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Streamlined Classification of Psychopathological Hand Disorders: a Literature Review

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Abstract In the surgical hand clinic, psychopathological hand disorders can be sorted into one of the following four categories: (1) factitious wound creation and manipulation; (2) factitious edema; (3) psychopathological dystonias, and (4) psychopathological sensory abnormalities and psychopathological Complex Regional Pain Syndrome. This article introduces these four categories. Pertinent literature that includes descriptions of each category's syndromes and diseases, demographic and psychological profiles, differential diagnoses, and appropriate treatment recommendations is reviewed.

Keywords Clenched fist syndrome · Compulsive behavior · Conversion disorder · Deception · Diagnosis · Differential · Dystonia · Edema · Factitious disorders · Foreign bodies · Hand · Hand deformities · Hyperalgesia · Hysteria · Infection · Injection · Lymphedema · Malingering · Munchausen syndrome · Occupational cramp · Oedeme bleu · Paralysis · Personality disorders · Prognosis · Pseudotrigger finger · Psycho-flexed hand · Psychopathology · Psychosomatic medicine · Reflex sympathetic dystrophy · Rehabilitation · Secretan's disease · Self-mutilation · SHAFT syndrome · Somatoform disorders · Surgical wound infection · Treatment · Upper extremity · Wounds

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Introduction

As a follow-up to the 1991 article *Classification system for factitious syndromes in the hand with implications for treatment* by Grunert et al. [32], this paper presents a modified version of their classification scheme for psychopathological hand disorders. The original classification consisted of three categories: (1) self-mutilation and wound manipulation, (2) edema, and (3) finger and hand deformities. In this paper, the scheme has been expanded to include a fourth category: psychopathological sensory abnormalities and psychopathological Complex Regional Pain Syndrome (CRPS). Each category contains a review of pertinent literature, descriptions of encompassed syndromes and diseases, demographic and psychological profiles, differential diagnoses, and appropriate treatment recommendations. Before discussing each category, a review of the literature associated with the psychiatric conditions that precipitate these hand disorders is presented. These psychiatric conditions include conversion disorder, factitious disorder, and malingering.

Conversion Disorder

Conversion disorder, a type of somatoform disorder, is unconsciously motivated and unconsciously produced. It is thought to result from a serious psychological conflict [36, 41]. According to Lazare, intra-psychic conflicts are awakened by stress and cause anxiety; this anxiety is "bound" by the conversion symptom [46].

Traits of conversion disorder patients have been compared with those of general hospital patients [7, 23]. When compared to these patients, conversion disorder patients had a lower socioeconomic status and were more likely to live in a rural area [23]. There was no significant difference with respect to marital status or educational level [7, 23].

Conversion disorder has been primarily shown to affect women [7, 23, 33, 49, 56, 68, 78, 79, 83, 99]. This may be because of its past classification as a subtype of "hysteria." Still, studies in populations where the demographic is largely composed of soldiers and veterans have shown a strong prevalence of conversion disorder in men [9, 36, 94]. At an Appalachian Veterans Neuropsychiatric Hospital in the 1960s, the incidence of conversion symptoms was 25–30 percent [94].

Associations between conversion disorders and laterality have been made and questioned. Conversion disorder patients quite commonly have bilateral symptoms [16, 68, 78]. In unilateral conversion disorders, studies have seemingly shown a more common prevalence of left-sided symptoms [27, 78, 83]. A 2002 study by Stone et al. [82] found that 58 percent of the symptoms reported by over 1,100 patients described in 121 eligible studies were left sided. When studies that featured laterality in the study title were excluded, the difference in laterality was insignificant. They concluded that laterality of symptoms should not be used as a criterion for identifying conversion disorders.

Clinical examination has long been relied upon to distinguish normal pathology from abnormal pathology [95]. A study that analyzed thirty stroke patients [28] made obvious that the normal and abnormal pathological signs might not be as useful in identifying the conversion disorder patient as had been previously thought [84]. For example, out of the thirty patients with acute structural nervous system damage, twenty nine demonstrated at least one feature of a non-physiological sensory exam, nineteen out of thirty had loss of pinprick sensation that split the midline exactly or had patchy areas of sensory loss, and eight out of thirty had *la belle indifference*.

