ If there is a persisting instability, the patient can experience discomfort and avoidance of movement in the full range of movement of the affected shoulder.²⁹

3.7. Lower extremities

The existing literature rarely mentions specific sequelae in the lower extremities in spite of the existence of multiple variants of suspension where the victim hangs by the ankles or knees. Only the Parrot Perch is mentioned to possibly result in rupture of the cruciate ligaments as well as nerve and vascular injury of the structures in the popliteal fossa.⁵² Popliteal venous thromboembolism may result in pulmonary thromboembolism.^{30,53} In one 10-year follow up of torture survivors, more reported pain in the knees than shoulder and upper arm pain, but the cause of pain or association with the method of torture is not specified.¹⁴

Symptoms of cruciate ligament tears would in the acute phase be pain and aggravation thereof when walking. Within approx. 24 h there will be swelling of the knee joints, instability in both anterior-posterior direction and upon rotation and reduced range of motion.^{54,55}

3.8. Hair

Suspension by the hair causes different degrees of traction alopecia. There is also a risk of involvement of the epicranial aponeurosis causing complete or partial loosening. The consequential scar tissues can tie the aponeurosis down to the periosteum causing pain and dysesthesia upon touch.²⁹

3.9. Death

Death following prolonged suspension is a poorly examined phenomenon. The following possible causes of death have been mentioned in the literature; rhabdomyolysis and subsequent myoglobinuric renal failure, positional asphyxiation, haemorrhagic shock, pulmonary or cerebral embolism/thromboembolic episodes and stress-related fatal cardiac arrhythmia.^{30,34,53,56,57} Only three examples of autopsy results from cases of suspension torture victims have been published. These conclude different causes of death in the three cases; fatal rhabdomyolysis,⁵⁶ positional asphyxia³⁴ and pulmonary embolus.⁵³

4. Discussion

Suspension is a globally reported method of torture with the highest frequency seen in the Middle East and North Africa. Only a few studies identified in this review included data from Latin America. The variations in frequency across studies and countries could partly be explained by the 30-year time span and that this type of data about geographical distribution often relates to specific conflicts or wars in a specific country and time.

The majority of the studies on torture sequelae are conducted on predominantly male populations, and a few studies indicate that suspension torture is less reported amongst females. This may be due to less exposure, but further studies are needed to determine whether this is actually the case or whether suspension torture may be underreported amongst females.

The many variations of suspension range from Butchery positions to Parrot Perch and reverse suspension. It is worth noting that there are occasional crossovers in these names and multiple variations, so you can find the same name being used to describe quite different torture.

The studies described a wide range of significant acute and chronic physical findings amongst suspension torture survivors. They call for a thorough interview and Istanbul Protocol compliant physical examination with a focus on skin, joint and nerve damage, and referral to specialists for treatment when relevant.

The scars found are often alopecic, hyper/hypopigmented and most commonly linear located around wrists and/or ankles. Parallel stretch marks over the shoulders, hips, buttocks, and lower back also support the suspicion of suspension torture by the extremities.

If a torture victim reports having suffered reverse suspension, the risk of shoulder joint dislocation is increased due to distortion of the weaker anteroinferior part of the stabilizing capsule and ligaments. Nerve injuries including the brachial plexus, axillary nerve, long thoracic, distal radial, ulnar or tibial nerves have also been described with consequent pain, sensory and motor dysfunction. The exact mechanism of injury is still debated.

There are significant limitations to this review and the studies included.

Only 36 articles surfaced in the initial literature search, but many more articles of relevance were found by reviewing their references. Most of these articles deal with suspension only as one of many torture methods and do therefore not list suspension or positional or overtaxing

as key words, but use e.g. maltreatment/physical torture, pain/neuralgia/chronic pain, neurological/long-term/physical/short term sequelae, scars, PTSD, epidemiology, refugees, torture documentation, medical examination, treatment and rehabilitation. The fact that only few articles surface in a specific search using the torture method as search term underlines the need for the current review.

Because of the sparse amount of quality studies identified for this literature review, no study was excluded based on publication date. Some of the studies included are however quite old, some going back to the 1980s, and newer and updated studies are needed.

The published literature on suspension torture primarily consists of descriptive articles that list which methods of torture the victims thereof report and/or what pain complaints, disabilities, and/or scars they present with upon examination. However, since many victims report several torture methods, the studies rarely make a direct link between a specific method and specific symptoms and functional disabilities. The data on trauma mechanisms and symptoms lacks specificity. The symptoms are registered in groups that are often large and with no anatomical location or characterization, e.g. "chronic pain". This makes it difficult to draw causal links between certain methods of torture and specific health sequelae. Also, most studies are based on the long-term sequelae and often only deal with one branch of symptoms, e.g. neurological sequelae. The studies by Olsen et al. Dokuzoğuz et al., Williams et al. and Thomsen et al. differed from the remaining studies by describing direct links between specific torture methods and their sequelae.^{2,14,18,28}

Most of the included research on torture victims is based on refugees and displaced people from violence-torn places and is conducted in western countries, where they were examined as part of their asylum process or received treatment at specialized torture treatment units. All victims acted actively and independently indicating a certain level of functioning amongst this selected population. Close to no studies are conducted on the victims of torture who do not survive their injuries or those staying in their home-countries. Amongst the included studies in this review only two were conducted in non-Western countries. It can be argued that the worst cases of torture are never included in any studies. This risk of selection bias is thus a premise in all torture research.

The studies included in the current review are exclusively based on data compiled from interviews and examinations of survivors of torture months to years after the torture episodes increasing the risk of information bias. Furthermore, loss of consciousness and the extreme emotional distress also affects the victim's ability to assess duration and recall details about the torture episodes properly. Care therefore needs to be taken when assessing the credibility of what appears to be an implausible duration of lost consciousness.

No other systematic review has been found on suspension torture and its sequelae despite it being a common method of torture. It is our hope that this review will improve both the way potential victims of torture are handled clinically and the way suspension torture is documented in medico-legal reports.

In daily clinical practice, torture victims do not always identify themselves as such, for example due to the avoidance symptoms linked with PTSD, and it is therefore important to know which signs to look for during a general physical examination that could indicate that torture took place including suspension torture. Only by identifying a victim of torture as such is it possible to ensure the correct treatment of his potential physical and psychological sequelae.

A thorough medico-legal report is one of the strongest types of evidence in cases of torture where perpetrators are brought to justice. By being aware of both the acute and the long-term sequelae described in this review, those who document torture for medico-legal purposes may be better equipped to collect a detailed history of the immediate and long-term symptoms as well as to identify not only the obvious but also the more subtle physical signs that suspension torture has taken place.

The knowledge about the consequences of individual torture methods is often lacking and the literature is based on small study

populations. Studies are also not reporting on the symptoms in a consistent way making comparisons difficult. Suspension torture is no exception to this as has been seen in this review. There is a dire need for systematizing further our knowledge about torture methods and their consequences so that eventually we may be able to better distinguish between the sequelae of different methods including different methods of suspension, thereby improving our patient care and the medical contribution to documenting torture.

5. Conclusion

It is of paramount importance that those documenting torture and treating torture survivors are aware of both acute and chronic sequelae of different torture methods as well as the geographical distribution of specific methods, gender differences etc. It is our hope that with this review we have contributed with these types of knowledge regarding the frequently used suspension that many torture victims have experienced.

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Declaration of competing interest

None.

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