

The diagnostic value of clinical examination after falanga

A pilot validation study

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Abstract

Medico-legal documentation of alleged exposure to falanga torture warrants a high diagnostic accuracy of the applied clinical tests. The objective of this study was to establish data on the validity of palpatory examination of the footpads and the plantar fascia and to assess the distribution of observations among selected cases and non-cases in a small study sample. Calculated estimates of sensitivity and specificity of the individual diagnostic tests are reported and, in general, did not meet the authority-based criteria of an 80% cut-off point. The observed total number of true tests in this study was 65%. It is concluded that future studies of the reliability of clinical examination and assessment of the variability of observations among unselected cases and non-cases should be conducted in a larger cross-sectional study population.

Keywords: torture, falanga, clinical examination, medico-legal documentation, validity

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Introduction

Documentation of alleged exposure to falanga is based on clinical examination, which entails reporting the degree of consistency between: 1) the torture history, 2) symptoms as described by the victim, and 3) possible pathological findings at objective examination. Standardised medical examination, including palpatory examination of the soft tissues of the feet, has therefore become routine procedure in assessing torture victims for medico-legal purposes.¹

Systematic knowledge is, however, lacking in several areas. The aetiology and pathogenesis of the persistent pain and disability seen after falanga torture is still not fully understood. Several theories about the long-term consequences and causal soft tissue lesions have been put forward based on clinical observations,²⁻⁸ but larger systematic studies are not available.

Thus, in spite of a long-standing tradition of clinical assessment, no empirical data on the diagnostic value of the applied tests has been established. The time perspective as well as the association between the magnitude (intensity and duration) of the applied falanga and subsequent development of symptoms and disabilities, and pathological changes in the feet and lower legs that can be demonstrated at clinical exami-

nation, is not known. Also, the role of imaging in substantiating the clinical diagnosis is yet not clarified and the present knowledge is mainly based on casuistic reports and studies of smaller samples.⁹⁻¹⁷

An increased knowledge about the lesions caused by falanga and development of evidence-based examination methods would not only contribute to a more reliable diagnosis and improved treatment, but also be an important tool in the medico-legal documentation of torture.

Prompted by the descriptive studies by Grethe Skyvl⁸ and the lack of evidence supporting the reliability and validity of clinical examination after falanga, it was decided in 1992 to carry out a pilot validation study in Izmir. Dr. Veli Lök organised the study, which took place in January 1993.

Objective of the study

The objective of the study was to assess the validity of palpatory examination of the footpads and plantar fascia “diagnosing” exposure to falanga torture and to assess the distribution of observations among selected cases and non-cases in a small study sample.

The examination took place in Izmir 1993.

Material

Five persons, all males, who allegedly had a prior history of exposure to falanga and five persons of matching ethnicity, gender and age and without past history of trauma or other pathology involving the feet or lower legs were identified by Dr. Veli Lök and entered the study after informed consent.

Method

Six observers, all medical doctors familiar with clinical assessment of torture victims, but with limited experience in palpatory examination after falanga, participated in the

study: Dr. Veli Lök, Dr. Turkcan, Dr. Sukran Irençin & Dr. Yesim Kuey from Turkey; Dr. Amris & Dr. Rasmussen from Denmark.

In order to standardise test procedures a protocol describing the palpation technique was developed:

1) *Palpation of the heel pads*: the person lies supine on an examination table. The observer stabilises the calcaneus with the left hand, and applies a light pressure at a perpendicular angle with the fingers of the right hand over the tuberosity of the calcaneum. It is registered if the elasticity in the heel pad is normal (negative test) or reduced with immediate bony contact through the tissue (punctured heel pad = positive test).

2) *Palpation of the medial and lateral footpad*: the person lies supine on an examination table. The observer stabilises the calcaneus with the left hand, and applies a light pressure at a perpendicular angle with the fingers of the right hand over the plantar aspects of the heads of the lateral and medial metatarsal bones. It is registered if the elasticity in the footpads is normal (negative test) or reduced with immediate bony contact through the tissue (punctured foot pad = positive test).

3) *Palpation of the plantar fascia*: the person lies supine on an examination table. The observer passively subjects the plantar fascia to tension with the left hand by dorsal flexing the 1st to 3rd toe. With the fingers of the right hand the entire plantar fascia, from its origin on the tuberosity of the calcaneum to its insertion on the proximal phalanges, is palpated. It is registered if the fascia appears thickened with an uneven surface (aponeurosis = positive test) or normal (negative test).

Table 1. Five persons with and five persons without reported falanga evaluated by six observers, by lesion: number of observations.

	Falanga	Non-falanga	Total (n=60)
Punctured heel pad			
Right	22	13	35
Left	21	14	25
Punctured medial pad			
Right	23	14	37
Left	25	15	40
Punctured lateral pad			
Right	21	12	33
Left	22	13	35
Aponeurosis			
Right	4	6	10
Left	3	6	9
Normal heel pad			
Right	8	17	25
Left	9	16	25
Normal medial pad			
Right	7	16	23
Left	5	15	20
Normal lateral pad			
Right	9	18	27
Left	8	17	25
Normal plantar fascia			
Right	26	24	50
Left	27	24	51

The test procedure and palpation technique was practiced and calibrated among observers the day before the study.

On the day of the study a full clinical examination of both feet of all participants was performed according to protocol by all the observers. The individual observers performed examinations independently and mutually blinded and were blinded to the clinical status (case, non-case) of the participants. In order to ensure blinding of the observer, the participants were lying supine on an examination table hidden behind a drape only with the feet exposed, with the observer present in the examination room.

Further, participants were instructed not to communicate with the observer during the examination and the observers had no access to the participants' medical records including clinical information about any

symptoms present at the time of the examination.

Findings at clinical examination were recorded independently and mutually blinded by all observers according to protocol at the end of each session.

Statistics

Estimation of test validity parameters: sensitivity, specificity, and predictive values of positive and negative tests were based on bivariate analysis.¹⁸ Additionally odds ratios by lesion were calculated with a 95% confidence interval as an indicator of the strength of the relationship between binary variables (reported falanga – test-result).¹⁹

Results

Table 1 summarises the relationship between findings in five persons with reported fa-

Table 2. Five persons with and five persons without reported falanga evaluated by six observers, by lesion: Test parameters, by number of observations.

Test	Sensitivity	Specificity	Positive predicted value	Negative predicted value	Odds Ratio	95% confidence Interval
Punctured heel pad						
Right	73.3	56.7	62.1	68.0	3.60 ²	1.22 to 10.64
Left	70.0	53.3	60.0	64.0	2.67 ¹	0.92 to 7.70
Punctured medial pad						
Right	76.7	53.3	62.2	69.6	3.76 ²	1.24 to 11.39
Left	83.3	50.0	62.2	75.0	5.00 ³	1.51 to 16.56
Punctured lateral pad						
Right	70.0	60.0	63.6	66.7	3.50 ²	1.20 to 10.20
Left	73.3	56.7	62.8	68.0	3.60 ²	1.22 to 10.64
Aponeurosis						
Right	13.3	80.0	40.0	48.0	0.6 ²	0.15 to 2.45
Left	10.0	80.0	33.3	47.1	0.4 ⁴	0.10 to 1.97

1) 0.05 < p < 0.10

2) p < 0.05

3) p < 0.01

langa and five persons without, evaluated by lesion by six observers. The accuracy of the clinical tests in diagnosing alleged exposure to falanga torture was calculated based on this relationship.

The total number of true tests (true positive tests + true negative tests/total number of tests) was 117/180 = 65%, the number of true positive test in persons with reported falanga 66/90 = 73.3%, and the number of true negative tests in controls 51/90 = 56.7%.

Calculated test parameters: sensitivity, specificity, predictive values of positive and negative tests and odds ratios are summarized in Table 2.

The sensitivity of clinical testing of footpads ranged from 70.0% to 83.3%, the specificity from 50.0% to 60.0%, the predictive value of positive test from 60.0% to 63.6%, and the predictive value of negative test from 64.0% to 75.0%.

Test parameters for clinical examination of the plantar fascia indicated low accuracy of the test with a very low sensitivity and

predictive values of positive and negative tests below 50.0%.

The observed odds ratios for punctured foot pads ranged from 2.67 to 5.0, the largest odds ratios being associated with clinical testing of the medial foot pads.

Observed odds ratios for aponeurosis were below one, indicating no relationship between findings at clinical testing of the plantar fascia and the reporting of falanga.

Discussion

Sensitivity, specificity and prediction values are one approach to quantifying the diagnostic ability of a test. The acceptable values for these test parameters depend on the context of the subject that is studied. Sensitivity and specificity are generally positioned between 50% (unacceptable test) and 100% (perfect test), the arbitrary cut-off point being 80% on authority-based evidence.²⁰ Such accuracy, however, is often unachievable in clinical settings.²⁰⁻²³

The use of clinical examination in documenting exposure to falanga torture for

medico-legal purposes warrants a high diagnostic accuracy of the applied tests. In our study the observed estimates of sensitivity and specificity of the individual diagnostic tests did not meet the criteria of an 80% cut-off point.

The observed sensitivity of clinical testing of foot pads was in general acceptable, in particular testing of medial footpads, but the corresponding values for specificity low. This resulted from a high frequency of false-positives in the study as illustrated by a false-positive fraction ($1 - \text{specificity}$) ranging from 0.5 to 0.4 (50% to 40%).

Observed predictive values for testing of the footpads were also found to be low. Test parameters for the predictive value of negative tests were in general higher than those of the positive tests, but the result does not support the predictability of clinical findings to differentiate reported falanga cases from non-cases.

The test parameters for clinical testing of the plantar fascia were in general unacceptable. This lack of validity was supported by odds ratios indicating that there was no relationship between test outcome and the reporting of falanga.

There are, however, several points for discussion related to the outcome of this study.

To assess the value of a diagnostic test it is necessary to compare the test results with a reference standard (a so called "gold standard") or a confirmed diagnosis. In our study the clinical tests were compared to the self-reporting of prior exposure to falanga torture. This clearly represents a methodological problem since it is the alleged exposure to falanga torture that is to be validated by the clinical test.

Further the performance of a diagnostic test may differ between subgroups of patients depending on the clinical spectrum. In

this context spectrum denotes the range of variation of clinical and pathological characteristics in patients with a given medical condition. These characteristics may vary and the performance of the test will therefore depend on the composition of the study sample it is tested in (spectrum bias).

The time perspective (the chronicity) as well as the association between the magnitude (the intensity and duration) of the applied falanga and subsequent development of symptoms, disabilities, and pathological changes in the feet, which can be demonstrated at clinical examination (the dose-response), is not known.

Prevalence rates can have an impact on sensitivity and specificity values when small populations are being evaluated, but more important for clinical decision-making, prevalence rates have a substantial impact on predictive values for clinical tests. If the condition in question is very rare a high negative predictive value can be obtained even if the sensitivity of the test is only moderate. If, vice versa, the condition is very frequent a negative outcome of the test is unreliable even if the sensitivity is high.

The prevalence of pathological changes in the feet after falanga is not known. Only a few clinical studies exists describing findings at palpatory examination of soft tissues and these studies have included highly selected populations.^{5,8,24} Further the prevalence of painful foot syndromes in the general population is reported to be as high as 10%,²⁵ and in the elderly it ranges from 53% to 95%.²⁶

As a gold standard is not obtainable, future studies of test accuracy will need to address the following questions:

- 1) Which pathological changes are likely to be found in the feet after falanga and how prevalent are they?

- 2) Are these changes subsequently to be used as a valid measure of prior exposure to falanga (validity)?
- 3) How much does the evaluation of these pathological changes in the feet vary from observer to observer (reliability)?

A strong relationship between variables – exposure to falanga and findings at clinical testing – and a high reproducibility of the clinical findings will be a precondition for accepting the diagnostic test to be accurate and useful in clinical practice.

An assessment of the reproducibility of the applied tests and estimates of inter-observer variations was not done in this study. Our study design based on a small study sample and six observers without prior experience in palpatory examination after falanga torture may have influenced the observed accuracy of the applied clinical test.

In contrast to the findings in previous clinical studies^{5,8} and reported findings from MR imaging and ultrasound studies,^{15,17,27} clinical testing of the plantar fascia only revealed pathology in a minority of the falanga cases and positive findings were more common in non-cases. This outcome may result from the research design including a small study sample and six inexperienced observers performing the clinical examination.

Research indicates that accuracy of diagnostic tests can be improved by clinical information and that this improvement results from increased sensitivity without loss of specificity.²⁸ The reporting of tenderness and pain elicited by palpatory examination of soft tissue structures is an important sign of pathology. In our study, participants were not allowed to communicate with the observer during the examination, which may have compromised this specific test. Future studies validating testing of the plantar fascia

should address this issue and include ultrasound in the study design.

A final point of discussion is the achievable diagnostic accuracy combining several clinical tests. In our study test parameters were only observed by lesion and we did not estimate the overall test accuracy. A combination of several clinical tests also including e.g. sensory testing of foot soles, analysis of foot function and gait analysis and testing informed by clinical information may prove to increase the achievable overall diagnostic accuracy.

Conclusion and perspectives

The accuracy of clinical examination after falanga torture is still uncertain. Future research addressing the validity and the reliability of the applied clinical tests are therefore warranted in order to advance an evidence-based approach.

In order to permit generalisation, studies of the reliability of clinical examination and assessment of the variability of observations among unselected cases and non-cases should be conducted in a larger cross-sectional study population.

Based on experience, the achievable accuracy of clinical testing is, however, often limited. It is therefore recommended that research focusing on the development of diagnostic imaging as a complementary tool in the documentation of falanga torture be prioritised.

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Vascular response to ischemia in the feet of falanga torture victims and normal controls

Color and spectral Doppler findings

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Abstract

Objective: To investigate whether signs of chronic compartment syndrome could be found in plantar muscles of falanga torture victims with painful feet and impaired gait. The hypothesis was that the muscular vascular response to two minutes ischemia would be decreased in torture victims compared to controls. On color Doppler this would be seen as less color after ischemia and on spectral Doppler as elevated resistive index (RI).

Methods: Ten male torture victims from the Middle East and nine age, sex and ethnically matched controls underwent Doppler examination of the abductor hallucis and flexor digitorum brevis muscles before and after two minutes ischemia induced with a pressure cuff over the malleoli. The color Doppler findings were quantified with the color fraction (CF) before and after ischemia. On spectral Doppler the resistive index was measured once before and three consecutive times after ischemia.

Results: Both torture victims and controls responded to ischemia with an increased CF. There

was no difference between torture victims and controls. With spectral Doppler all subjects had an RI of 1.0 before ischemia. After ischemia, in nearly all subjects and all muscles the first RI was lowest, the second was higher and the third was highest indicating that the response to ischemia was disappearing as measurements were made. There was a trend that the first RI was higher in torture victims than in controls.

Discussion: The study was not able to confirm the presence of chronic compartment syndrome. However, the trend in RI still supports the hypothesis. The negative findings may be due to inadequate design where the CF and RI were measured in one setting, perhaps resulting in both methods being applied imperfectly. The response to ischemia seems short-lived and we suggest that the Doppler methods may be re-evaluated with separate ischemic phases for CF and RI.

Keywords: torture, falanga, chronic compartment syndrome, ultrasound, Doppler, resistive index

Introduction

Falanga is a torture method involving systematically repeated application of blunt trauma to the soles of the feet. It is still widely practiced especially in the Middle East.¹ The torture victims are beaten on the soles of their feet with rattle butts, wooden poles, iron rods, cables, or sticks. In addition, the torture victims may be forced to

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walk, run or jump with bare feet on rough surfaces to increase the pain.