La belle indifference has been noted to be an important factor in the diagnosis or presence of conversion disorder [63, 93]. Some studies have even used it in the criteria for patient inclusion [77]. Still, authors of the aforementioned stroke study and others have encouraged the release of *la belle indifference* from its association with conversion disorder [28, 46, 84]. A systematic review of studies reporting *la belle indifference* rates concluded that the term should be "abandoned as a clinical sign as it does not distinguish between conversion disorders or hysteria and symptoms of organic disease" [87].

Psychiatric disorders associated with conversion disorder patients vary widely in the literature. They include hysterical traits [27, 86], histrionic traits [16], depressive disorders [16], anxiety and phobia [16], dependent traits [16], and affective disorders [99]. Some authors have suggested that there is no character pathology [56], but rather that conversion disorder is a coping mechanism employed by patients free of underlying psychiatric illness [23].

Children with conversion reactions reportedly have a high frequency of recent family stress and family communication problems, and over half have unresolved grief [52]. An outbreak of conversion disorder occurred in a strict, Old Order Amish community. The five patients were all Amish girls between the ages of nine and thirteen years old, and four of the five were the oldest daughters in their families [11].

Conversion disorders often respond well to treatment [23, 24]. These treatments can involve psychotherapy [24, 61], suggestion [24], hypnosis [24, 41], hypnotic anesthesia interviews [24, 41, 61, 79, 84], antidepressants [85], physiotherapy [85], and classical dream analysis [41]. Also, patients could record behavior in a diary for later analysis of which factors reinforce the behavior [41].

It has been proposed that treatments based on suggestion do not actually cure conversion disorders, but they do facilitate the creation of a healthier balance between intrapsychic conflicts and anxiety [79]. Treatments involving symptom-based removal by suggestion have had "very good" results, with the best long-term results in patients who had symptoms for less than six months [33]. One author noted that out of the three hundred "Amytal Sodium" interviews he had conducted, none had ever resulted in a patient becoming overtly psychotic when the symptoms were removed [79]. This is in reference to the idea that symptoms act as primary defense mechanisms, and their removal would "unbind" the patient's anxiety [33, 46]. A patient was reportedly driven to suicide secondary to the "disappearance of the physical projection of her psychological problem" in a 1996 report [37].

Advocates of the treatment of conversion paralysis with no psychotherapeutic techniques suggest that confrontation of the patient with the knowledge that the symptom is psychological would be possibly detrimental [98]. Rather, they encourage the use of graduated physiotherapy, biofeedback technique, occupational therapy, and positive reinforcement [98]. Progress can be recorded with charting and video recording.

A seemingly opposite regimen involved admitting patients, informing them that the symptoms they were experiencing were psychologically motivated, and placing the patients on complete bed rest with only the use of bed pans [18]. Gradually, increased use of ward facilities were allowed as the patients improved, with full privileges being granted when symptoms were in full remission. Using this approach, nine out of thirteen symptom complexes showed full remission.

A poor prognosis in conversion disorders has been associated with the following: diagnosis of personality disorder on clinical examination [49]; previous treatment for a conversion disorder [49]; long history of illness [33, 49]; older age at onset [49]; weakness or weakness with sensory symptoms [83]; receipt of financial benefits at the time of admission to the hospital [16]; pending litigation

[16]; personality disorder and overall personality pathology [8]; presence of a concomitant somatic disease [8]; low DSM-IV Axis V score [8]; high score on the Beck Hopelessness Scale [8].

Indicators of a better prognosis are as follows: affective diagnosis or anxiety neurosis [49]; only sensory symptoms [83]; symptoms present for less than one year upon admission to the hospital [16]; comorbid affective disorder and schizophrenia that coincided with the unexplained motor symptoms [16]. Weakness and sensory disturbance have been noted to have a better clinical outcome than seizures and tremor [49]. Patients have also been found to have better functioning at follow-up if they had sensory symptoms rather than weakness [83].

A pressing concern for years was that, after diagnosing patients as "hysterical" or with "hysterical conversion," an organic problem would be uncovered as the true cause of the symptoms [86]. A 2005 meta-analysis of twenty seven studies dating back to 1965 investigated the rates of misdiagnosing cases as conversion disorder when they were actually due to physiopathology [86]. Since the 1970s, the rate of misdiagnosis has been only 4 percent [86].

