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THE CLENNCHED FIST SYNDROME: A PRESENTATION OF EIGHT CASES AND AN ANALYSIS OF THE MEDICOLEGAL ASPECTS IN DENMARK

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Clenched fist is a rare disorder of the hand associated with fixed contractures of fingers. The condition is often preceded by minor trauma or surgery, but these do not explain the severity of the contractures. Extension of the fingers is painful and hygienic problems can be considerable. Psychiatric disease is frequent in clenched fist patients. The patients may express a strong wish for amputations. In a review of eight patients with clenched fist who had claimed economic compensation from the Danish Patient Insurance Association, four patients had amputations. Three of them subsequently developed new contractures.

Keywords: clenched fist, conversion disorder, compensation, amputation

INTRODUCTION

Clenched fist is a rare condition and a designation for one of several abnormal hand postures. Believed by many authors to be a conversion syndrome, it was first named by Simmons and Vasile (1980). Very similar conditions have since been called the psychoflexed hand (Frykman et al., 1983) and dystonia-CRPS (Cordivari et al., 2001). It is characterised by contractures of fingers without any physical explanation. Frequently, two or three of the ulnar digits are affected, but the thumb or the whole hand can be involved. The contractures are fixed and independent of the position of the wrist (Simmons and Vasile, 1980). Attempts at passive extension of the fingers are painful, but sometimes a sleeping patient, or one believing him- or herself to be unobserved, can painlessly extend the fingers completely (Louis et al., 1985; Simmons and Vasile, 1980; Swift and Walker, 1995). Under anaesthesia, full extension can be obtained, but the contractures recur immediately afterwards (Cordivari et al., 2001; Frykman et al., 1983; Grunert et al., 1991; Simmons and Vasile, 1980). Electromyography (EMG) and nerve conduction studies are mostly normal (Kasdan and Stutts, 1995; Louis, 1993; Simmons and Vasile, 1980; Swift and Walker, 1995).

The condition is often preceded by a minor injury or surgery and there is a discrepancy between the magnitude of the trauma and the severity of the contractures.

Patients injured as a result of medical examination or treatment in Danish hospitals or by other authorised healthcare professionals have the right to seek economic compensation according to the Patient Insurance Act. The law was introduced in 1992 to facilitate access to compensation. According to article 2, section 1, paragraph 1, compensation can be given if the treatment is not comparable to best specialist practice. If the injury or complication sustained is more than the patient should reasonably have expected, compensation can also be granted according to article 2, section 1, paragraph 4.

The Patient Insurance Act is administered by the Danish Patient Insurance Association (DPIA), which is an independent body. Rejected claims can be appealed to the Patients’ Injury Board of Appeal (PIBA).

The purpose of this study is to present clinical observations in eight patients with clenched fist syndrome seeking compensation via the DPIA, and to analyse the medicolegal aspects of these cases.

PATIENTS AND METHODS

In the period 1997 to 2006, eight cases of clenched fist were assessed by the DPIA. The list of patients was obtained by the senior author (MB), who recorded patients with clenched fist syndrome seeking compensation in the DPIA. None of the patients claimed compensation for the subsequent amputations. The list is considered to be complete. We have had access to all the material obtained by the DPIA, which includes medical records from hospitals, medical examinations by independent consultants requested by the DPIA and legal documents. All patients claimed compensation for clenched fist. None of the patients claimed compensation for the subsequent amputations.
RESULTS

Clinical aspects

The diagnosis ‘clenched fist’ was noted in the medical records in five patients, in two patients the diagnosis was ‘reflex dystrophy’. One patient had no specific diagnosis but it was stated that surgery on the flexed fingers would present a risk of involving the rest of the hand. The time from developing contractures to the diagnosis or recognition of the condition fell in two groups: in five patients a diagnosis was made within a month, in the remaining three patients, the delay was 20 to 38 months. EMG and nerve conduction studies were carried out in four patients with symptoms of ulnar nerve compression; two patients had no examination before neurolysis, but after developing clenched fist, repeated neurophysiological investigations were normal. Two patients had signs of ulnar compression before neurolysis. After developing clenched fist, EMG and nerve conduction study were repeated in one patient and found to be normal. In two patients full extension of the affected fingers was obtained under regional block, but contractures recurred immediately after the anaesthesia was no longer effective.