Years after falanga, chronic pain in the feet and lower legs is common.² Deep, dull and cramping pain in the feet and lower legs may intensify with weight bearing and walking. Also, a sensation of burning, stinging pain in the soles is frequently reported.³ The torture victims typically have impaired gait.

Some authors suggest that part of the pain mechanism may be the development of a chronic compartment syndrome in the tight muscle compartments in the planta.⁴ The theory is that when the need for oxygenated blood increases (walking, weight bearing) the muscles cannot expand adequately within their compartments to allow sufficient blood flow, thus leading to ischemic pain.⁵

We wished to explore this mechanism non-invasively with Doppler ultrasound. With color Doppler, resting muscles have detectable perfusion seen as color foci blinking with the heart cycle. When muscles contract, oxygen is spent and in the following relaxation a transient increased perfusion is seen with color Doppler. Furthermore, in resting muscles the peripheral vascular resistance is high because the need for blood flow is low and consequently blood flow in the diastole is low or absent. The peripheral vascular resistance may be quantified with spectral Doppler using the resistive index (RI), which is defined as "peak systolic velocity – enddiastolic velocity"/"peak systolic velocity".⁶ RI has been widely applied in obstetrics and nephrology where an increased peripheral vascular resistance (increased RI) denotes pathology as well as in rheumatology where a decreased vascular resistance (decreased RI) indicates inflammation.⁷

Because the vascular response to exercise in muscles is transient, we needed to induce the muscle stimulus on the supine subject

(so that we could examine him immediately after the stimulus). Furthermore, we wished a standardized stimulus and therefore induced the muscular vascular response with a period of ischemia instead of muscle exercise.

Our hypotheses were that torture victims had increased stiffness of the muscle compartments and that the vascular response to ischemia would be reduced compared to normals. On color Doppler this would be seen as less color in a transverse scan of the muscle and with spectral Doppler there would be reduced diastolic flow resulting in an increased resistive index (RI).

Material and methods

Participants: Thirty torture victims who had previously completed an interdisciplinary rehabilitation program at the Rehabilitation and Research Centre for Torture Victims in Copenhagen were invited via mail to participate in the study. Inclusion criteria were: exposure to falanga and over 18 years of age. Eighteen of the thirty torture victims came to individual information meetings. Of these 18, seven were not included: four did not want to participate, one had a psychological impairment and one had not been subjected to falanga. Thus, 11 torture victims were scheduled for ultrasound examination.

Eleven age, sex and ethnic-matched controls with no history of torture were recruited from first generation immigrants in the Arab community of Copenhagen.

All participants were male. The mean age and range was 43 (34-54) for the torture victims and 40 (30-52) for the controls.

Ultrasound: The ultrasound examination was carried out with a Siemens Acuson Sequoia equipped with a linear array transducer with a center frequency of 14 MHz. Before scanning, the participants sat with their feet in lukewarm water in order to

improve subsequent sound propagation through the thick plantar stratum corneum. For scanning, the participants were placed supine with their feet hanging freely from a pillow behind the distal lower legs. The participants remained in this position throughout the procedures.

Color Doppler: Color and not power Doppler was used because it is more sensitive on the Sequoia machine. The system was optimized for low velocity flow with a Doppler frequency of 7 MHz, lowest pulse repetition frequency and lowest wall filter, and with gain just below the noise threshold. The system then had highest sensitivity for detection of any flow (slow and fast). Blooming artifacts (color bleeding outside the boundaries of the vessels) were accepted as a systematic error. The color Doppler settings were the same for all subjects. The color Doppler findings were stored digitally by activating an automatic four seconds cine-loop recording.

Spectral Doppler: The spectral Doppler gate was placed over a vessel visualized with color Doppler. An image with the spectral Doppler trace was stored digitally.

Procedure

Pre-ischemia: The right abductor hallucis muscle was scanned in transverse with color Doppler. The scan plane with most Doppler activity was marked on the skin with dye. A four seconds cine-loop and a subsequent image with spectral Doppler trace were stored. This procedure was repeated on the right flexor digitorum brevis muscle as well as the same two muscles on the left side.

Ischemia: Ischemia was induced with a blood pressure cuff placed just above the malleoli. The cuff was inflated to 200 mm Hg and with color Doppler it was confirmed that no perfusion could be detected distally to the cuff. The pressure was maintained for two minutes.

Post-ischemia: The pre-ischemia scanning position was re-established guided by the dye markings on the skin. The cuff was then deflated and as the first color Doppler signals inside the muscle were seen, the following four seconds were stored. An additional four seconds cine-loop was stored if the first contained too many motion artifacts or if the color Doppler activity continued to increase. Three different vessels (if possible) were then investigated with spectral Doppler and the images with the Doppler traces were stored.

The ischemia and subsequent post-ischemia procedures were performed separately on the four muscles. Thus each subject experienced four ischemic episodes.

Image evaluation

Cine-loops: From each cine-loop the image with maximum color Doppler activity and the image with minimum color Doppler activity were exported as jpeg-files. Each image was imported into the program DataPro (Courtaboef, France) where a trace was made around the muscle. The program then reported the color fraction (CF) which was the number of color pixels inside the trace divided by the total number of pixels inside the trace (Figure 1).

Spectral Doppler traces: The spectral Doppler traces were reviewed in the program LogiqWorks (General electric, Milwaukee, WI, USA). On each Doppler trace, the maximum systolic velocity and the enddiastolic velocities were measured and the resistive index was calculated.⁶ The resistive index was (maximum systolic velocity – enddiastolic velocity)/maximum systolic velocity (Figure 2). If no spectral Doppler trace could be recorded (absence of detectable arteries), the RI was defined to be 1.0, which is the normal value in resting musculoskeletal tissues.

Thus, from each subject the following 32

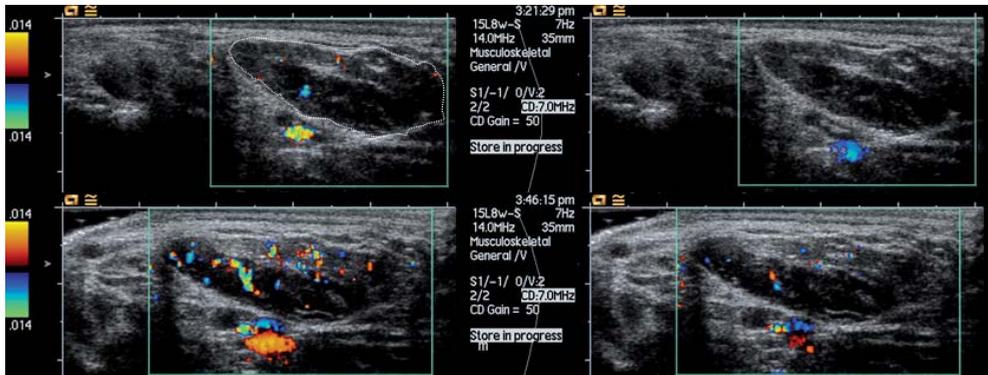


Figure 1. Color fraction before and after ischemia. The images are transverse scans of the left abductor hallucis muscle in a control subject. Top row shows the maximum and minimum color Doppler activity before ischemia. The muscle is outlined with a dotted trace and the color fraction (CF) is 3%. In the diastole there was no Doppler activity and the CF was 0%. The bottom row shows the corresponding findings after 2 minutes ischemia. The maximum CF (left) is 20% and the minimum CF (right) is 4%.

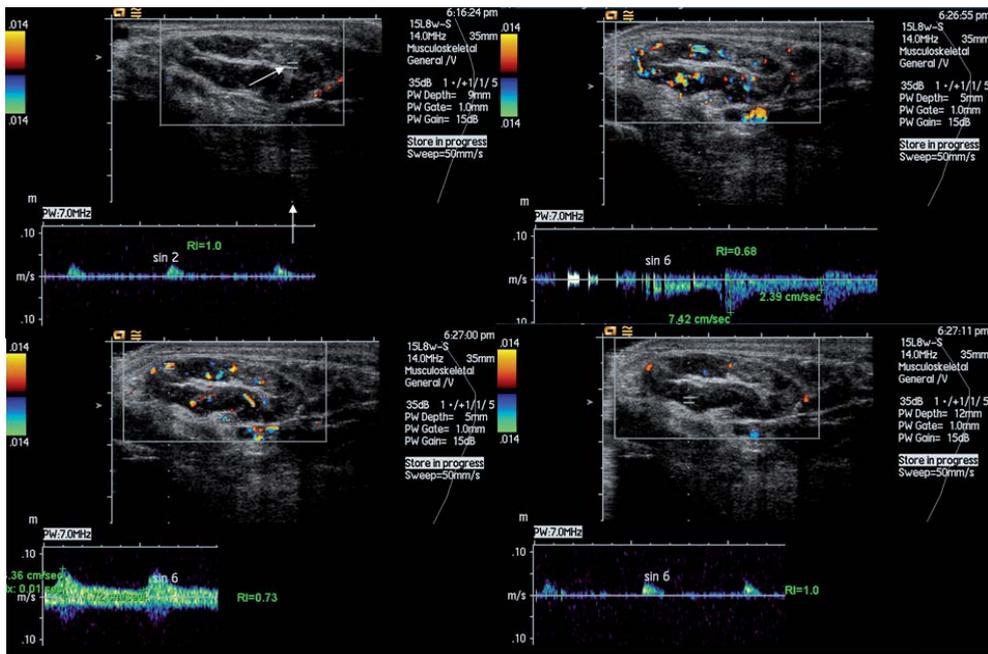


Figure 2: Resistive index (RI) before and after ischemia. The images are transverse scans of the left abductor hallucis muscle in a control subject. They are triplex scans meaning that grey-scale ultrasound is combined with color Doppler and spectral Doppler. Color Doppler is used to identify the vessels and guide the positioning of the Doppler line (vertical arrow) and the Doppler gate (oblique arrow). The spectral Doppler measurements are performed inside the gate (between the two horizontal lines). In the bottom of each image the spectral Doppler trace is seen. Top left is before ischemia. The Doppler trace shows only systolic flow and the RI is 1.0. Top right is the first RI-measurement after ischemia. Flow is seen throughout the cardiac cycle. The peak systolic and enddiastolic flows have been measured and the RI is 0.68. Bottom left is the second RI-measurement which is similar to the first. RI is 0.73. Bottom right is the third RI-measurement where the preischemic conditions seem reestablished. RI is again 1.0.

values were recorded from left and right abductor hallucis and flexor digitorum brevis muscles:

CF: Pre-ischemia maximum and minimum, post-ischemia maximum and minimum.

RI: Pre-ischemia RI; first, second, and third post-ischemia RI.

Originally, it was planned also to investigate selected muscles of the lower leg after ischemia induced by a pressure cuff just above the knee. This was aborted because cuff insufflations in this position could not be tolerated by the first participants (torture victims).

Statistics

Groups stratified by muscles and pooled muscles were compared with a two-sample t-test with pooled variance. Level of significance was 5%.

Ethics

Each participant received oral and written information about the study in Arabic and in Danish. The participants also received guidelines concerning participation in medical research issued by the Danish Ethical Committee. Written consent was then signed and an appointment for ultrasound examination given. The study was registered with the Regional Committee for Ethics in Medical Science in Copenhagen and with the Danish Data Protection Agency.

Results

Of the 11 torture victims, one found the pressure cuff to be too uncomfortable and had to be excluded leaving 10 torture victims who completed the study. Of the 11 controls, one found the pressure cuff to too uncomfortable and one revealed that he had actually had falanga torture. Both these

controls were excluded leaving nine who completed the study. The 10 torture victims were seven from Iraq and three from Iran. The nine controls were seven from Iraq, one from Tunisia, and one from Syria.

The recruitment and clinical findings of the study group has previously been reported.³ All torture victims had painful foot dysfunction and impaired gait as falanga sequelae.

Color fraction: The two minutes ischemia resulted in an increase in color Doppler activity in all four muscles in nearly all torture victims and controls. In four torture victims and two controls ischemia resulted in a fall in CF at a single site – from 9, 8, 2, 2, 17 and 11% to 4, 5, 1, 0, 2 and 10%, respectively. In one torture victim and one control a single site showed no change – 0 and 4%, respectively. Maximum values, minimum values, and averages of maximum and minimum both before and after ischemia were analyzed and no differences between torture victims and controls could be detected. For illustration the mean and range for the maximum values are shown in Table 1.

Resistive index: Before ischemia it was possible to measure RI at 72 of 76 sites (four muscles in 19 subjects) and it was 1.0 in all cases. The four sites where RI was defined as 1.0 represented four torture victims. After ischemia, it was possible to measure three RI-values in 53% and 47%, only two RI-values in 35% and 33%, only one RI-value in 10% and 14%, and no RI-value (defined as 1.0) in 5% and 6% of the 40 and 36 sites in torture victims and controls, respectively (Table 2).

The abductor muscles were more vascular than the flexor muscles and it was possible to measure more RI-values. The mean number of measured RI-values ranged from 2.6 to 2.9 in the abductor muscles and from 1.6 to 2.2 in the flexor muscles. There was

Table 1. Maximum color fractions before and after ischemia. Numbers are percentage color area inside transverse scan of the muscle, mean, (range).

Muscle	Torture victims		Controls	
	Before	After	Before	After
Right abductor	5.6 (1-10)	14.1 (4-38)	6.2 (1-13)	17.7 (4-31)
Left abductor	6.6 (4-19)	19.8 (4-39)	7.9 (3-17)	19.6 (2-38)
Right flexor	3.0 (0-9)	19.0 (0-51)	4.3 (2-7)	14.4 (2-32)
Left flexor	2.4 (0-8)	6.2 (1-11)	4.1 (2-9)	14.4 (3-32)

Table 2. Resistive index (RI) after ischemia. Numbers are mean, (range).

Muscle	Torture victims				Controls			
	1st RI	2nd RI	3rd RI	Number of RI	1st RI	2nd RI	3rd RI	Number of RI
Right abductor	0.86 (0.75-1.0)	0.95 (0.75-1.0)	0.93 (0.75-1.0)	2.9 (2-3)	0.75 (0.67-0.87)	0.76 (0.56-1.0)	0.93 (0.72-1.0)	2.8 (2-3)
Left abductor	0.80 (0.69-1.0)	0.82 (0.67-1.0)	0.91 (0.52-1.0)	2.6 (2-3)	0.77 (0.61-1.0)	0.84 (0.65-1.0)	0.89 (0.66-1.0)	2.6 (1-3)
Right flexor	0.95 (0.68-1.0)	0.97 (0.70-1.0)	1.0 (1.0-1.0)	1.7 (0-3)	0.85 (0.61-1.0)	0.92 (0.63-1.0)	1.0 (1.0-1.0)	1.6 (0-3)
Left flexor	0.84 (0.59-1.0)	0.94 (0.67-1.0)	0.97 (0.69-1.0)	2.2 (1-3)	0.94 (0.68-1.0)	0.95 (0.74-1.0)	1.0 (1.0-1.0)	2.0 (1-3)

no difference between torture victims and controls concerning number of RI-measurements. The abductor muscles had lower RI-values than the flexor muscles both in torture victims and controls.

Except for the right abductor muscle in the torture victims, the first RI measurement was the lowest, the second was higher and the third was highest indicating that the effect of ischemia was disappearing as the measurements were made. The first RI-measurements were lowest in the controls except for the left flexor muscle where the torture victims had the lowest value. The third RI-values were more or less identical in torture victims and controls.

Discussion

The results show very similar response to two minutes ischemia in the medial two

superficial muscles in the planta in torture victims and controls. Neither the absolute color fraction before and after ischemia nor the relative change could separate torture victims from controls. The RI-measurements showed a trend toward torture victims having a higher vascular resistance immediately after ischemia. This may support the theory of a relative closed compartment syndrome being part of sequelae to falanga torture.