Factitious Disorder

Factitious disorders are unconsciously motivated and consciously produced. It has been proposed that even though the production of the factitious lesions is conscious, it may occur while the patient is in an altered state. This altered state does not involve the modifications that inhibit the behavior. Therefore, this lack of inhibition in combination with the deeply-rooted psychological benefits derived from being in the role of the patient causes the patient to deceive medical personnel [80].

Interesting associations between females [10, 66, 88], medical care providers [10, 88], and factitious illness have been made. Factitious disorders can only be positively diagnosed when the patient confesses or is caught self-inflicting the injury [2]. Still, diagnosis by exclusion can be made based on the good judgment of the medical and psychiatric teams [2]. For example, abnormal fluctuations in the healing process that coincide with close observation and periods of non-observation may indicate that the patient is factitiously harming himself or herself [2, 62, 64, 74]. Many studies note hesitation in recommending the direct confrontation of some or all patients with factitious disorders [2, 26, 32, 64, 71, 74] based on fears that the patient would discharge himself or herself against medical advice [10, 21, 75, 81, 101]. Indeed, patients will often become hostile or deny the accusation that they are the cause of their own bodily harm [1, 5, 10, 17, 21, 25, 66, 88].

Nevertheless, the current health care system and Worker's Compensation carriers often necessitate the need for a confrontational approach [32]. In factitious wound creators and manipulators, it is thought that the best approach is to not confront the patient until social and psychological care has been prearranged [1, 55, 66]. During the confrontation, evidence of the factitious nature of the disease and an understanding of the nature of the illness should be presented in a nonpunitive, timely, supportive manner [1, 21, 48, 66, 81]. While the confrontation may result in anger directed toward the medical team, many patients respond well afterwards [1, 32, 37, 66]. With regard to treatment by behavioral shaping and hypnosis, patients who are found to be emotionally needy and passive on the Minnesota Multiphasic Personality Inventory (MMPI) respond favorably to these psychological interventions while angry, hostile patients have a poorer response [32].

Management and treatment can involve protective dressings [5], the avoidance of exploratory surgery [5], and psychotherapy [88]. Also, withholding medical attention may extinguish cravings for attention [10]. It may be wise to hold meetings with staff to prevent divisions regarding the approach to the patient [66, 81]. Countertransference by the hospital personnel may make the development of a sympathetic treatment atmosphere difficult [81]. While the patient is out of the room, searches could be done to find evidence of, and remove, the objects with which he or she is inflicting self-injury [66].

Munchausen syndrome is an extreme type of factitious disorder [15]. It is associated with peregrination and pseudologia fantastica [24]. The characteristics of those with Munchausen syndrome differ from those of the typical factitious disorder patient. A compilation of four Munchausen syndrome patients showed that all four had hysterical traits, were demanding, had a past history and special relationship with physicians and medicine, and the "need to be sick" [15]. "Wandering patients" are more often male than their "non-wandering" counterparts [10].

Sad, hostile, angry, frustrating, and tenacious (SHAFT) syndrome is thought to be a "passive form of Munchausen syndrome" [92], although the characteristics of those with SHAFT syndrome differ from those of other Munchausen syndrome patients [40]. SHAFT syndrome patients are also more likely to be women [29], have a history of psychiatric care, cry with pain, and disproportionately verbalize symptoms [40]. SHAFT syndrome patients in the 1999 Graham et al. study were treated using a multidisciplinary team. Out of the fourteen patients receiving Worker's Compensation, eight (57 percent) returned to work [29]. In the 1998 Kasden et al. study [40], it was recommended that treatment of the syndrome's cause remain the responsibility of the psychiatrist or psychologist, as improper diagnosis would be detrimental to both the patient and the surgeon. Almost 90 percent of the study's twenty-eight-person cohort had not and did not plan to return to work.

Malingering

Malingering is consciously motivated and consciously produced [80]. Only when the patient does not have an underlying psychiatric disease and the patient is clearly using the behavior to achieve an external incentive should the diagnosis of malingering be made [75]. External incentives are driving forces that range from receiving time away from prison or the battlefield to having a workload lightened [35].

Malingerers are noted by one author to usually have the characteristics of being young people or people who are under employment-related pressure or people who have had some trivial physical insult in the past [45].

Techniques for weeding out the malingerers from patients with actual pathology have been developed and refined [100]. In a study of patients who claimed to have an organic disease, four malingerers were caught by secret videotaping surveillance that was done by the referring agency [90].