All patients received hand therapy. One patient had botox injections and two patients received stellate ganglion block; neither of these treatments was effective.

Four patients had operations after developing clenched fist: one patient had six operations including amputation of the thumb, long, ring and little finger, arthrodesis of the carpometacarpal joints of the ring and little finger and arthrodesis of the index metacarpophalangeal joint (Case 1). One patient had amputation of the long, ring and little finger in one session (Table 1, Patient 2) without further development of contractures. Two patients had amputations of the ring and little fingers. Both developed a contracture of the long finger. One of these patients (Table 1, Patient 8) initially had a disarticulation through the proximal interphalangeal joint of the little finger. Later, a transmetacarpal amputation of the little finger was done because of recurrent contracture. At the same operation the A1-pulley was released in the ring finger as trigger finger was believed to be the cause of the contracture that had developed in this finger. At a later stage, the ring finger was disarticulated through the proximal interphalangeal joint due to persistent contracture. Subsequently, this patient developed contractures in the long finger and the wrist. The other patient is described in Case 2 below.

None of the patients in this study developed symptoms in the other hand.

In summary, three of the four patients who had amputations developed contractures of previously unaffected fingers. None of these contractures had resolved at the time of decision of the claims, which were decided...
at a median time of 4 years and 4 months from the
diagnosis of clenched fist.

The demographic details and results are summarised
in Table 1.

Medicolegal aspects

Both cases of clenched fist after trauma were rejected by
the DPIA and PIBA. Five of six cases resulting from
operations were recognised, two by appeal to the PIBA.
All recognitions were according to article 2, section 1,
paragraph 4.

Case report 1

A 35-year-old woman with a previous medical history
of depression and anxiety sustained a fracture of
the proximal phalanx of the ring finger on the
non-dominant hand. After cast removal, a flexion
contracture was seen in the ring finger and less
markedly in the long and little fingers. On account
of malrotation of the ring finger a derotating osteot-
omy of the ring metacarpal was done a year after the
injury. The contractures worsened, especially in
the ring finger, which was disarticulated through the
metacarpophalangeal joint. Almost immediately, the
long and little fingers contracted into full flexion.
It was then stated in the medical record that further
surgery would present a definite risk of contractures
of the remaining fingers. Nevertheless, the long and
little fingers were disarticulated though the
metacarpophalangeal joints at the persistent wish of
the patient and due to serious hygienic problems.
Subsequently, an adduction contracture of the thumb
developed. She then requested an amputation of
the whole hand. It was suggested to her that
psychological factors might play an essential part in
her condition and that a psychiatric assessment was
necessary before any other surgery was carried out.
She reluctantly attended a psychiatric day-hospital for
3 months. A thorough psychiatric assessment revealed
that the patient had a hysteriform personality.
The wish for amputation was considered psychopatho-
logical and further amputations contraindicated.
An attempted arthrodesis of the carpometacarpal
joints of the ring and little finger to improve hygiene
by opening the hand failed and the hand contracted
again. The patient then left the public health system
as no hand surgeon wanted to amputate the hand.
She has since had an amputation of the thumb and
an apparently failed attempt at arthrodesis of the
index metacarpophalangeal joint in a private clinic.
The patient did not respond to invitations to a follow-
up for this study.

Case report 2

At the age of 6 years, the patient sustained a supracon-
dylar fracture of the left humerus. In the following years
she complained about sensory disturbances in the
left ring and little fingers. According to her own history
she was considered ‘hysterical’ in childhood and received
antipsychotic medication.