The ultrasound scanning was in no way uncomfortable to the subjects since it only involved a light pressure to soles of the feet. The pressure cuff around the ankle was uncomfortable but was equally tolerated by victims and controls with only one in each group aborting the procedure.

We did not find any significant differences between victims and controls and this may be because we measured both the

development in CF and RI instead of aiming at one or the other. Directly after releasing the cuff pressure we spent time recording one or two 4 second cine-loops and thereby we have no data of the immediate RI-response. Our data suggest that the response is relatively short-lived and that controls may have a lower vascular resistance initially that increases to the level of the victims during the time it takes to make three RI-measurements. If we had focused solely on RI-measurements and not performed the CF-measurements we could have investigated this part of the response.

Also, the CF-measurements may be suboptimal. We focused on the immediate response and once a successful 4 seconds cine-loop showing Doppler activity that did not increase further had been recorded, we spent the remaining time recording three RI-values when possible. It may be that it would have been more fruitful to record one long cine-loop showing the full response where we would have been able to record time to peak as well as time to the return to pre-ischemia values. It has been reported that closed compartment syndrome patients have delayed peak and a prolonged response.⁸ Our results indicate that the victims may have a prolonged response. We measured more RI-values in the victims which may be because more vessels were available for a longer period of time. Furthermore, our results indicate that we may have measured RI-values as the response was disappearing in the controls seen as lower first RI-measurements and more or less identical third RI-measurements.

We were not successful in finding a diagnostic method to separate torture victims from normal controls. Nor were we successful in establishing presence of a relative closed compartment syndrome in falanga torture victims with painful feet and im-

paired gait. Our negative findings may, however, be due to inadequate design and we suggest further investigation of color/power Doppler and spectral Doppler response to ischemia where the two methods are tested separately. The method still has the potential to disclose important information and is relatively well tolerated by torture victims.

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Clinical performance diagnosing alleged exposure to falanga

A phantom study^A

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Abstract

Background: Falanga torture involves repetitive blunt trauma to the soles of the feet and typically leaves few detectable changes. Reduced elasticity in the heel pads has been reported as characteristic sequelae and palpatory testing of heel pad elasticity is therefore part of medicolegal assessment of alleged torture victims.

Objective: The goal was to test the accuracy of two experienced investigators in determining whether a heel pad model was soft, medium or hard. The skin-to-bone distance in the models varied within the human range.

Method: Two blinded investigators independently palpated nine different heel pad models with three different elasticities combined with three different skin-to-bone distances in five consecutive trials and categorized the models as soft, medium or hard.

Results: Two experienced investigators were able to identify three known elasticities correctly in approximately two thirds of the cases. The skin-to-bone distance affected the accuracy.

Conclusion: The use of clinical examination in documenting alleged exposure to torture warrants a high diagnostic accuracy of the applied tests. The study implies that palpatory testing of the human heel pad may not meet this demand. It is therefore recommended that a device able to perform an accurate measurement of the viscous-elastic properties of the heel pad be developed.

Keywords: torture, falanga, heel pad, palpation, clinical examination

Introduction

The human heel pad is a complex structure consisting of a fat pad with micro- and macro-chambers divided by an intricate fibroelastic septation. The fat pad is contained by the internal heel cup, a ligament that encircles the fat pad as a functional link

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This experimental physical model of falanga exposure has been published before. However it belongs to this specific thematic issue on falanga.

between the septal structure and the subcutaneous tissue. The structure of the septation is designed to avoid any outflow of fat from single compartments and hence they are resistive to compressive loads.^{1,2}

The heel pad presents non-linear viscoelastic characteristics, as the majority of soft body tissues. The term viscous implies that it deforms as a function of time under a given load, and the elastic term that once the deforming load is removed, the tissue returns to its original configuration. Viscoelastic materials have the ability to absorb energy and thus to reduce the magnitude of impact forces by extending the time course of the impact event. In the heel pad, the viscous and elastic features correspond to the fat cells and septa, respectively. Trauma to the heel pad may result in destruction of the complex structure with resulting permanent impairment of its function as a shock absorber.^{3,4}

Falanga torture involves repeated applications of blunt trauma to the soles of the feet including the heel pads. One of the characteristic permanent changes reported at clinical examination is the flattened shape of the loaded heel, which is believed to be caused by a destruction of the intricate septation with resulting medial and lateral displacement of the fatty tissue of the heel pad.⁵⁻⁷ At palpation, the calcaneus is more easily felt under the skin, so the heel pad feels too soft. Palpatory testing of heel pad elasticity has therefore become part of medicolegal assessment⁸ of alleged torture warranting a high diagnostic accuracy of the test.

The validity and reliability of palpatory testing of heel pad elasticity is, however, not known. In assessing the accuracy of a diagnostic test it is necessary to compare test results with a reference standard (gold standard) or a confirmed diagnosis. Comparing test results to self-reporting of prior

exposure to falanga clearly represents a methodological problem since it is the alleged exposure to falanga that is to be validated by the test.

Hence, the goal of this study was to test the accuracy of two experienced investigators in determining the elastic properties of a heel pad model with known elasticity by palpation. Three different heel pad models were developed – a soft, a medium, and a hard. As a confounding factor the skin to bone distance in the model was varied within the human range.

Material and methods

The mould: The heel pads used in this study were created by embedding part of an artificial calcaneus in an elastic material by use of a mould (Figure 1). To mimic the tuberosity of the calcaneus bone, a plastic calcaneus (AMS Superbones, Washington, USA) facing upwards was placed on a pedestal that was in turn attached to the bottom plate. By varying the height of the pedestal, different skin-to-bone distances were made.

PVA cryogel: The heel pad was modelled by use of a particular viscous liquid composed of 10% of polyvinyl alcohol (PVA) dissolved in water-based material. It provides an excellent model of the human tissue since the elastic modulus of PVA cryogel is controllable by varying the number of freeze/thaw cycles or the PVA concentration. Bought as a liquid, PVA cryogel changes into a gel by a freeze/thaw process.

Skin-to-bone distance: From eleven papers describing unloaded heel pad thickness, we calculated the mean (M) skin-to-bone distance to 17 mm with a standard deviation (SD) of 3 mm (Table 1). In the present study, we used three skin-to-bone distances: M - SD, M, and M + SD, i.e. 14 mm, 17 mm, and 20 mm, respectively.

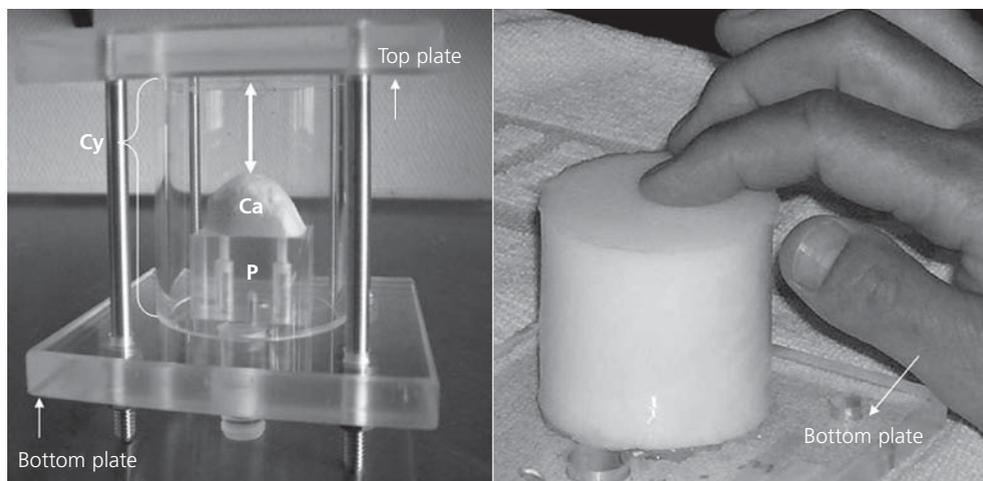


Figure 1. Heel pad model.

Left: Mould for the heel pad model. Inside the cylinder (Cy), the plantar part of the plastic calcaneus (Ca) is mounted upside down on the pedestal (P). The pedestal is attached to the bottom plate. The double arrow indicates the skin-to-bone distance. The top and bottom plates close the cylinder.

Right: The heel pad model has been taken out of the cylinder and is still attached to the bottom plate. It is opaque and the calcaneus cannot be seen.

Table 1. Skin-to-bone distance from eleven studies.

Reference	Year	Technique	Thickness range (mm)	Mean \pm SD (mm)
Gooding GA et al. ¹⁶	1985	Ultrasound	13-21	16.6 \pm 0.32
Jorgensen U ¹⁷	1989	Radiography	12.5-30	17.4 \pm 3.7
Prichasuk S et al. ¹⁸	1994	Radiography	12-28	18.70 \pm 2.46
Prichasuk S ¹⁹	1994	Radiography	14-27	18.77 \pm 2.33
Hsu TC et al. ²⁰	1998	Ultrasound	Na	17.6 \pm 2.00
				20.10 \pm 2.40
Rome K et al. ²¹	1998	Ultrasound	9.9-17.1	12.47 \pm 4.22
Gefen A et al. ²²	2001	Radiography	Na	12.5 \pm 0.20
Kanatli U ²³	2001	Radiography	Na	19.55 \pm 2.52
Nass D et al. ²⁴	2001	Ultrasound	Na	15.0 \pm 2.6
Tong J et al. ²⁵	2003	Ultrasound	9.8-18.7	15.5 \pm 2.4
Ledoux WR et al. ²⁶	2004	Radiography	Na	17.10 \pm 3.63
Overall				17 \pm 3*

Na = not available,

*) The studies have equal weight in the overall value.

Selection of elasticity: Twelve cryogel cubes (three of each) were made with one through four freeze/thaw cycles – each cycle making the sample harder. The elasticity of the samples was measured by compression testing applying an Instron test machine with a 250

N load cell. Elastic moduli of foot pad tissue in the range from 24 kPa to 306 kPa have been reported.⁹⁻¹¹ The PVA samples match this range well.

Two experienced physicians selected the cubes made with two, three, and four

freeze/thaw cycles as representative of the human range of heel pad elasticity, i.e. soft, medium, and hard. The three different elasticities combined with three different skin-to-bone distances gave nine different heel pad models.

Palpation tests: Two investigators (KA and BDS) palpated the models in five consecutive trials each. Each trial consisted of palpating the model n times. In each trial we wanted the probability of guessing a model correctly all n times to be less than 0.05. Since, the chance of guessing correctly is $1/3$ at each palpation, n became three ($1/3^3 < 0.05$). A trial therefore consisted of 27 palpations of the nine models in a random order (as each model had to be palpated three times).

A wide area of the examination table was covered and the investigator could not see how many models existed. The investigators were told that each model contained a calcaneus and that the models were soft, medium, or hard. They were not informed that the skin-to-bone distance varied. The investigator was allowed to familiarize herself with one model to get to know the shape. She was not told whether it was soft, medium, or hard. She was then blindfolded and given the models in a predefined computer-generated random order. There was no time limit. The investigator had to categorize each model as soft, medium or hard. There was a 30 minutes break between trials.

After three trials, the investigator was shown the nine models and was explained about the different skin-to-bone distances. She was allowed to familiarize herself with the nine models. She then performed two more trials blindfolded.

Statistics

We tested the independent accuracies of the two investigators in the 5 trials based on the

proportion of correct answers (%), with an emphasis on the elasticities applied, enabling estimation of the difference between these. The null-hypothesis was two-fold: that there were no differences between (i) trials or (ii) elasticities. We applied the Cochran Q-test for homogeneity,¹² and evaluated the amount of heterogeneity on the basis of I^2 .¹³ These differences between trials and elasticities were combined based on an empirical Bayes methodology, applying the method of moments estimator proposed by DerSimonian and Laird¹⁴ using Review Manager (RevMan version 4.2 for Windows, Copenhagen, Denmark). We used the total dataset for each investigator (135 binomially distributed yes/no test samples per assessor) to estimate the overall accuracy for each investigator. We calculated the 95% confidence intervals (CI) based on 10,000 bootstrap samples – allowing us to estimate the median (proportion of correct answers), and the corresponding 2.5th and 97.5th percentile of the bootstrapped empirical data distribution.¹⁵

If there was no difference between the two investigators over the 5 trials, or over the three elasticities the pooled results (270 observations) would be used for an analysis of the interaction between skin-to-bone distance and elasticity applying a standard χ^2 -test (with 4 degrees of freedom; elasticity \times skin-to-bone interaction). Except for the homogeneity and empirical Bayes analysis, the SAS® statistical package (SAS 9.1.3 executing on the XP PRO platform; Copyright [c] 2002-2003 by SAS Institute Inc., Cary, NC, USA) was used for the statistical analyses.

Results

Performance by trial: The two investigators performed almost identically with approximately $2/3$ correct answers (Figure 2), with the following proportions correct for KA and BDS: 67% (bootstrap 95% CI: 56 to

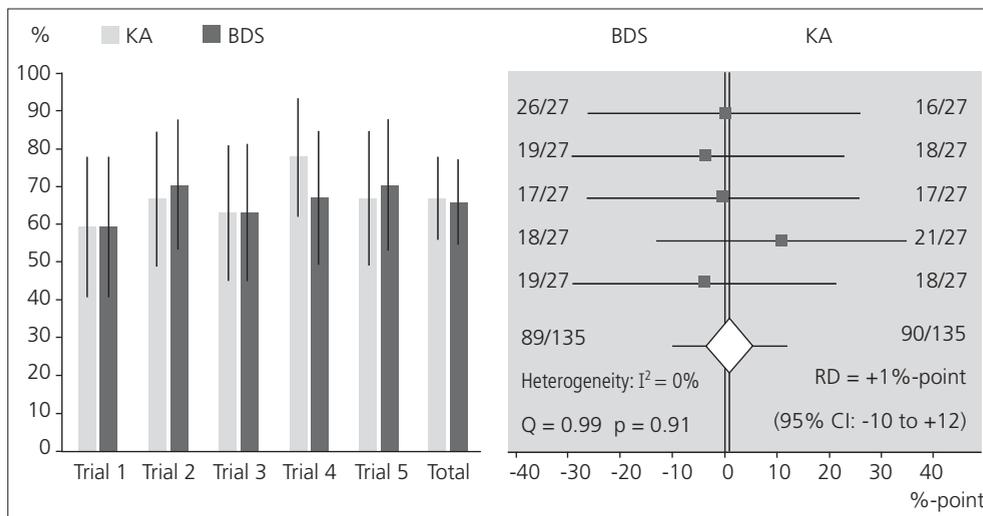


Figure 2. Performance of the two investigators in the five trials.

Left: The bars show the percentage of correct answers for both investigators through trials one to five (with 95% CI). The bars marked total are the overall percent correct answers (with empirical 95% CI) for each assessor, based on the bootstrapped median and the 2.5th and 97.5th percentiles.

Right: The differences between trials were combined based on an empirical Bayes methodology and the amount of heterogeneity was evaluated on the basis of I^2 . The data consistently show that the investigators perform better than chance only and that they agree.

78%) and 66% (54 to 77%), respectively. As presented in Figure 2, there was no difference between the percentage correct answers between assessors across trials ($p=0.91$; $I^2=0\%$); the combined difference between percent correct answers was +1 %-point (95% CI: -10 to +12 %-point). The performance did not improve when the investigators knew about the varying skin-to-bone distance and had become familiar with the nine models (trial 4 and 5).

Performance by elasticity: The two investigators had a very similar performance with the lowest accuracy in the soft models, slightly higher accuracy in medium models and highest accuracy in hard models (Figure 3). There was no difference between the percentage correct answers between assessors across elasticity ($P=0.25$; $I^2=28.8\%$); the combined difference between proportions

was -1 %-point (95% CI: -13 to +10 %-point).