Treatment of malingerers is difficult as they have no motivation to give up their symptoms until they have successfully attained their goal [80]. Management of these patients includes a wide range of methods ranging from extreme patience by the physician to sensory deprivation of the patient [45]. Another successful technique for "treating" malingerers is described under Category Three.

Category One: Wound Creation and Manipulation

The first category is wound creation and manipulation. Two subcategories of patients emerge: those who create or maintain wounds themselves and those who cause others to create or maintain wounds.

Wounds can be created by subcutaneous or intravenous introduction of foreign materials. Abscesses, cellulitis, recurrent skin infections, or septicemia have resulted from the self-injection of saliva [1, 39, 66], fecal matter [25, 66], washed erythrocytes [1], cigarette ashes [25], urine [25], bacterial cultures [1, 66], milk [1], dirt [1], deodorant [1], air [3], vegetable matter [3], and paraffin [15]. Also, wounds can be created by excessive scratching [2, 17, 65], cutting [14], burning [3], picking [2, 71], dermatitis factitia [65], biting [65], sharp and blunt objects and several other means. In addition, the insertion of foreign objects can lead to the creation of wounds. Objects used in such a manner have included sewing needles [3], pencil lead [32], and intra-urethral bobby pins [57]. Most of the methods used to create wounds can also be used to maintain them. Patients in this subcategory may manipulate wounds that have been created out of necessity by others [51] or after accidental injury [40].

Other people can be manipulated by patients into creating and maintaining wounds. This form of wounding may be less guilt-provoking for the patient [21]. To illustrate the "passive mutilator" persona, Al-Qattan described a patient who complained of unilateral, nonspecific hand pain and, after visiting several surgeons, underwent a carpal tunnel release that did not relieve her pain [3]. A psychiatric evaluation revealed that treatment for depression would be beneficial and, indeed, it resulted in "complete pain relief." Those who seek out and convince surgeons to perform procedures on them may have a form of SHAFT syndrome [29, 40, 92]. SHAFT syndrome is exemplified by the woman who, after a "minimal laceration" to her index finger, underwent a finger amputation, skin grafts, and pedicle flaps [40]. She had thirtyfive procedures in total. Dependency on the surgeon's knife or dermatologist's needle may be seen in the "insatiable cosmetic patient" [42]. A male nurse with Munchausen syndrome had plastic surgery on the same scar six times [15], which demonstrates the importance of identifying factitious disease in both the reconstructive and cosmetic surgical clinic.

Although the wounds have a factitious origin, the dangers they may pose to a patient's life are real. Treatment must first address the life and limb threatening complications of the injuries. It is, nonetheless, vital to understand the psychological "blueprints" that guide these patients to build and demolish their own physical structure. Most commonly, wound creators and maintainers have factitious disorders [1, 51]; some have a subset of factitious disorder called Munchausen syndrome [80]. More rarely seen in this category than factitious disorder patients are malingerers who turn to self-mutilation because of external incentives [80].

Characteristics of both the patients and the wounds may prove useful in differentiating between factitious and organic disease. Those who are driven by factitious disorders to create and maintain wounds have been noted to be predominantly female [2, 3, 65] and possibly sadomasochistic [14] or dependent [21, 51]. In a series of factitious disorder cases [66], all twelve self-infection patients were pleasant-natured, immature women who had begun inducing infection during adolescence. Seven other patients in the same series maintained but did not create their wounds; they were mostly "middle-aged, depressed, angry, hostile women" who were noncompliant and not happy with their care. Wound creators and manipulators have more psychopathology than patients with factitious hand deformities or factitious edema [32].

Upon presentation, these patients may appear anxious or tense and may "show off" their wounds [2]. Self-wounding may be the inadvertent result of a habitual conscious or unconscious self-mutilation in some highly stressed patients [2]. In this category, SHAFT syndrome is more likely to present with infection or laceration [29]. Although more

commonly associated with a somatoform disorder called body dysmorphic disorder, the "insatiable cosmetic patient" with factitious disorder may also appear in the plastic surgeon's office. This patient will not be satisfied after surgery because he or she will desire more procedures [42].