At the age of 20 the left ulnar nerve was decompressed
in the cubital tunnel with no effect. Eight years later,
EMG and nerve conduction studies showed minor delay
in nerve conduction velocity of the ulnar nerve in the
cubital tunnel. Neurolysis and anterior transposition of
the ulnar nerve was done. An accidental lesion of the
medial cutaneous antebrachial nerve was sutured and the
arm splinted for 3 weeks. Seven weeks postoperatively,
the ring and little fingers were clawing and attempts at
extending the fingers were painful. The patient received
hand therapy and night splinting but the contractures
persisted. After 6 months, the hygienic problems were
worse. Further neurophysiological investigations
were unchanged. After 2 years, the patient was seen for
an evaluation by the DPIA. The long finger was
then partially contracted (Fig 1a). Under regional
anaesthesia, considerable extension of the fingers
could be achieved (Fig 1b). The contractures recurred
immediately afterwards. She then asked permission to
‘hide’ the fingers (Fig 1c). A further nerve conduction
study showed no signs of ulnar nerve compression.

Her claim for compensation to the DPIA was
rejected on the grounds that the clinical findings
could not be explained by ulnar nerve compression.
The claim was appealed and recognised by the PIBA
under article 2, section 1, paragraph 4. After closure of
the case by the DPIA, the ring and little fingers were
amputated. Subsequently the long finger contracted
into full flexion.

DISCUSSION

The clenched fist syndrome is generally believed to be
a conversion disorder. However, decisive evidence in
favour of a psychogenic origin is not always present.
Conversion disorder includes a wide range of features:
motor disabilities, abnormal movements and postures,
sensory disturbances, seizures, blindness, deafness,
aphonia etc. Contrary to patients with factitious dis-
orders or malingerers, patients with conversion disorder
do not engage in deliberate self-harm.

In the literature of hand surgery, case histories of
clenched fist patients are often described in conjunction
with patients suffering from factitious hand disorders
like Secretan’s disease, factitious oedema and
persistent ulcers presumably reflecting the significant
psychopathological component in both conditions
(Grunert et al., 1991; Kasdan and Stutts, 1995; Louis,
1993; Louis et al., 1985; Swift and Walker, 1995).
Louis et al. (1985) described four patients with lymphoedema who after treatment developed conversion disorders including clenched fist and equinovarus position of the foot. Grunert et al. (1991) described one patient who developed chronic ulcers after successful treatment of a clenched fist. These cases might indicate overlapping psychopathology.

A clear distinction in the approach to treatment of patients with conversion and factitious disorder is seldom maintained, and it is unclear whether different therapeutic approaches are warranted (Grunert et al., 1991; Simmons and Vasile, 1980). A history of previous personality disorders, psychiatric illness, depression, schizophrenia, or childhood sexual abuse is often present in patients with conversion disorders (Frykman et al., 1983; Kapfhammer et al., 1998; Kasdan and Stutts, 1995; Stonnington et al., 2006). Binzer et al. (1997) compared 30 patients with conversion disorder and motor disability with a control group with matching motor disabilities of somatic origin and found psychiatric syndromes in 30% and personality disorder in 50% in the conversion group. The numbers for the control group were 10% and 17% respectively.

Low education, presence of a personality disorder and high Hamilton Depression Score were significantly associated with conversion syndrome.

The differential diagnosis includes contractures seen in neurological disease such as stroke and Parkinson’s disease or in Dupuytren’s contracture and camptodactyly. A more difficult differential diagnosis is complex regional pain syndrome (CRPS). CRPS has been used synonymously with clenched fist (Aprile, 1997), but there are specific differences as described by Simmons and Vasile (1980).