Performance by skin-to-bone distance: There was a significant elasticity \times skin-to-bone interaction ($p=0.0003$), suggesting that a clinical assessor's ability to answer correctly varies across elasticity as the skin-to-bone distance changes (Figure 4). A superficial bone position (14 mm) made it easier to correctly identify a hard model; whereas, a deep bone position (20 mm) made it more difficult to identify a hard model correctly. Exactly opposite findings were made in soft models. In medium models, the intermediate bone position gave highest accuracy.

Discussion

The study showed that two experienced investigators had almost identical performance in determining whether a heel pad model

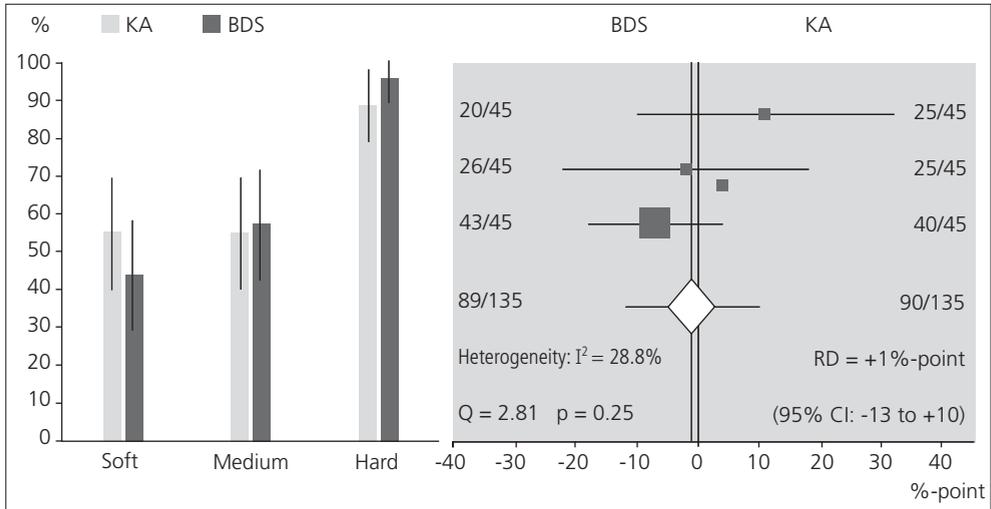


Figure 3. Performance of the two investigators by elasticity.

Left: The bars show the percentage of correct answers for both investigators by elasticities soft to hard (with 95% CI).

Right: The differences between elasticities were combined based on an empirical Bayes methodology and the amount of heterogeneity was evaluated on the basis of I^2 . The data consistently show that the investigators perform better with increasing hardness and that they agree.

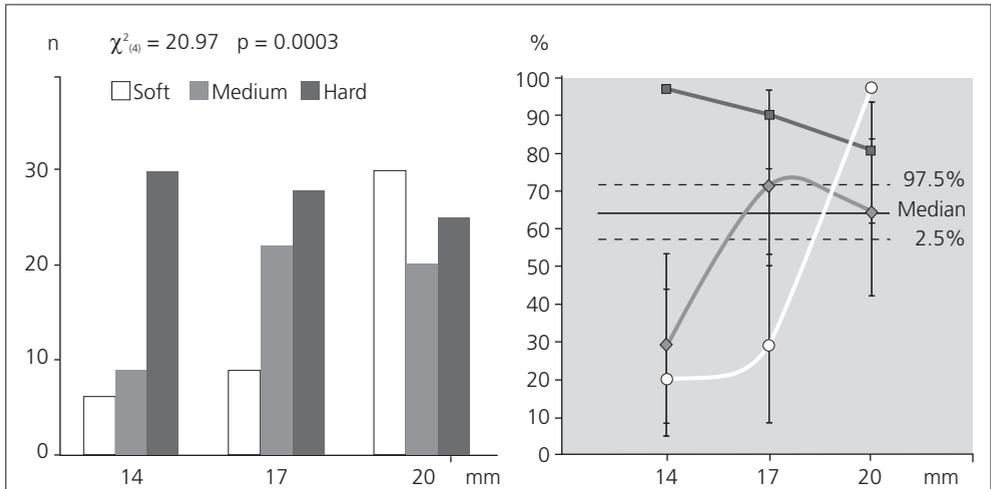


Figure 4. Combined performance over elasticities and skin-to-bone distances.

Left: The absolute number of correct answers for each elasticity is presented by skin-to-bone distance. Because of the agreement (Figures 2 and 3), the results were pooled in order to evaluate this interaction.

Right: The three graphs present the three elasticities plotted against the skin-to-bone distance. Each elasticity has its own pattern as skin-to-bone distance varies. E.g. a superficial bone makes the model feel harder and vice versa for a deep bone. The horizontal line marked median is the overall percent correct answers (with empirical 95% CI) across assessors, based on the bootstrapped median and the 2.5th and 97.5th percentiles.

was hard, medium, or soft. Their accuracy of two thirds is double that of chance and is not impressive considering the medicolegal use of heel pad palpation in the evaluation of alleged falanga torture victims.

By using a heel pad model with a known and controllable elasticity, we had the unique opportunity to accurately test the human ability to classify into soft, medium and hard by means of palpation. We made it easy for the investigators by creating a very primitive model with only one type of "tissue" in comparison to the complex structure of the human heel pad with skin, subcutaneous connective tissue, and the complex structure of the heel pad itself with septation and spiral structure of chambers with fat. Our very limited number of classes (soft, medium, hard) further made it easy for the investigators in comparison to the continuous variation in the human heel pad elasticity. We therefore expect that our investigators will have a lower accuracy in a human material and the observed accuracy of two thirds should be seen in this context.

The variation in skin-to-bone distance made the models slightly more realistic although the variation again was discontinuous with only three classes exemplifying the human mean \pm SD. When the bone was close to the skin, the model felt harder resulting in 100% accuracy for the hard model with smallest skin-to-bone distance. Likewise, when the bone was deep, the model felt softer leading to 100% accuracy for the soft model with highest skin-to-bone distance. It was interesting that the investigators did not improve their performance when this variation was known and they had familiarized themselves with the models. We postulate that this will also be the case when the human heel pad is palpated: we know there is a variation in the skin-to-bone distance, which will affect our impression of hard versus soft just as the

elasticity itself, but we do not know the individual skin-to-bone distance.

We believe there is a need for a device capable of measuring the elastic properties of the heel pad in order to obtain more credible evidence in the evaluation of alleged falanga torture victims. Theoretically, the device could record force and displacement when pressed against the heel pad. A series of corresponding force and displacement recordings during compression and decompression will allow us to measure the elastic properties of the heel pad. However, also this device will need to take in to account the variation in skin-to-bone distance. This is because the elastic nature of any tissue will change dramatically toward hard when a certain degree of compression has been reached. Therefore, we need to find an algorithm for the influence of skin-to-bone distance upon force-displacement data in order to allow for comparison between subjects with different skin-to-bone distances. This distance could be obtained with ultrasound.

Conclusion

The use of clinical examination in documenting alleged exposure to torture warrants a high diagnostic accuracy of the applied tests. Our study implies that palpatory testing of the human heel pad may not meet this demand.

Two investigators experienced in evaluation of heel pads in torture victims had an accuracy of approximately two thirds when palpating and classifying simple cryogel heel pad models as being soft, medium or hard. The variation in skin-to-bone distance in the models highly influenced the results. We recommend that a device able to perform an accurate measurement of the visco-elastic properties of the heel pad be developed. Such a device needs to take the individual skin-to-bone distance into account.

Roles: STP was chief investigator and guarantor, responsible for literature search, study design, data collection, data analysis, drafting, revision, and final approval. SM was responsible for literature search, model development, elasticity measurements, study design, data collection, data analysis, drafting, revision, and final approval. JW was responsible for model development, elasticity measurements, study design, data collection, data analysis, drafting, revision, and final approval. KA was responsible for data collection, revision, and final approval. BDS was responsible for data collection, revision, and final approval. JIB was responsible for elasticity measurements, revision, and final approval. RC was responsible for study design, data analysis, drafting, revision, and final approval.

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The epidemiology of falanga – incidence among Swedish asylum seekers

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Abstract

Falanga (falaka), beating of the soles, is commonly reported by torture survivors. It is known to be used in many countries and regions where torture practice is endemic.

In this study 131 torture victims were examined at the Kris and Trauma Centrum (KTC) of Stockholm. Falanga was reported in 45% of the cases. It was most commonly found among Bangladesian and Syrian patients but was also reported from all Middle Eastern countries and Northern Africa.

Scars and/or pigmentations on the feet and/or lower legs as well as palpable soft tissue irregularities were seen in 82% of the patients reporting falanga, of which 36% had scars or pigmentations in the soles. Persistent pain and tenderness of feet and lower legs were reported in 48%. The signs and symptoms were highly significant when compared with a control group who had not received falanga ($p < 0.0001$).

Keywords: epidemiology, torture, falaka, falanga, refugees

Introduction

Falanga (falaka, bastinado), i.e. beating of the soles, is frequently reported by asylum seekers who allege being tortured. In previous studies we found an incidence of 65% in a selected group of Swedish asylum seekers and alleged torture victims.¹ The differences amongst countries showed great variations in the six countries that were studied, the greatest being 95% in Syria.¹

The use of falanga appears to be especially common in Middle Eastern countries but the circumstances and instruments used vary amongst countries or regions.

One problem with falanga is that it may not always leave any physical marks discernable to the naked eye, but the physical findings when present are quite characteristic.²⁻⁵ However, specific diagnostic tests and investigation by radiological methods may give further diagnostic information.⁶⁻⁸ The frequency of physical signs and chronically disabling symptoms has not been studied in large populations. The present study is a retrospective estimation of the incidence of reported falanga and findings after examination in a group of Swedish refugees.

Patients and methods

In this study 131 refugees were examined at the Kris och Traumacentrum (KTC) in Stockholm during the period 2003-2007.

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Examination procedures adhered to the principles stated in the Istanbul Protocol (United Nations Publications, 1999). Records of visible and palpable injuries to the foot and soles, as well as alleged chronic symptoms that could possibly be related to falanga were analyzed. If any scars or other signs of injury were found, the soles, feet or ankles were photographed.

The patients were divided into countries, geographical regions, and religious confessions. The objective findings were classified as scars and pigmentations in the soles, feet, or ankles, and palpable irregularities in the soft tissues. The symptoms that were accounted for were pain in the soles when walking, and pain in the ankles as well as the lower part of the legs. In cases of falanga, the instruments used when beating, the position of the victim, and if there were any additional procedures in combination with falaka were noted.

The statistical methods used were frequency tables and analysis of differences between groups using Fisher's test for non-parametric data.

Results

The median age of the population was 33 y and mean age +/-sd was 35,4 +/-9,5 y. 6% (n=8) were females.

The frequency of falanga in the whole population was 45%. None of the females, but 59 out of 123 (48%) of the male patients alleged falanga torture.

The distribution of falanga is shown in Table 1. with data from three studies.

The countries and frequency in which falanga occurred, as well as the details, i.e. weapons used, the position in which it was given, are seen in Table 2. Only countries represented by three or more patients are accounted for. A few patients from Algeria, Eritrea, Georgia, India, Iraq, Jordan, Libya,

Table 1. The distribution and incidence of the practice of falanga in the world. Data taken from the present study and three other studies.^{1,10,16}

Gender and nationality (n)	Falaka (n)	%	Reference
Females (8)	0	0	Present study
Males (123)	59	48	Present study
Algeria (1)	1		Present study
Argentina (25)	1	4	10
Azerbaijan (9)	3	33	Present study
Bangladesh (34)	27	79	Present study
Bangladesh (53)	45	86	1
Bangladesh (82)	65	79	16
Chile (69)	5	8	10
Egypt (2)	2	100	Present study
Eritrea (2)	1	50	Present study
Greece (35)	29	83	10
India (1)	1	100	Present study
Iran (22)	2	9	Present study
Iran (21)	13	62	1
Iraq (2)	1	50	Present study
Iraq (16)	12	75	10
Jordan (2)	2	100	Present study
Libya (1)	1	100	Present study
Palestine (1)	1	100	Present study
Spain (28)	9	32	10
Syria (11)	10	91	Present study
Syria (24)	23	95	1
Tajikistan (1)	1	100	Present study
Turkey (13)	4	31	Present study
Turkey (25)	21	84	1

Palestine, and Tajikistan reported falanga.

A man from Tajikistan had experienced torture similar to falanga: he had been beaten repeatedly on the left heel only, with a small rubber hammer.

The alleged procedures of falanga showed some variation amongst countries. In Bangladesh in most instances the victim reported that he was suspended. In Syria he was often immobilized folded double in a tire, and in Turkey the victim most often alleged being tied with a rope or a gun-sling around the ankles lying prone on the floor or a bench.

The distribution of falanga when religious faith was considered showed that citizens of countries of Christian faith (20% of

Table 2. Torture victims of nationalities reporting a high frequency of falanga, weapons used and position when tortured.

Country	Falanga %	Commonest striking weapon	Other striking weapon	Commonest position
Azerbaijan (n=9)	33	Rubber baton	–	Prone on the floor
Bangladesh (n=34)	79	Police baton (lathi)	Roller, hot water bottle	Suspended
Iran (n=22)	9	Electric cable	Baseball bat	Suspended
Syria (n=11)	91	Electric cable	Wooden stick	Body folded in a tire
Turkey (n=13)	31	Baton	Electric cable	Prone on the floor

Table 3. Physical findings and reported persistent symptoms in 131 alleged torture victims. The control group (no falanga) was significantly different from the falanga group.

Physical findings and symptoms	Falanga (n=58) n (%)	No falanga (n=73) n (%)	Fisher's test p-value
Scar foot	38 (66)	14	<0.0001
Scar/pigmentation sole	21 (36)	3	<0.0001
Soft tissue injury	15 (28)	4	<0.0020
Total (1-3 findings)	48 (82)	18 (25)	<0.0001
Pain and tenderness in soles	28 (48)	4	<0.0001
Pain in lower leg	26 (45)	6	<0.0001

the whole study population) 27% had been subjected to falanga. Among Moslems, (72% of the study population), 51% had been tortured by falanga. In the remaining group of different faiths or unknown affiliations (8%), two individuals (25%) both citizens of Moslem countries affirmed falanga.

The physical signs and symptoms corresponding to falanga are listed in Table 3. The occurrence of scars and pigmentations in the soles of those who had suffered falanga were more common than those who had not ($p < 0.0001$). Scars on the upper part of the foot and ankle were also more common in the falanga group ($p < 0.0001$). In 21 patients (36%) who said they had been tortured by falanga, scars or pigmented spots in the sole were noted at the physical examination. Palpable soft-tissue irregularities were less frequent (26%), but these findings were also significantly different from the controls ($p < 0.002$). In the control group 25%

showed physical changes in the foot-ankle region compared to 82% in the falanga group. Subjective symptoms of tender soles and pain in the ankles were also significantly more common in the falanga group ($p < 0.0001$) (Table 3).

Discussion

The study shows that falanga as a torture method is predominantly used in countries of the Middle East, Iran and the Indian region. It also occurs in countries of northern Africa and in the Caucasian region. In those regions, however, there were too few patients to estimate the frequency. In a number of previous studies, falanga has been described in torture victims from the Middle East,^{3,6,9} but also from Greece in the 1970s,^{10,11} Spain,¹⁰ Sri Lanka,^{12,13} and occasionally in Uganda and South America.^{1,10}

In this study the total frequency of falanga was 45%. The population was mainly

Figure 1. World map showing the distribution of the practice of falanga. Data taken from the present study, reference 1 and reference 4 (*italics*). Countries marked with **bold/size 12** signifies falanga reported by more than 50% of the patients, **bold/size 10**, between 25 and 50%, **bold/size 8** below 25%. Countries marked with **bold/size 6**: falanga was reported but the number of patients was too low to make statistical calculations.



comprised of patients from Bangladesh, Syria, Iran, and Turkey. In a study of 200 torture victims by Rasmussen¹⁰ where the examinations were performed during 1975 – 1982, the bulk of the population came from South America; the total frequency of falanga was 29%, but among Iraqi torture survivors (n=16) it was 75%. In Greeks (n=35) it was even higher, 83%, and in victims from Spain (n=28) it was 39%.⁴ On the contrary, in the present study falanga was never reported by patients from Central or Western Africa, Europe, or former Soviet Republics in central Asia.