Based on abnormalities in their appearance, distribution, and healing patterns, wounds can be identified as factitious [2, 21]. Their inconsistency with normal pathology may arouse suspicions in the examiner [2]. Factitious burns made with chemicals may have a "tail" that resulted from dripping upon application [2]. While several sources note the importance of accessibility and position [17, 25, 39], especially dedicated patients can create wounds on less reachable areas of their bodies [2]. Because the hand's position on the body makes it susceptible to all types of damage, it would be difficult to argue that a hand wound is factitious based upon its ease of access to the patient. Accessibility is more important to the hand surgeon when monitoring the wound appearance on the casted or splinted hand versus the undressed hand.

Despite indications that an injury is factitious, the wound may indeed be due to non-factitious causes. Primary organic diseases that can present similarly to factitious ulcers include basal cell carcinoma, Systemic Lupus Erythematosus, and various collagen disorders. Excoriation may result from scratching that is promoted by scabies, pediculosis, eczema, "itchy" dermatoses, glass fiber exposure, parasitic infection, nutritional deficiency, and internal disease. Gangrene can result as a complication of diabetes, vascular disease, collagen disease, clotting abnormalities, and drug ingestion [48]. Mimickers of hand infection include silicone synovitis; it can appear to be a chronic infection until radiographic evaluation reveals an implant and surrounding cystic lesions [47]. Vasculitis is another potential cause of ulceration, extreme pain and tenderness that can be misidentified as a factitious wound [29]. As it can have skin manifestations, CRPS-I should also be considered in the differential. A survey completed by 198 patients with CRPS-I found that red, burnt, dry, scaly, bloody, or swollen skin lesions often arise between one and two years after the onset of CRPS-I [30]. Because the appearance of these lesions sometimes have a "bizarre appearance," including demarcated lines, patients could be misidentified as factitious wound creators or manipulators [34].

Once a wound is identified as factitious, a unique approach to treatment is necessary. Recommendations often include debriding and dressing the wounds in protective dressings until the patient receives psychological therapy [25]. Nevertheless, the tenacious patient could still inflict harm upon his or her body by creating wounds through or around the dressing [3]. One would think plaster to be more effective for preventing self-injection through the dressing. Even plaster was not strong enough to stop six reported patients whose self-infections impeded the healing of surgical wounds [51]. They "complained bitterly" about being confined to a plaster cast. After its removal, the wounds or infections recurred in five. Thus, the importance of treating the body and mind of the factitious wound creator and manipulator is highlighted. For treatment recommendations regarding patients with factitious wounds, please refer to the introductory sections on factitious disorders, SHAFT syndrome, and malingering. As it is an opportunity to screen for patients with SHAFT syndrome and patients who are dependent on others for the creation or maintenance of wounds, preoperative evaluation should prevent unnecessary procedures [51, 65, 70]. For malingerers, approaches to treatment generally do not involve direct confrontation [3] but instead cause dismissal of the external incentive.

None of the four wound creators or manipulators in the 1991 Grunert et al. study of factitious hand syndromes ever returned to work [32]. In the 1999 study by Graham et al. [29] of SHAFT syndrome patients, six out of the seven Worker's Compensation patients with factitious wounds returned to some form of work. Both studies involved a multidisciplinary approach which included physicians, psychologists, and hand therapists [29, 32].

Category Two: Factitious Edema

The second category is factitious edema. Factitious edema cases can be divided based upon the nature of the precipitating factor: trauma or obstruction. The majority of patients in this category have a factitious disorder.

Traumatic cases of factitious edema include Secretan's disease. Secretan's disease, an edema of the dorsum of the hand, was thought to be idiopathic until R. J. Smith's 1975 article [74] on factitious lymphedema of the upper extremity. Out of the twenty two patients described in his article, seven caused their edema by repeatedly contusing the dorsum of their hand. Although Smith doubted that such contusions could result in a "fibrinoid hemorrhagic clot," he did propose a connection between factitious injury and Secretan's disease. The connection between Secretan's disease and self-inflicted injury was solidified in George Reading's 1980 article [64]. Some patients with SHAFT syndrome use an edematous condition by the patient to convince a physician that procedural intervention is necessary [29].

Obstructive edema can be created by the use of various tourniquets. Examples of described tourniquets include elastic bandages [62, 74], kerchiefs [74], and rubber bands [74]. Charcot's *oedème bleu* [53] would fit into this subcategory.

Patient profiles and presentations of the syndromes associated with factitious edema vary. Please refer to the

introductory sections on factitious disorders and SHAFT syndrome. Factitious edema patients typically have greater psychopathology when compared to patients with factitious hand deformities and less psychopathology when compared to factitious wound creators and manipulators [32].