Many forms of treatment have been attempted, reflecting the difficulty of treating these patients. In a Cochrane review it was not possible to demonstrate the benefit of psychosocial intervention on patients with conversion disorder (Ruddy and House, 2005). A multimodal treatment programme including splinting, physiotherapy, psychotherapy and family counselling relieved the contractures in two adolescents with clenched fist (Simmons and Vasile, 1980). Hypnosis and self-hypnosis have been applied successfully by Spiegel and Chase (1980) in one patient with clenched fist and in three out of four clenched fist patients by Hoogduin et al. (1993). In a study by Moene et al. (2002) hypnotherapy gave no additional improvement in a multidisciplinary treatment programme for conversion disorder of the motor type. The same authors randomised 44 patients with conversion disorder of the motor type to hypnotherapy or a waiting list and showed improvement in the hypnotherapy group (Moene et al., 2003). Several authors have used splints, but treatment can result in skin breakdown and recurrence of the contractures after removal of the splint (Frykman et al., 1983; Simmons and Vasile, 1980). In a study by Cordivari et al. (2001), 14 patients with clenched fists of different aetiologies were injected with botulinum toxin. The four patients with clenched fists of the conversion type required larger doses and had a poorer outcome. One patient developed contractures in the contralateral hand during treatment. Surgery, including flexor tendon tenotomies, arthroplasties and pinning of the contracted joints involves a significant risk of complications. It is not unusual that treatment of contracted fingers can lead to contractures in previously

![Fig 1 (a) Contractures 2 years after ulnar nerve decompression. (b) Extension of finger under anaesthesia. (c) The patient is ‘hiding’ the fingers.](https://www.jhs.sagepub.com)
unaffected fingers in the same hand or contractures in other extremities. Attempts at relieving the contractures can even make a psychiatric illness worse (Simmons and Vasile, 1980).

There is general agreement that treating these patients is difficult and demanding and requires a psychotherapeutic as well as somatic approach. (Grunert et al., 1991; Louis et al., 1985; Simmons and Vasile, 1980). It is important to be aware of concomitant psychiatric or somatic morbidity and negative life events (Binzer et al., 1997). The prognosis is markedly affected by poor compliance with treatment, especially in psychiatric patients. The patients can be surprisingly unconcerned about their condition and unwilling to engage in a treatment programme. They often have difficulty in accepting a psychological cause for their symptoms and it is not unusual that after a while patients begin missing appointments before dropping out of treatment altogether.

In our eight patients, several characteristic features of clenched fist patients were present: four patients had a former history of serious psychiatric disorder; three patients developed contractures in adjacent fingers after amputation and the prognosis was uniformly poor. It should be taken into consideration that none of these patients received multidisciplinary treatment including psychiatric assessment and psychotherapy.

We found a remarkably high number of cases triggered by decompression of the ulnar nerve in the elbow. It is characteristic that the fingers involved in these cases were the long, ring and little fingers, representing a segmental involvement of the ulnar side of the limb. The deformities could not be explained by an injury to a specific peripheral nerve, as seen in an ulnar claw hand or an intrinsic minus hand. In the patient with a crack fracture of the radius, the radial side of the hand was involved in a ‘thumb in palm’ deformity.

We are unable to contribute new recommendations for treating patients with clenched fist syndrome, but we must strongly caution against amputations. As the literature shows and this review confirms, it is a fact that amputations may lead to further contractures.

A diagnosis of clenched fist must be suspected when painful and fixed contractures develop after a relatively minor injury or surgery. It is mandatory to look for concomitant psychiatric or somatic disorders.

The decisions made by the DPIA in cases of clenched fist are parallel to those involving cases of CRPS. Normally, cases of CRPS caused by trauma are rejected on the grounds that the condition is most likely caused by the injury and not the treatment. The recognition of five postoperative cases of clenched fist in this series is in accordance with this practice. It also reflects the fact that predisposing (psychiatric) factors are not taken into account when deciding claims.

The rejection of Patient 6 (Table 1) reveals an inconsistency in the decisions. The contractures developed after decompression of the ulnar nerve. Nevertheless, the deformity was perceived as a consequence of ulnar nerve compression and lateral epicondylitis. This inconsistency, emphasised by the disagreement between decisions by the DPIA and PIBA, undoubtedly reflects the fact that clenched fist syndrome is a rare condition and not widely known, even among surgeons who operate on the upper extremity. Current practice in the DPIA is now to recognise clenched fist resulting from an operative procedure.

References