The practice of falanga is statistically

correlated to countries associated with Islamic religion. It is said that its practice originates from older traditions in Persia and the Arabian Peninsula, and could have been spread very early by the Moslem expansion to northern Africa and the Iberian peninsula as well as India. It was later adopted by the Ottoman empire which can explain its survival into fascist Greece and the Caucasian region. Historical accounts of falanga are, to this author's knowledge, scarce. It is not reported from the Greco-Roman world; neither are there accounts of falanga or similar treatment from the Christian cultural sphere in medieval times or during the In-



quisition.^{14,15} Although not used in torture, falanga might have been known as a method of punishment throughout European history, as there are references to the practice in a play by Shakespeare (*As you like it*) and in opera librettos, e.g. Mozart's *Die Entführung aus dem Serail*.

The examination of the patients in this study was not concentrated primarily on detection of the specific diagnostic signs and symptoms of falanga. By examination and palpation the physical signs of falanga were found to be rather common, but additional evidence might have been found even more frequently with adjuvant diagnostic methods,

e.g. gait analysis,³ bone scintigraphy^{7,8} or MRI.⁹ In the present study, by inspection and palpation, 84% of the patients reporting falanga showed some external signs, i.e. scars on the upper foot, pigmentations and scars in the soles, and irregularities in the fatty tissue of the fore-foot and heel pads, or in the plantar fascia. Moreover, symptoms of pain and tenderness were affirmed in nearly 50% of patients. Using patients with no history of falanga as "controls" showed that all the physical findings and alleged symptoms were highly significant for falanga (Table 2).

In conclusion, apart from beating and kicking, falanga was the most common phys-

ical method of torture in this study population. In this and some previous epidemiological studies¹⁰ the practice was shown to be endemic in the Middle East and Mediterranean region. The practice also appeared to be used regularly in India, Sri Lanka and Bangladesh. Another result of this study is that, in contradiction to previous beliefs⁴ the signs and symptoms of falanga will persist, have a high specificity, and are possible to diagnose even many years after the torture event.

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Long-term consequences of falanga torture

What do we know and what do we need to know?

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Abstract

The long-term consequences of falanga are probably the best described consequences of exposure to specific forms of physical torture. Theories about casual lesions in the peripheral tissues of the feet have been put forward based on clinical observations along with international guidelines for the clinical assessment, but still knowledge is needed in several areas. A review of the literature on falanga is presented, mainly focusing on the clinical aspects and possible lesions caused by this specific form of torture that may influence the overall management of the condition. Finally, the article closes with a call for future research, which is needed in order to advance a knowledge-based development of the applied clinical practice.

Keywords: torture, falanga, clinical examination, long-term consequences, review

Introduction

The long-term consequences of falanga are probably the best described consequences of exposure to specific forms of physical torture. Theories about casual lesions in

the peripheral tissues of the feet have been put forward based on clinical observations¹⁻¹⁰ along with international guidelines for the clinical assessment.¹¹ However, larger systematic studies are still scarce and knowledge is needed in several areas.

In spite of a long-standing tradition of clinical assessment, only limited empirical data on the diagnostic value of the applied tests have been established.¹² Further, the time perspective as well as the association between the intensity and duration of the applied falanga and subsequent development of symptoms and disabilities, and pathological changes in the feet and lower legs that can be demonstrated at clinical examination are not known. Neither is the role of imaging in substantiating the clinical diagnosis yet clarified and the present knowledge is mainly based on casuistic reports and studies of smaller samples.¹³⁻²¹

Management of the persistent pain and painful foot dysfunction seen after exposure to falanga is based on clinical experience and there are no systematic studies addressing treatment and outcome of treatment after this particular form of torture.

An increased knowledge about the lesions caused by falanga and development of evidence-based examination methods will not only contribute to a more reliable diag-

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nosis and improved treatment, but also be an important tool in the medico-legal documentation of torture.

The aim of this article is to present an overview of the literature on falanga, mainly focusing on the clinical aspects and to highlight possible lesions caused by this specific form of torture that may influence the overall management of the condition. Finally, the article will close with a call for future research, which is needed in order to advance a knowledge-based development of the applied clinical practice.

The clinical picture

Clinical presentation

Based on clinical experience and reporting from observational studies, persistent pain in the feet and painful foot dysfunction are described as being cardinal symptoms in the chronic phase.^{1,5,6,9,22-28} Two types of pain are usually described: 1) a deep, dull cramping pain in the feet, which intensifies with weight bearing and muscle activity spreading up the lower legs, and 2) a superficial burning, stinging pain in the soles, often accompanied by sensory disturbances.^{1,5,9,22,25} Reported walking difficulties include alterations in gait pattern, reduced stride and walking speed and pain-related short walking distance.^{1,5,6,9,22,23,25-27}

Supporting these clinical observations, a study which includes monitoring data on 232 torture victims interviewed on average 8.4 years after exposure to torture, found that the strongest predictor of pain in the feet was reporting of systematic, general abuse of the whole body and beating of the lower extremities.²⁹ Although beating of the soles was not specifically explicated in the monitoring system, the authors concluded that there seems to be a strong association between exposure to falanga and long-lasting pain in the feet. 139 of the torture victims

from the baseline study were included in a ten-year follow-up study and re-interviewed.³⁰ It was shown that pain reported at follow-up was strongly associated with pain reported at baseline as well as locus-specific torture, and that the prevalence of pain increased considerably during the ten-year follow-up period – 63.3% reporting pain in the feet at follow-up versus 23.7% at baseline. Pain intensity at follow-up was high – on average 7.2 on a 10 cm visual analogue scale (VAS) – and almost half (47.5%) reported pain in the feet at least three to seven days a week. The study also indicated a “dose-response” relationship, as the mere amount of exposure to torture (number of applied torture methods) was a positive predictor of pain in the feet. No clinical examination was included in the study.

Clinical findings

At clinical examination reduced elasticity in the foot pads, various skin changes, soreness and coating of the plantar fascia (aponeurosis), sensory disturbances in the soles, foot dysfunction and myofascial changes in the lower extremities and abnormal gait were reported as being characteristic although not pathognomonic. These findings, however, are based on reporting from smaller observational studies including highly selected study populations.^{5,7,10,15,23,25,31}

In one descriptive study from 1993⁷ which includes 30 torture victims alleging exposure to falanga, clinical assessment included examination of foot pads and the plantar fascia, testing of ligaments and joint mobility in the feet and lower legs, and gait analysis. Reduced elasticity in the heel pads was found in 17 persons, in the medial foot pads in 15, and in the lateral foot pads in 11. Clinical signs of aponeurosis were diagnosed in 22 persons. No characteristic changes in the gait pattern could be

demonstrated and in four of the included torture victims there were no pathological findings at clinical examination. The authors concluded that there is a high prevalence of pathological findings in torture victims alleging exposure to falanga, and that a correct clinical examination makes the diagnosis of falanga sequelae possible. They also stressed that a normal examination should not rule out the possibility of exposure to falanga.

In a more recent study published in 2008,⁵ 11 male torture victims reporting exposure to falanga and 11 age, sex, and ethnically matched controls without prior torture history were examined according to a standardised protocol.³² All torture victims reported pain in the feet and lower legs and several, but not all, had structural changes in the feet at clinical examination, contrasting findings in the control group. Reduced elasticity in the heel pads were found in 9/11, and soreness and coating of the plantar fascia in 6/11. All of the torture victims reported walking difficulties and in all a compensatory altered gait pattern was observed at clinical examination.

Theories explaining the persistent pain and foot dysfunction after falanga

Several theories about causative pathological changes in the soft tissues of the feet have been put forward, primarily based on clinical observations and studies including smaller study populations:

Reduced elasticity in the foot pads

Demonstration of reduced elasticity in the foot pads has been a hallmark in clinical diagnosing of exposure to falanga torture.^{7,9} The foot pads are situated under the weight bearing bony structures, where in particular the heel pads act as the first in a series of shock absorbers. The heel pad is normally a firm, elastic structure covering the calcaneus. It has

a complex internal architecture consisting of closely packed fat cells surrounded by septa of elastic connective tissue that also contain the vessel and nerve supply to the tissue.

After falanga the heel pad may appear flat and wide, with displacement of the tissues laterally during weight loading. At palpation, the elasticity in the heel pad is described as being reduced and the underlying bony structures easily felt through the tissues.

The pathophysiology of the reduced elasticity in the heel pad is thought to be tearing off the connective tissue septa, leading to deprivation of blood supply and secondary atrophy of fat cells. Once the architecture is destroyed it cannot be rebuilt, and the shock absorbing ability of the heel pad is lost. Similar findings are described involving the lateral and medial foot pads.⁹

Plantar heel pain is common in the general population and occurs in approximately 15% of all adults with foot problems.³³ Clinical evaluation of the elastic properties of the heel pad may be difficult,¹² and several conditions aside from atrophy of the heel pad fat may lead to plantar heel pain, including plantar fasciitis, calcaneal stress fracture and lesion or dysfunction of the tibial, plantar or calcaneal nerves.

Changes in the plantar fascia (aponeurosis)

The plantar fascia functions to maintain the medial longitudinal arch of the foot and assists in absorbing forces in the midtarsal joints. Abnormal biomechanical factors can influence the stress on the plantar fascia and plantar fasciitis is the most common cause of hindfoot pain in clinical practice.³⁴ The most prominent clinical feature is deep, aching plantar-medial heel pain and localised tenderness on palpation at the anteromedial aspect of the heel.

Changes in the plantar fascia after falanga are reported as a consequence of the repeated

direct traumas to this superficial structure. The fascia is described as thickened with an uneven coated surface on palpation, and tenderness that may be present throughout its entire length from origin to insertion. Disruption of the plantar fascia from its distal insertion has been reported based on the finding of increased passive dorsal flexion of the toes at clinical examination.^{7,9}

Closed compartment syndrome involving muscle compartments in the foot

A compartment syndrome is a condition in which increased pressure in a muscle compartment impedes blood flow and compromises the metabolic demands of the tissues within that space. In most instances the aetiology relates to a limiting noncompliant fascia surrounding the affected muscle compartment. Clinically, one can distinguish acute irreversible and chronic reversible types.

In the acute form a rapid increase in the intracompartmental pressure leads to ischemia that, untreated, may cause severe and permanent nerve and muscle damage. Classic clinical signs are tense swelling of the affected compartment and discoloration of the skin, pain on passive stretching of the involved muscle, and dysfunction of the nerves, which pass through the involved compartments.

Chronic recurrent or exertional compartment syndrome is a condition most commonly associated with overuse in well-conditioned athletes. Muscle volume increases with exercise, and a relatively noncompliant fascia may lead to abnormally increased compartmental pressure during muscle activity. It is clinically manifested by recurrent episodes of muscle cramping, tightness, and occasional weakness and numbness during exertion. Symptoms normally dissipate with a period of rest, generally in the order of minutes, but may be prolonged. The gold

standard for diagnosis is compartment pressure testing.³⁵

The existence of several closed muscle compartments in the foot have been documented by anatomical studies,³⁶ and it has been shown that crush injuries, forefoot and midfoot fractures, and calcaneal fractures are prone to the development of foot compartment syndromes.³⁷ Studies have also demonstrated a foot-leg communication between the calcaneal compartment, and the deep posterior compartment of the leg, and that a foot-injury alone may also cause a deep posterior compartment syndrome in the leg and vice versa.³⁸ Muscle contracture with claw-toe deformity is described to be the primary late sequela of a pronounced foot compartment syndrome, but the actual pressure that the muscles and nerves of the foot can tolerate is unknown.³⁶

A closed compartment syndrome involving muscle compartments of the foot has been suggested to contribute to the typical pain pattern and pain-related walking impairment seen after falanga.³ Muscle nociceptors are mechanosensitive and if tested with natural stimuli these receptors do not respond to everyday stimuli such as weak local pressure, contractions and stretch within the physiological range. However, it has been demonstrated that hypoxia can induce peripheral sensitization with a drop in receptor threshold and increase in suprathreshold responses.³⁹ Peripheral sensitization could therefore explain pain and soreness that persist after muscle effort in hypoxic conditions and are increased or evoked by movement. A long lasting abnormal input from muscle nociceptors could also lead to changes of dorsal horn neurons and contribute to pain amplification via central sensitization.

Peripheral nerve lesion and neuropathic pain
Neuropathic pain implies pathology of the

somatosensory system, either in its peripheral elements (peripheral neuropathic pain) or in the CNS (central neuropathic pain). Clinically, no single symptom is diagnostic for peripheral neuropathic pain, but typical complaints are stinging, burning, aching pain, often perceived as worse at night; numbness or loss of sensation of the involved area, associated with hypersensitivity and/or allodynia.

Evidence supporting the theory of peripheral nerve lesion and neuropathic pain caused by falanga is now emerging in the literature.^{5,6,10,15,40} In the study by Prip et al. published in 2008,⁵ sensory dysfunction involving more sensory modalities were found in the majority of the examined feet, indicative of peripheral nerve lesions including large sensory fibres and/or small fibres. The authors concluded that clear signs of a neuropathic pain component were present in 10 of 11 torture victims and that sensory findings indicated two neuropathic pain mechanisms: One dominated by a peripheral pain generator and another by irritative phenomena indicative of central sensitization. Pain in most of the feet was reported to be stimulus-dependent – evoked by mechanical stimuli as in walking – and physical measures designed to minimize the mechanical load of the soles were therefore recommended as a target for intervention.

Overload and strain

The foot is a complex structure made of several small bones with capsular and ligamentous constraints. Many movements of the foot and toes are controlled by muscles that originate from the lower leg and whose tendons are attached to the foot, whereas muscles that have both their origin and insertion in the foot itself control more precise movements. Changes in the anatomical structure of the foot and/or impaired func-

tion of the foot may lead to alterations in the biomechanical work pattern of the entire lower leg and subsequent to overload injuries, e.g. development of myofascial trigger points and musculo-tendinous inflammation, also in more remote areas. Pain arising from activation of nociceptors in these tissues may therefore contribute to the overall pain condition.

Diagnostic imaging

The use of imaging in substantiating the clinical diagnosis and documentation of falanga is not yet clarified as larger systematic studies are lacking. At present the available knowledge is mainly based on casuistic reports and studies of smaller samples.

Conventional x-ray

Fractures after falanga torture are relatively seldom. In one study, only five persons out of 59 reported fractures of the feet due to falanga. Only four had an x-ray taken and the location of the fractures were not described.⁶ In a study of 11 Greek falanga victims with walking difficulties, eight had x-rays and abnormalities were found in only two. One had an enchondroma, measuring 15 × 18 mm lateral and plantar to the fourth metatarsophalangeal joint. In another person the radiography showed a small, periosteal calcification medially and proximally on the plantar aspect of the metatarsophalangeal joint.³ On a casuistic basis, fractures have been reported in calcaneus, distal phalangeal, metatarsal and tarsal bone.^{6,16,31,41}

Bone scintigraphy

Bone scintigraphy is a sensitive, but unspecific indicator of bone pathology and may reveal signs of bone trauma overlooked by conventional x-rays and other imaging modalities. Increased activity at bone

scintigraphy in the feet and lower legs with normal findings in conventional x-rays, computerised tomography and magnetic resonance imaging has been reported after falanga.^{13,17,18,21}

Magnetic resonance imaging

MR imaging is superior in revealing soft tissue pathology. In one MRI study comparing torture victims (n=12) exposed to falanga with healthy volunteers (n=5), significant thickening of the plantar fascia was found in all the victims.²⁰ Apart from this, morphological changes were present. Two layers of the fascia were demonstrated: a deep, thin portion with a normal homogeneous appearance and a superficial thicker portion with an inhomogeneous appearance, possibly representing scar tissue formation. No signs of closed compartment syndrome or visible changes in the heel pads were shown in this study.