Edema may be identified as factitious based on several characteristics. If there is no apparent lymphatic or venous obstruction and the edema has a fluctuating presence, a factitious etiology should be considered [3, 62]. Obstructive edema caused by tourniquet application often reveals a "broken windowpane" pattern of collateral lymphatic circulation distal to the tourniquet and a well-demarcated ring proximal to the edema [62, 74]. Gross anatomical, histological, and radiographic findings in Secretan's disease have been described. Surgical specimens in three cases of Secretan's disease showed "hematomas with adhesions to the extensor tendons" in two cases and a hematoma surrounded by a thickened scar in the third [69]. A more recent study [97] described tissue specimens as being similar to ganglion tissue, with cystic areas of mucin, fibrosis, and myxoid degeneration. Magnetic resonance imaging revealed soft tissue and tendon edema, as well as "diffuse peritendonous fibrosis" extending to the fascia of the dorsal interosseous muscles." Authors of that study proposed that the mechanism for the dorsal edema of Secretan's disease is ganglion formation.

Investigating alternative etiologies of factitious edema is important. The differential diagnoses of edema include CRPS-I [30], contact dermatitis, erysipelas, dermatomyositis, superior mediastinal obstruction, secreting tumors, urticaria, angioneurotic edema, cutaneous porphyria, filariasis, and irradiation [48, 74].

Factitious lymphedema patients benefit from a multidisciplinary team [32]. Possibly because of the loss of privacy, the very act of being hospitalized has been noted to cause lessening of the edema [74]. Even before the connection between self-injury and Secretan's disease was made, the initial treatment of choice was splinting and active exercise with surgery following only if no improvement occurred after several months of such conservative therapy [69]. A combination of surgical intervention, elevation, and compression gloves, as well as splinting and physical therapy has been shown to improve range of motion but intermittent symptom flares still occur [97]. Four of five Secretan's disease patients described by Reading returned to work, despite recurrent episodes [64]. Heavy but non-compressive cotton dressings can be applied to prevent self-injury [62, 74]. The application of casts for protection is also effective [29, 32]. R. J. Smith noted that "hand surgery does not cure factitious lymphedema" and that psychiatric care should be provided, especially in the form of psychotherapy [74]. Psychiatric consultation lead to the reported cure within one month of three female teenagers with obstructive edema [3]. Behavioral shaping used in the treatment of eight factitious edema patients deemed emotionally dependent by MMPI led to four of the patients returning to work [32].

Category Three: Psychopathological Dystonias

The third category consists of psychopathological dystonias. Included in this category are various abnormal hand postures, including Clenched Fist Syndrome, the Psycho-Flexed Hand, Occupational Cramp, and "pseudotrigger" finger as well as weakness and various undefined, non-organic hand contractures. This category is largely composed of conversion disorder patients [37], SHAFT syndrome patients, and less so, malingerers.

Clenched Fist Syndrome (CFS) is noted to be a disease associated with SHAFT syndrome [29, 72]. In CFS, there is flexion contraction of the ulnar three digits of the palm, and although the thumb and index finger are unaffected, the hand conformation is that of a fist [37, 72]. A less common, alternative form is the opposite in that there is flexion contraction of the thumb and index finger, and the ulnar three digits remain unaffected [37]. Swelling is present; there is no correlation with handedness, and studies have shown it to occur in a wide range of people, including teenagers, and have correlated it with various psychiatric abnormalities, including schizophrenia and depression [3, 26, 72]. The Psycho-Flexed Hand involves the same hand conformation as classical CFS but differs in certain characteristics [26]. In a series of five Psycho-Flexed Hand patients, swelling was minimal or absent, the dominant hand was involved, patients were at least middle-aged, and none of the patients' fists were entirely clenched [26]. Occupational Cramp involves the impairment of a person's ability to perform a specific, learned motor skill [58]. Attempting to perform that motor skill results in "disabling muscle spasm, a lack of coordination and discomfort," making performance of that skill increasingly difficult [58]. Significant, though, is that the symptoms disappear when the patient performs other skills [58]. Various other uncategorized, nonorganic hand contractures have been noted, including the inability to flex a nine-year-old girl's little finger [37], the inability to separate various fingers [37] and "pseudotrigger" finger [26].