Ultrasonography

In one pilot study 11 male torture victims exposed to falanga and presenting with chronic symptoms were examined and compared to six healthy male volunteers (hospital staff).¹⁴ Sagittal sonograms were obtained of the plantar aspect of the foot, and the thickness of the plantar fascia was measured in the midfoot, halfway between the proximal calcaneal origin and the distal insertion on the phalanges. The morphology of the entire fascia was recorded. Analogous to MR imaging ultrasonography showed morphological changes with a layered plantar fascia in all torture victims as compared to controls. In this small material a non-significant ($p < 0.15$) difference was found as concerning the thickness of the plantar fascia (median: 0.184 cm in torture victims versus 0.169 cm in controls). No signs of detachment of the distal insertion of

the fascia were found at dynamic examination (passive dorsal flexion of the toes). The authors concluded that ultrasonography, which is a readily performed and well-tolerated examination method, may prove useful in future studies of the sequelae after falanga and in connection with medico-legal assessment of torture.

Management of the long-term sequelae after falanga

Management of the persistent pain and pain-related disability seen after exposure to falanga is based on clinical experience and contributions from other specialities, e.g. sports medicine and orthopaedics. As of today, there are no systematic studies addressing treatment and outcome of treatment after this specific form of torture.

Various forms of physiotherapy, including manual therapy, graded exercises and balance training based on an individual, systematic assessment and aiming at pain reduction, improved function and development of active coping skills has been recommended.^{1,9,22,27} Taping, stabilising bandages, shoe modification and shock absorbing foot orthoses are likewise recommended in order to improve gait and the level of ambulation.^{1,9}

No recommendations on pharmacological pain treatment has been put forward, but Transcutaneous Electrical Nervous Stimulation (TENS) and education in self management of pain based on a cognitive-behavioural approach have been suggested as an integral part of pain management.¹

In one study, conducted at a Danish rehabilitation centre, the aim of the study was to estimate the change in pain reporting (prevalence and level of pain in head, back and feet) at 9 and 23 months follow-up.⁴² 69 torture victims were included out of which 71% had been exposed to falanga. Of the 69

torture victims interviewed at baseline 84% received comprehensive, multidisciplinary treatment consisting of medical assistance, physiotherapy, psychotherapy, and social counselling. Despite intervention, no change in symptom prevalence or symptom level could be demonstrated – 59% reporting pain in the feet at baseline versus 67% at 9 months and 70% at 23 months follow-up. The authors concluded that persistent pain related to locus specific torture presents a considerable challenge to future evidence-based development of effective treatment programmes.

Future perspectives

– what do we need to know?

Seen from a clinical perspective, the treatment approach to the persistent pain and pain-related disability seen after falanga still lacks precise standardisation – reflecting an incomplete understanding of the underlying pathophysiological mechanisms, scarcity of validated examination methods and absence of outcome research.

Future research should therefore focus on:

- evaluation of key pain mechanisms including the possibility of a predominant neuropathic pain component and/or pain amplification due to peripheral and/or central sensitization
- evaluation of specific torture induced soft tissue lesions including the possibility of a chronic compartment syndrome involving foot muscle compartments and muscle compartments of the lower legs
- the validity and reliability of applied clinical test and overall diagnostic accuracy of clinical examination
- outcome of non-pharmacological treatment based on multidimensional outcome measures relevant to chronic pain populations
- efficacy of pharmacological pain treatment including analgesics used in the treatment of other neuropathic pain states (antidepressants and antiepileptics).

Further knowledge is needed in order to advance evidence based clinical guidelines and to improve treatment efficacy.

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Evaluating psychosocial group counselling with Afghan women: is this a useful intervention?

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Abstract

Data from 109 Afghan women participating in psychosocial counselling groups was analyzed to measure the groups' effects on their lives. Most participants were survivors of war-related forms of violence. Others had experienced domestic violence and some were still living under abusive circumstances while attending counselling. The evaluation took place in the group setting and each participant was asked to answer a standardized set of four open-ended questions. All answers were tabulated, coded and eventually put into themes to be analyzed. Over 90% of the participants described an improvement in their social life or their general health. This research shows that this model of psychosocial care is a useful intervention to assist Afghan women suffering from a variety of physical or emotional problems.

Keywords: psychosocial counselling, women in Afghanistan, psychological trauma, sexual violence, domestic violence

Introduction

In 1995 the United Nations Special Rapporteur on Torture recognized rape as a trau-

matic form of torture for the victim.^a Presently, sexual violence against women in war and conflict is regarded as a severe violation of human rights under international humanitarian law.¹ Perpetrators of torture focus not only on the physical and psychological aspects of their victims but also attack their economic, social and cultural worlds. Consequently, survivors often suffer from a variety of mental health problems.

Afghan women have been affected by nearly 30 years of war in their country and the subsequent destruction of their lives, families and communities.² Over these years they experienced political and military acts of violence that affected them deeply. Additional to the devastating effects of war, Afghan women have lived, and still live, in a volatile and patriarchal society that has made them targets of specific kinds of violence, namely domestic, social and sexual violence.³ These kinds of violence are used as tools of oppression and may include physical confinement, forced and child marriage, rape, torture, abduction and murder.⁴

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a) In certain countries, rape and other forms of sexual assault were reported to be common means of torture. In some instances, the gender of an individual constituted at least part of the very motive for torture itself, such as in those where women were raped allegedly for their participation in political and social activism.¹⁸

One of the many objectives of torture is to destroy the psychological and social integrity of the victim. In Afghanistan, women who have been raped or have experienced any form of sexual or sexualized violence suffer from extreme anxiety and shame. If the violation is known to others, they are also exposed to severe forms of stigmatization and are at risk of getting killed as they are perceived to have destroyed their families' and patrilineages' honour. Thus, perpetrators use sexual violence intentionally and as a weapon of war to affect not only the individual victim but also her family and community.^b

Participants of the evaluated psychosocial counselling groups typically suffer from a range of mental health conditions. These range from chronic headaches to self-mutilation and suicidal behaviour. Several studies point out the high level of mental health problems as presented by Afghan citizens^{5,6} but particular populations seem to present with higher levels of vulnerability. These include children⁷ internally displaced people and refugee populations.^{8,9}

Most Afghan women are still lacking basic health care services^c and very limited mental health services are only available in the major centres. An extremely small number of professionals are able to provide qualified psychosocial and mental health services.^d One of the few service delivery and training agencies currently operating in Afghanistan is *medica mondiale*.

Medica mondiale's activities in Afghanistan

Medica mondiale is an international non-governmental organization whose base of operation is located in Germany (www.medicamondiale.org). The organization was founded in 1992 and supports women and girls who have been sexually violated during war and civil conflict. It also provides services for women affected by other forms of gender-based violence in post-war and conflict zones.^e *medica mondiale* uses a holistic, multidisciplinary and women-centered approach. Direct services, training of professionals and political lobby and advocacy work for women's rights are characteristics of *medica mondiale's* strategies.

Medica mondiale initiated services for traumatized women and girls in Afghanistan in 2002. Today *medica mondiale's* Afghanistan program has a multidisciplinary team providing psychosocial counselling, medical and legal advice and support for beneficiaries, lobbies for women's rights and trains professional women. All of the program components are available in Kabul and some are provided in Mazar-e-Sharif, Herat and Kandahar. In 2004, group counselling services began in five districts of Kabul and to date about 350 women have participated in psychosocial counselling groups. Additionally, *medica mondiale* staff trained and is training educated and professional women as counsellors to facilitate individual and group counselling.

b) For further information related to the background of war rape and its consequences for women see¹⁹

c) Life expectancy rates for men and women are 41 and 44 years respectively. The national infant mortality ratio is 25.7%. It is higher in certain provinces. The maternal mortality rate is at 1,900 deaths in 100,000 live births, and overall the country's health conditions are among the worst in the world.²⁰

d) See e.g.^{8,21}

e) *medica mondiale* built and supports women's psychosocial and counselling and training centres in Bosnia and Herzegovina, Albania, Kosovo, Afghanistan, Liberia and DR Congo and supports small scale psychosocial projects for women affected by violence in Cambodia, East Timor, Iraq, Israel, Nepal, Mexico, Sierra Leone, South Africa, Turkey and Uganda.

Psychosocial care

The term psychosocial care entails a range of psychological and social services that support individuals and communities in need of mental health services. This includes any intervention from supporting a person in need of counselling to teaching specific skills to finding employment. In the general field of psychology this may entail stabilizing a person in crisis, offering counselling, connecting someone with family members, educating and giving information on specific psychological or neurologically based personal reactions, explaining behaviours of specific groups of people and sharing information on different forms of psychological help. Social interventions are supports that help people deal with the social part of their lives. These include any service that helps connect people as families, communities, neighbourhoods and other groups. Ideally, psychosocial interventions reflect cultural definitions and understanding of illness and well-being and include help and guidance required to deal with social structures such as education and health systems, official bureaucracies, legal and paralegal aid, housing and sanitation as well as learning about how to be mentally healthy in one's environment. Conversely, psychosocial mental health care does not include psychotherapeutic or psychiatric interventions.

Although various models of psychosocial care^f exist, this article focuses on particular forms of group-based psychosocial counselling for women with mental health problems in Afghanistan.

Psychosocial counselling groups for Afghan women

It is difficult to assess the intensity or prevalence of psychological stress affecting various populations of Afghan women, for no regularized means have been developed for

making such assessments directly. Intensity and prevalence have instead been chiefly inferred from the more easily observable level of stressful individual, social, economic, political and militarily generated changes wrought by thirty years of conflict and war. This being said, the Afghan women participating in these medica mondiale led psychosocial groups suffer primarily from a specific range of psychosomatic or behavioural symptoms. For example, some women have attempted suicide or performed acts of self-mutilation; others have chronic physical complaints or are anxious and depressed. The group participants report having experienced, and sometimes still experiencing, violent events caused by war and fighting or through individual acts of violence. The latter may be political or personal and is usually some form of domestic violence perpetrated by family members and husbands.

Psychosocial counselling may help such survivors better deal with the physical and psychological symptoms they developed after a traumatic event or a series of events has occurred. The literature shows the usefulness of psychosocial group interventions for individuals with particular mental health problems. It has been used to good effect in certain cultural settings¹⁰ and is reported as being particularly helpful when working with women and children who have experienced

f) Broadly speaking these include psychological debriefing, psychological education, psychological screening and psychosocial counselling. Commonly used debriefing methods are either short forms of basic counselling interventions or Critical Incident Stress Debriefing (CISD). However, new studies suggest that CISD may not be very helpful for individuals who have experienced traumatic events and that this form of debriefing may instead reinforce fragments of these experiences as disturbing memories in the brain. (See^{22,15} on a critical discussion about the usefulness of CISD.)

various forms of violence.¹¹⁻¹³ Psychosocial group counselling offers a treatment alternative to typical one-to-one counselling.¹⁴

Medica mondiale in Afghanistan has developed a particular counselling model called Basic Counselling Training (BCT)^g that applies to working with individuals and with groups. The intent of the use of this model is not to diagnose or offer psychotherapeutic help. Instead, it emphasizes psychosocial interventions and empowerment strategies. The BCT model utilizes four key strategies that are integrated in the group counselling process: psycho-education to help women understand their reactions and behaviours, removal or relief from distressing symptoms, teaching of new social skills (for example problem solving skills) and development of new support networks with counselling group members.

Women joined these groups primarily as a result of hearing through word of mouth that this service was available in their districts. Sometimes her family members or a neighbour made the initial contact with the group counsellor. In other cases, local and international organizations, hospitals and “graduates” from the first round of groups made sure a woman in need met the coun-

sellor assigned to her district. After an initial talk with the counsellor, women were asked to participate in one-to-one counselling sessions or in psychosocial counselling groups or else were referred to other services.^h

In Afghanistan, whole communities were destroyed or fragmented through war and exile and it is useful to develop community based forms of healing beyond individual or family support.¹⁵ The BCT model gives participants a chance to reconnect, to share and re-establish new community ties with other women.

Traditionally, Afghan women’s contacts are limited to their immediate birth families and, once they are married, also to the women of their in-law families and their husbands. Depending on a woman’s marriage arrangementsⁱ and on the level of acceptance by her new family, she will feel she is supported and develop a sense of trust. If she does not receive this support she may feel isolated and lonely and this sense of isolation is exasperated by her experiences of war and as a refugee or IDP. Particularly, widows suffer from social isolation and stigma and are economically dependent on their in-laws.^j Many women may feel alone with her

g) The Basic Counselling Training Model was developed by S. Manneschmidt²³ and can be accessed through contacting K. Griese.

h) The first contact with the client usually entails a talk with the group counsellor. This is much more a talk than a typical clinical interview and takes place as much as possible in a private and confidential manner. At this stage, the counsellor decides with the woman if she wants to participate immediately in the counselling group or if she first attends individual sessions. If the woman needs help with medical or legal problems in addition to the psychosocial support, the counsellor will refer her to other services.

i) Important factors affecting a woman’s status in her in-law family are the perceived influence and importance of her family of origin, the value attached to her bride price, the level of respect and authority between the two joining extended families, the acceptance of this particular marital union by bride and groom and the physical distance of the in-laws residence to the bride’s family or community.

j) Many participants in the counselling groups are widows. Their material and economic situation is usually very bad and they depend on hand-outs from relatives, neighbours or international aid organizations. Many experience violence by their in-laws or outside their homes. The program benefits from a good cooperation with CARE another humanitarian organization – to support widows through food distribution and skills building programs.

problems and have often lost perspective of their situation. They feel overwhelmed by their problems, are mistrusting and often have lost empathy for others. Very similar emotions are typically stated by women who have experienced and are still experiencing domestic violence.^{16,17}

The counselling program had the following objectives: to have group participants learn to break through their isolation, to support the women developing new ties and networks, to facilitate sharing experiences and feelings and to show how they can help each other to access resources and support systems. They also learn to listen to each other and by doing so eventually reach out to people outside their group. In Afghanistan where women have traditionally learned only to trust members of their birth families, where they often have no support and experience direct violence through their in-laws and husbands, building trust with women they are not related to is a huge step toward their own healing.

Research methodology

This evaluation focuses on 12 counselling groups with 137 participants meeting from January 2006 to May 2007 in five mm district centres of Kabul.^k 109 women took part in an evaluation that was set up for each individual group at the end of the group sessions. While groups were active, participants met weekly for two to three hours. On average groups met for eight and a half months. Each group varied in size but was limited to

a maximum number of 13 participants. As of December 2007, a total of approximately 350 women had participated in the counselling groups but this assessment focuses only on the evaluations conducted with the groups mentioned above.

For the purpose of this study, the evaluation took place after group participants and its counsellors had decided to end the group meetings with which a given individual was involved. The evaluation was done in a group setting with all participants present. Each participant was asked to answer a standardized set of four open-ended questions. The questions were formulated to be as simple as possible and were intended to find out for what reasons the women joined the groups, what they had learned in the groups, if changes had occurred in their lives since they joined the groups and what they wanted to do after leaving the groups.

Each evaluation took approximately two hours. The evaluation took place in the groups' meeting places in the district centres and was conducted by a PSP team member^l in the absence of the groups' counsellors. The first round of evaluations was conducted by the PSP international program manager with the help of the national PSP coordinator who translated. After receiving training on conducting the evaluation, this staff member took over the task to evaluate the groups and followed the same standardized evaluation procedure.

The information given by the participants was immediately recorded in English

k) Group participants ranged from 16 years to over 60 years of age. There were some older women but they did not know their age and could not give reference points to the year they were born in. The majority of the women were illiterate and only a small number (approximately 5% of all participants) had some form of formal education.

Many women were widowed and had no employment.

l) PSP stands for Psychosocial Program and is one of departments of medica mondiale in Afghanistan.

on evaluation forms during the evaluating process. Later this information was tabulated, coded and eventually put into themes to be analyzed. This was done by us at medica mondiale's headquarter office in Cologne, Germany.

It is important to mention that medica mondiale's group counselling interventions did not usually take place promptly after a woman's exposure to a traumatic event. Rather, the event or events in question typically had taken place many years previously, and typically also, no help was given at the time. When such women joined a medica mondiale group they were then usually suffering from disabling or incapacitating symptoms. Therefore, the assumption can be made that these women's initial reactions to what had happened to them exceeded their ability to cope with the event in a manner that they or their families regarded as normal reactions. They were not able to reconstitute or heal spontaneously or in a sufficient manner using available resources and supports. Although some of the participants suffered from serious mental health problems, the group counselling interventions avoided the use of diagnostic criteria and concentrated on specific and directive techniques grounded in behavioural-cognitive and socially oriented approaches.^m

m) According to Salomon²⁴ psychosocial interventions are directed to prevent long-term consequences in victims who display early symptoms of stress and/or behavioural dysfunction following exposure to a traumatic event. Potential interventions include participation in self-help groups for individuals with common problems. These interventions do not include formal treatment procedures for PTSD such as behavioural flooding techniques or pharmacotherapy.

Summary of participants' responses

The first question asked was about the purpose of the group. The majority of answers focused on the hope of finding relief of physical and psychological symptoms. 28.5% of answers mentioned general or specific pain, trembling, feeling paralyzed, shortness of breath and numbness. Another 24.1% of answers described frustration, depression, nervousness, being extremely worried, anxiety, aggression, self-mutilation and fear of going "crazy".

Other answers mentioned the importance of sharing feelings and thoughts (15.8%) and the need to discuss family problems and conflicts in a safe environment

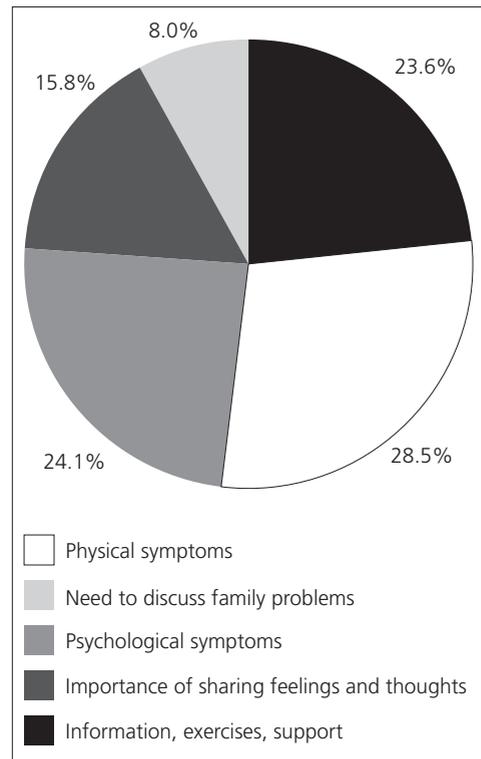


Figure 1. Can you describe the purpose of the group?

(8%). Fewer answers were about the participants' wish to receive information on mental health, to learn specific exercises and to receive social support (23.6%) (Figure 1).

The second question asked the participants to say what they learned in the groups. 46% of the answers focused on the learning of social skills related to improved communication and changes in mood and behaviour. 27% of the answers described new problem solving skills and another 27% of the answers mentioned the exercises they learned in the group sessions (Figure 2).

The third question asked if anything changed in the life of the participants since they joined the groups. More than half of

all answers (55%) described the positive effects on their social life. Some participants mention that the interactions with their family members have become better; others mention that they have learned to deal better with stress, make decisions more easily and feel less shy. 35.7% of answers focussed on the improvement of participants' general health. They say their mood has changed and they are happier and they experienced a reduction or disappearance of some of their problems. However, 3.3% of the answers indicated that these women had not solved any of their problems (Figure 3).

The fourth and last question asked about the steps the participants wanted to take in

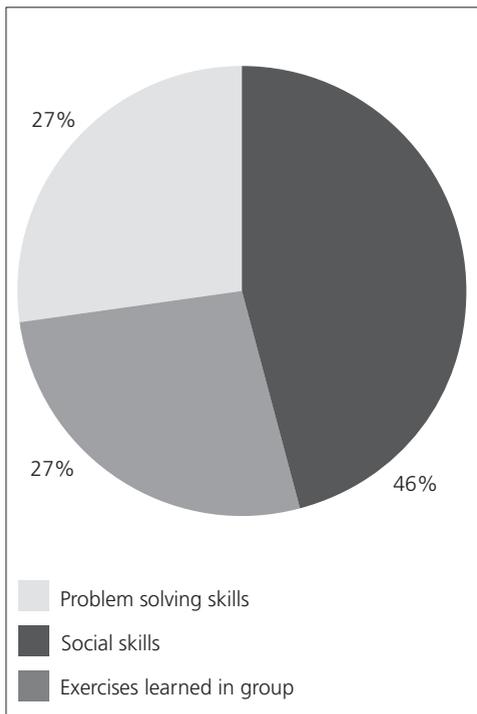


Figure 2. Can you describe what you learned in the group?

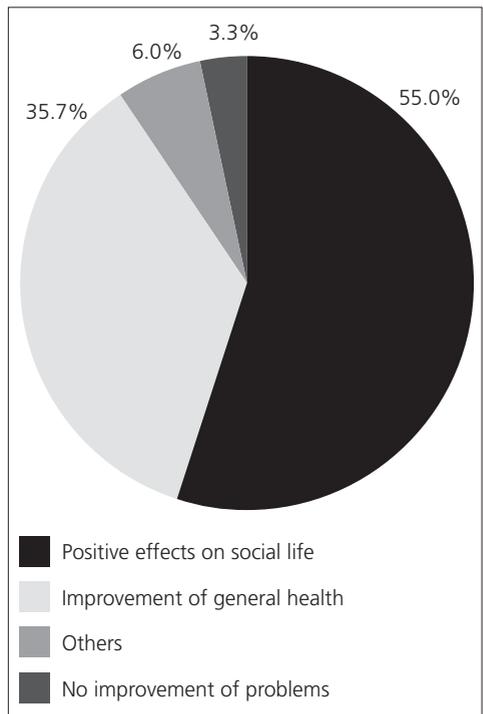


Figure 3. Did anything change in your life since you joined the group?

the future to make their lives better. Half of the answers (50.9%) related to the women's wishes to find employment. Many wanted to find work together with the other group members. 30% of answers mentioned the importance of taking care of one's own well-being. Possibly, some said this because they wanted to keep on sharing feelings with a friend and others mentioned they are now coping better with stress. A smaller number of answers described the wish to take care of others in a better way (9.1%) and a minority said that they wanted a formal education (3.6%). 2.8% of answers reflected that the participants had no future plans and 3.6%

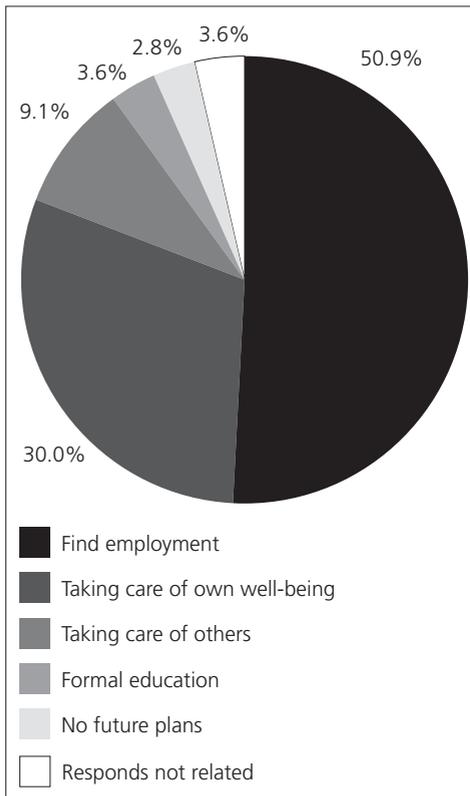


Figure 4. What steps do you want to take in the future to make your life better?

responses did not relate to the question asked (Figure 4).

The evaluation outcomes clearly present the benefits the women felt they gained from being in the counselling groups. The women reported improvement of somatic and emotional complaints. Some women described physical dysfunction and actual injury caused by the violence they had experienced. Others expressed their suffering in somatic terms focusing on specific pain or generalized aches. In Afghan culture physical complaints are an acceptable way for women to express suffering and sometimes this is strategically used to allow for time away or to negotiate certain rights or benefits.

Additionally, women improved their social skills which they related to being connected with others who listened and supported them. This development of a sense of belonging led to strong group cohesion. In the context of Afghanistan, this is a remarkable achievement as women are usually taught not to trust other women outside of kin affiliations. And as many have also experienced violence and abuse through inlaw family members it is especially astounding that the participants established a high level of trust and solidarity with each other.

Conclusion

The evaluation of a particular model of psychosocial group counselling proved to be useful and relevant for participants, Afghan women who had experienced forms of war-related and domestic violence. The group process presents a different approach regarding the possibility and validity of group evaluations. It followed a threefold strategy: 1) to give information about mental health and explain particular physical and psychological symptoms in relation to mental health problems, 2) to teach specific techniques to

achieve relief or removal of distressing or disabling symptoms and 3) to help establish support and friendship ties among group members.

The women learned in the group to express and verbalize their complaints and ways to share their problems with others in an appropriate manner. The group process emphasized listening skills and giving each participant a chance to speak. The format of the group sessions was ritualized and it was repeated in the same manner in each group session. This taught the women to be patient and to take time to listen to other's problems. They were able to give their opinions and share their experiences and these were validated. This process was a new experience for most participants, particularly those whose lives are marginalized due to widowhood, poverty, lack of education and victimization through domestic violence.

The participants were taught specific techniques on how to deal with their complaints and problems through physical or psychological exercises. These proved to be extremely helpful to relieve stress and pain. Learning and practicing these exercises gave the participants newly acquired expertise and many used this new knowledge to teach their children or other neighbourhood women. Thus, the group process became a tool of empowerment that built on group interaction and support of peers rather than staying focused on counsellor-client interaction. It emphasized group strength rather than individual learning. After the termination of the groups, participants still wanted to meet and decided to start with a literacy program that allows them to continue being together in their groups and, additionally, teaches them new skills.

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An evaluation of the mental status of rejected asylum seekers in two Danish asylum centers

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Abstract

Introduction: International studies have shown high incidences of symptoms regarding anxiety, depression, and post traumatic stress disorder (PTSD) among asylum seekers of different ethnicities. The aim of the present study was to investigate the presence of symptoms of anxiety, depression, and PTSD among rejected Iraqi asylum seekers in two Danish Red Cross asylum centers. Factors such as the length of stay in an asylum center and the number of traumatic events were considered as risk factors associated with the degree of psychological morbidity.

Method: In 2007, 53 rejected Iraqi asylum seekers from two Danish Red Cross centers completed a survey based on the Harvard Trauma Questionnaire-IV (HTQ) and the Hopkins Symptom Checklist 25 (HSCL-25). The response rate was 36%. The analyses focused on the impact of gender, age, marriage, religion, the length of stay at the asylum center, and the number of traumatic events on the severity of symptoms of anxiety, depression, and PTSD.

Findings: Of all participants, 94% were found to have symptoms of anxiety, 100% had symptoms of depression, and 77% had symptoms of PTSD.

The participants had experienced or witnessed an average of 8.5 traumatic events before their arrival in Denmark. There was no significant association between the number of traumatic events, and the symptoms of PTSD. In addition, there was no significant difference in the length of stay and symptoms of anxiety, depression, and PTSD despite the fact that 79% of the participants had stayed in an asylum center for 5-10 years or more.

Conclusion: Despite the limitations of the data, such as the small sample, this study showed that the prevalence rates of psychopathology in Iraqi asylum seekers in Denmark were alarmingly high. Therefore, it is recommended that systematic screening of all detained asylum seekers in Denmark is introduced. Given the degree of mental health problems it is also recommended that procedures be changed and that treatment should be offered to asylum seekers who are detained in Danish asylum centers.

Keywords: rejected asylum seekers, mental health, trauma events, length of stay, posttraumatic stress disorder

Introduction

March 20th, 2003 saw the suspension of the processing of Danish asylum cases and the expulsion of Iraqi nationals from Denmark as a result of the international coalition force intervening in Iraq. However, this was short lived and after only six months the processing of asylum cases was resumed. Recently, there has been renewed interest in the Dan-

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ish media regarding issues concerning both asylum seekers conditions and asylum seekers general health while resident in Danish asylum centers. A large number of rejected Iraqi asylum seekers must now return home, although Denmark is still part of the coalition force in Iraq. The majority of these Iraqi asylum seekers have been living in Danish Red Cross centers for several years. The return of such Iraqi asylum seekers may be partly attributed to the Danish media highlighting issues regarding the deterioration of the mental health of asylum seekers while resident in asylum centers.

The number of rejected asylum seekers

The restrictive refugee policy in Denmark has recently contributed to a marked reduction in the overall number of asylum seekers. In 2007 the total number of applications submitted for asylum in Denmark was 2,246. Of these, approximately 50% (1,069) were of Iraqi nationality.¹ In 2007, according to the Danish Immigration Service, 458 Iraqi adults were located in Danish Red Cross centers; this corresponds to approximately a fourth of the total number of asylum seekers staying in Danish asylum centers.² The number of asylum seekers waiting for expulsion in 2007 was 749, of which 409 (55%) were Iraqi nationals.³

Background

Most of the Iraqi asylum seekers in Denmark originate from an environment which is characterized by uncertainty, fear, and general instability. They have fled their country or have been smuggled illegally into Denmark. Many of them have experienced and/or witnessed abuse, torture, and death. Due to the traumatic events Iraqi asylum seekers have been exposed to prior to their arrival many who arrive in Denmark may already be at great risk of developing a mental

health disorder such as anxiety, depression, or PTSD. It is also important to note that not all of the rejected asylum seekers coming from Iraq have been exposed to warfare. The invasion began in 2003, so asylum seekers accepted into Danish asylum centers prior to 2003 may not have experienced active war or battle, but may have been victims of political oppression. Living in an asylum center, with the prospect of having to wait several years for a final decision, may cause a great deal of stress and mental strain. A report from the Danish Immigration Service showed that the length of stay in Danish Red Cross centers increased on average from 313 days to 927 days from 2001 to mid 2005, therefore an increase of 196% in four and a half years.⁴

In recent years, international studies have documented frequent cases of mental disorders among asylum seekers placed in asylum centers, in particular cases of anxiety, depression, and PTSD.⁵⁻¹⁸ Silove et al. found that among 38 asylum seekers from 21 different countries, 79% reported exposure to a traumatic event. Of the 30 people with a traumatic history, 37% met the DSM-IV diagnostic criteria for PTSD.¹²

Likewise a number of studies and a recently published Danish study⁷ showed that both the placement and the length of stay at an asylum center have an effect on the development of mental disorders such as anxiety, depression, and PTSD among asylum seekers.²⁰⁻²²

Aims of the study

The aim of the present study was to investigate the prevalence of symptoms with regards to anxiety, depression, PTSD, and trauma exposure in rejected Iraqi asylum seekers in Denmark. Gender, religion, and length of stay in an asylum center were all considered factors that might influence

symptoms of anxiety, depression, and PTSD. We hypothesized that the number of traumatic events and the length of stay in an asylum center would be associated with the severity of anxiety, depression, and PTSD. In addition, we expected female gender to be associated with a higher level of PTSD.

Method

Procedure and sample

Data collection took place in 2007 at the arrival and departure areas of two Danish asylum centers in Avnstrup and Sandholm. An Arab interpreter from the Danish Red Cross conveyed information directly to the participants regarding their participation in the study and assisted by translating questions and answers about the study. Participants also received a one page written information sheet in Arabic. Furthermore, the participants signed an informed consent to participate in the study. A total of 146 questionnaires written in Arabic were distributed to refugees. Questionnaires were made available on two occasions, which coincided with the distribution of pocket money in the asylum center. Overall 401 adult Iraqis were resident in the two asylum centers. Of 146 participants 53 (36%) participated in the survey. The response rate of 36% is similar to the response rates for these types of studies.¹²

Participation was anonymous and any desire to terminate the study was respected with participants being informed that they were free to withdraw from the study at any point. Participants were made aware that participation would not have any impact on their asylum status nor on the outcome of their asylum procedure should their case be reopened. The study was approved by the Danish Dat a Protection Agency (#2007-41-0099).

To be included in the study participants

had to be of Iraqi origin, Arabic or English speaking, more than 18 years of age, and having been rejected for asylum in Denmark. A rejected asylum seeker is defined as a foreign national who has received a final rejection of their application for residence, and is currently in an expulsion position (waiting to be returned to their home country). We chose to study rejected Iraqi asylum seekers because they are highly representative of the inhabitants in the Danish asylum centers and have resided in the asylum detention system for the longest period of time.

Measures

The first part of The Hopkins Symptom Checklist – 25 (HSCL) contains 10 anxiety items and 15 depression items. All items have a Likert scale with four categories (“Not at all,” “A little,” “Quite a bit,” “Extremely,”) ranging from 1 to 4. A total score is calculated by adding all 25 items. An average score of >1.75 for anxiety and/or depression and/or the total score of all 25 symptoms determines the diagnosis and has been validated both in outpatients²³ and refugee populations.²⁴ The total score for anxiety and depression has been shown to correlate highly with both severe emotional distress in terms of anxiety and severe depression as defined in the American Psychiatric Diagnostic System, DSM-IV.²³

The first part of The Harvard Trauma Questionnaire (HTQ) consists of 17 questions regarding prior traumatic life events. Each question has four possible answers (“Experienced,” “Witnessed,” “Heard about it,” or “No”). The second part is a subjective description of the most traumatic event ever experienced. The third part examines events regarding head trauma. The fourth and final part contains 30 questions about trauma symptoms. The first 16 questions correspond to DSM-IV’s three core symptoms regarding

posttraumatic stress disorder (PTSD): re-experiencing (4 items), avoidance (7 items) and arousal (5 items). The Harvard Program in Refugee Trauma developed the remaining 14 questions to describe trauma symptoms particularly related to being an asylum seeker. Each question in part four is associated with a Likert scale divided into four categories (“Not at all”, “A little”, “Quite a bit”, “Extremely”), ranking from 1 to 4. The cut-off score used in most scientific articles is 75, equivalent to an average score of 2.5 as the cut-off score for the diagnosis of PTSD.^{25,26} This analysis is based only on data from the first and the fourth part of the HTQ.

Statistical analysis

Mann-Whitney U non-parametric tests were calculated to examine differences in the socio-demographic variables and the average score of anxiety, depression, and PTSD. In order to examine the association between two non-parametric variables a Spearman's rank correlation was calculated. $p < 0.05$ was considered statistically significant for all analyses. Data was entered and processed with the assistance of the Statistical Package for the Social Sciences, SPSS 15.0.

Results

Characteristics of the study population

The sample consisted of 53 (34= 64% male) rejected Iraqi asylum seekers from the age of 18 to 65 years or above (Table 1). Of all participants, 34 (64%) were between 18 and 44 years old with 31 (62%) being married, the remaining 22 (38%) participants were either divorced or never married. Half of the participants were Sunni Muslims, and one fourth were Christian. Thirty of the rejected asylum seekers (58%) were of average socio-economic status in their home country before seeking asylum in Denmark. At the time

of the study, the vast majority of the asylum seekers (41 = 79%) had been resident in a Danish asylum center for 5 to 10 years or more.

Anxiety and depression symptoms

All 53 participants completed the HSCL-25. The average score for anxiety was 3.12 (SD = 0.77) and 3.14 for depression (SD = 0.58). The overall average score for both anxiety and depression was 3.14 (SD = 0.61) showing that all three scores were above the recommended cut-off score of 1.75 and therefore considered symptomatic. In regards to anxiety, 50 participants (94%) had a greater score than the cut-off score of 1.75 and all participants (100%) had a greater score than the cut-off score of 1.75 on the depression scale. Hence, according to these results only three participants had no clinical symptoms of anxiety, whereas all 53 participants had symptoms of depression. It

Table 1. Socio-demographic characteristics of the rejected Iraqi asylum seekers (n = 53)

		n	%
Home Country	Iraq	53	100
Gender	Male	34	64.1
Age	18-24 years	9	16.9
	25-34 years	12	22.6
	35-44 years	13	24.5
	45-64 years	16	30.1
	Above 65	3	5.6
Marital status*	Married	31	62
	Unmarried	19	38
Religion	Shi'it Muslim	8	15.0
	Sunni Muslim	27	50.9
	Christian	13	24.5
	Other	5	9.4
Economic status in home country**	Low	11	21.1
	Average	30	57.6
	High	11	21.1
Length of stay	<5 years	11	21.1
	5-10 years	41	77.3
	>10 years	1	1.8

*) Three answers missing.

**) One answer missing.

was not possible to calculate the odds ratios for the risk of anxiety and depression with regard to gender and length of stay since half of the observations on anxiety had expected scores of less than five and the number of cases of depression was constant.

Looking at the overall average score for both anxiety and depression based on all 25 symptoms and the difference in the socio-demographic characteristics, only religion yielded a significant difference. The Muslim participants had a higher average score on symptoms of both anxiety and depression compared to the Christian participants (Mann-Whitney $U(z = -2.54 p < 0.01)$).

Trauma and PTSD symptoms

The average score of the 30 symptoms of post-traumatic stress disorder (PTSD) was 3.00 (SD = 0.65). The total score was above the cut-off score of 2.5 and was considered symptomatic. In total, 41 participants (77%)

had an average score above 2.5. Of the 41 people with symptoms of PTSD, 25 (61%) were men and 16 (39%) were women. The risk, however, associated with having symptoms of PTSD were higher for women than for men; 84% of the women and 73.5% of the men reached the cut-off score. There were no significant associations between the total HTQ score symptoms and the socio-demographic characteristics.

Trauma events

The majority of asylum seekers 38 (71.7%) had experienced or witnessed illness without access to medical care (Table 2). More than 50% of the participants had experienced or witnessed: Shortages of food or water, combat situations, forced isolation, being close to death, forced separation from their family, murder of a family member or friend, unnatural death of a family member or friend, and murders of strangers. The number of participants who had witnessed or experienced rape or sexual abuse was the lowest reported (12 = 23%). This is probably due to the fact that the response rate for this event, together with brainwashing, was the lowest of all the trauma events. Other studies have previously described similar findings in the field.²⁵

The number of traumatic events that the participants had either witnessed or experienced ranged from zero to 17. On average, each participant had witnessed or experienced more than eight traumatic events ($M = 8.52$, $SD = 4.58$). Of all participants 23 (43%) had witnessed or experienced between zero and seven traumatic events, 30 (57%) had witnessed or experienced eight or more traumatic events. Although the participants who had witnessed or experienced between eight and 17 traumatic events had a higher average score on PTSD symptoms than the group of those who had witnessed or experienced fewer than eight traumatic

Table 2. *Harvard Trauma Questionnaire – Part I. The frequency of trauma events witnessed or experienced by asylum seekers (n = 53).*

Witnessed or experienced events	n (%)
1. Lack of food or water	34 (64.2)
2. Ill no access to medical care	38 (71.7)
3. Lack of shelter	26 (49.1)
4. Imprisonment	18 (34)
5. Serious injury	22 (41.5)
6. Combat situation	31 (58.5)
7. Brainwashing	12 (22.6)
8. Rape or sexual abuse	12 (22.6)
9. Forced isolation from others	27 (50.9)
10. Being close to death	34 (64.2)
11. Forced separation from family	32 (60.4)
12. Murder of family or friend	32 (60.4)
13. Unnatural death of family or friend	36 (67.9)
14. Murder of stranger or strangers	28 (52.8)
15. Lost or kidnapped	26 (41.9)
16. Torture	22 (41.5)
17. Other frightening situation or felt your life was in danger	21 (39.6)

events, the difference was not statistically significant. Also, there was no significant association between the number of traumatic events and having symptoms of PTSD. In other words, the PTSD prevalence did not increase with the number of traumatic events witnessed or experienced.

Length of asylum stay

Forty-two of the participants (79%) had stayed at an asylum center 5 to 10 years or more. Out of 41 participants with symptoms of PTSD, 33 (75%) had been resident in a Danish asylum center for 5 to 10 years or longer. However, there was no statistically significant association between the length of stay and symptoms of anxiety, ($z = -0.52$ $p < 0.60$) depression ($z = -1.59$ $p < 0.11$) and PTSD ($z = -1.09$ $p < 0.27$) (Mann-Whitney U).

Discussion

A number of studies have focused on asylum seekers' mental health while resident in asylum centers. This study is one of the first to focus on rejected asylum seekers. The study showed high prevalence rates for symptoms of anxiety (94%), depression (100%), and PTSD (77%). Previous studies about asylum seekers utilizing the HTQ and the HSCL-25 reported prevalence rates close to 20% for anxiety, 30% for depression, and 45% for PTSD.^{7,12}

Other studies have found increased psychological morbidity due to the rejection of asylum, the accommodations, and a long stay in a detention center.^{6,22} This study only included asylum seekers in an expulsion position and it is possible that the high symptom scores in this study are reflective of this rejection status. In addition, several studies have documented that asylum-seekers have a higher prevalence of symptoms of anxiety, depression, and PTSD in general compared

with refugees and immigrants.^{7,13,15} The study also detected small, non-significant gender differences. This is in sharp contrast to PTSD studies in the general population, where women have a greater risk of developing PTSD than men.²⁷

With regard to the socio-demographic variables it appeared that being Muslim was associated with a statistically significant increase in symptoms of anxiety and depression. The Muslim participants, compared to the Christians, had a higher average score on anxiety and depression symptoms. One might speculate that those with a Christian faith could feel more comfortable in a country where the official state religion is Christianity.

The study further showed that there were large differences in the severity of the traumatic events the participants had been exposed to. The majority of participants, 38 (71%) had witnessed or experienced illness without access to medical care, whereas 12 (23%) had witnessed or experienced rape or sexual abuse. Other studies have found similar trauma prevalence rates, and the number of witnessed or experienced traumatic events has proven to be of importance for the development of symptoms of PTSD.^{7,8} However, this study found no association between the number of traumatic events witnessed or experienced and the severity of PTSD.

Lastly, the study found no significant association between the length of stay at an asylum center and symptoms of anxiety, depression, and PTSD, despite the fact that 79% of the participants had stayed in an asylum center 5 to 10 years or more. The length of the asylum stay was thought to be a strong contributing factor with regards to their symptoms. The lack of association is in contrast to earlier studies, which have found significant differences in the degree of

symptoms of mental disorders with length of stay zero to five months and more than six months.⁶ An Australian study found similar increased prevalences of symptoms of anxiety, depression, and PTSD associated with staying in a detention center for more than two years.²¹ The reason for not finding any association in the present study might be attributed to the extensive length of stay. Speculation could suggest that after a number of years the asylum seekers reach “a distress threshold” after which differences regarding trauma exposure and length of asylum stay are no longer detectable. However, it cannot be ignored that the high level of symptoms of anxiety, depression, and PTSD may have been present when asylum seekers arrived in Denmark and is attributable to the traumatic events they had been exposed to before they left Iraq.

Screening tools

The validity and reliability of the two screening tools (HTQ and HSCL-25) has not previously been tested, nor has a cut-off score for the diagnosis been established with an Iraqi population. However, the screening tools have previously been applied to a group of Iraqi asylum seekers in other studies.^{9,10,15,22} Both questionnaires have been subjected to criticism with regards to their ability to predict and assess the number of the mental disorders mentioned above.²⁵ Common to both screening tools is that people with completely different answering profiles can achieve the same score. A person with severe depression, who scores high on the Likert scale, could obtain the same score answering a few of the questions, as a person answering most of the questions with a low value on the Likert scale.²⁴

In addition, both questionnaires have been criticized for being developed based on one particular ethnic group or in one spe-

cific clinical setting with particular cut-off scores crucial to the diagnosis. Hence, it may be difficult to utilize the questionnaires with a different group of people without making any changes to the questionnaire. Several studies have suggested different cut-off scores,²⁶ which may indicate that the characteristics of a specific population may affect the outcome data of the HTQ.²⁴

It is important to point out that the HTQ does not take into account the number of times each person has experienced one or more traumatic events, the duration of the traumatic events, or the connection between the traumatic events and the asylum seekers experience of them.¹⁸ A participant may have experienced any event more than once without the screening tool being sensitive to it. Finally, the present study did not include a physical examination or a clinical interview of the asylum seekers. This makes it difficult to see the extent to which self-reported symptoms of anxiety, depression, and PTSD, which are measured by the HTQ and HSCL-25, would match a clinical diagnosis.

Limitations

There are several limitations in the present study due to the moderate response rate and sample size. More comprehensive and prospective studies are recommended in the future. There is also a limitation in the chosen study design regarding the sample selection process. The investigated group of participants may not be representative of the total group of rejected Iraqi asylum seekers in the Danish asylum centers. There is a risk that the rejected Iraqis who were most disabled by their psychological symptoms, where too sick to participate in the study. The possibility also exists that the participants in the study represent a group of asylum seekers with less severe symptoms of anxiety, depression, and PTSD.

Another possibility is that the asylum seekers may have deliberately rated themselves worse than they actually were at the time the study was conducted in order to help their application for asylum. In order to avoid such a potential bias, the researchers stressed verbally and in writing that participation in the study would not have any impact on asylum status as rejected or the future outcome of a resumed case. It would have been beneficial to include a control group with an equal number of non-rejected Iraqi asylum seekers in the study.

Conclusion

The level of psychopathology in the rejected asylum seekers in this study was alarmingly high. The study found a prevalence of anxiety, depression and PTSD at 94%, 100% and 77% respectively. The participants had witnessed or experienced a mean of eight traumatic events, but no association was found between the number of events and the degree of symptoms of PTSD. Furthermore, there was no indication that the longer the participants had stayed in an asylum center, the more severe the psychopathology.

Since the majority of the participants in the study, regardless of the length of their stay at an asylum center, and the number of traumatic events, were found to have symptoms of anxiety, depression, and/or PTSD, it is recommended that systematic screenings at asylum centers be introduced as a standardized routine. These screenings could be used to initiate psychological treatment in asylum centers, necessitated by the extended stays that some asylum seekers have in asylum centers and the high degree of traumatization they have experienced. A recommended supplementary political initiative would be to introduce a time limit for the stay at any asylum center.

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