Psychiatric profiles of the various psychopathological dystonias vary. Comorbidities associated with the conversion disorders of CFS and Psycho-Flexed Hand patients include depression [3, 72], posttraumatic stress disorder [89], schizophrenia [3, 72], and psychotic episodes [72]. Conversion disorders are thought to manifest as hand contraction because of the patient's suppressed anger [26, 89]. Occupational Cramp's origin has been attributed to

mechanistic, psychological, and psychosomatic theories [58]. In the psychosomatic theory, the subjects find it necessary to perform a frustrating task, and this frustration drives them to adopt new postures that are increasingly different than the original posture [58]. In a study of ten patients with hand posturing, seven male patients presented with uncategorized hand posturing, and all seven were found to be malingerers [3]. Patients with functional weakness could be suffering from a conversion disorder, factitious disorder, or they could be malingering [84].

Under general anesthesia, sodium amytal sedation, or hypnosis, abnormal hand contractures may be identified as factitious because the psychopathological contracture is released [32, 37, 89]. Despite secondary changes that may occur, the hand can usually move freely [29, 89]. Again, patients with occupational cramp will be unable or almost unable to perform only a certain task, while other tasks will be performed without difficulty until the cramp is in its late stages [58]. Diagnosis of malingering in patients with hand contracture has been made by observing the resistance to passive movement and "bizarre posture" that supposedly resulted from minor hand injuries [3]. Clues that functional weakness may be psychopathological can also be found by assessing inconsistency in weakness throughout an examination [84].

Differential diagnoses of psychopathological dystonias include CRPS [29, 32, 89], trauma [26], collagen diseases [26], congenital defects [26], Dupuytren's fracture [26, 29], carpal tunnel syndrome [29], ulnar neuritis [29], thoracic outlet syndrome [29], tendonitis, arthritis, and cerebrovascular accident. Characteristics that are usually absent in CRPS-I, including a clenched fist with macerated palm and paradoxical stiffness, are usually present in CFS. Likewise, pain with passive flexion is usually absent in CFS, while it is usually present in CRPS-I [89].

Treatment of CFS patients involves unclenching of the fist under anesthesia, followed by hand therapy [37]. This hand therapy could utilize dynamic and passive splinting [29, 37], stretching [29], active assisted motion [29], or casting [29, 37]. Patients who are treated with manipulation and splinting may have contractures that recur after completion of the splinting treatment [26]. Mental health professionals should be involved in the coordinated care of patients with "psycho-flexed hands" for the therapy to be most effective [26, 29]. Occupational Cramp treatment is considered theory based [58].

Prognosis varies with psychiatric profile. In the 1991 Grunert et al. study [32] of factitious hand syndromes, 8 out of 10 emotionally dependent patients with hand deformities and two out of eight hostile patients returned to work. In the 1999 study by Graham et al. [29] of SHAFT syndrome patients, only two of seven patients with unusual limb posturing who were receiving Worker's Compensation returned to work. Both studies involved a multidisciplinary approach, including physicians, psychologists, and hand therapists [29, 32]. A satisfactory, long-term improvement in a patient with Occupational Cramp resulted from the treatment approach in which psychosomatic aspects of the cramping were addressed and treated through a combined program of movement re-education and relaxation [58]. In the aforementioned series of seven male malingerers with hand contractures, the patients were informed that no compensation would be given because the minor injury could not explain the hand posturing; after short-term physiotherapy, all the patients were "cured" and returned to work [3].

Category Four: Psychopathological Sensory Abnormalities and Psychopathological CRPS

The fourth category is comprised of psychopathological sensory abnormalities and psychopathological CRPS. These patients may have conversion disorders or factitious disorders, or they could be malingering. Psychopathological sensory abnormalities include anesthesia, paresthesia, dysesthesia, hyperesthesia, and hypoesthesia. Psychopathological CRPS is a condition that resembles authentic CRPS. Authentic CRPS is, according to International Association for the Study of Pain 1994 consensus criteria [76], pain in conjunction with impaired function, trophic changes, and autonomic dysfunction involving blood flow and sudomotor activity in which the symptoms and findings must not be due to a different underlying disease process. By definition, CRPS is not malingering or factitious disorder [76].

Before discussing psychopathological CRPS, an overview of authentic CRPS-I is provided as follows in an attempt to explicate a misunderstood syndrome. In 1994, CRPS-I replaced the term Reflex Sympathetic Dystrophy as the descriptor of a "deep, diffuse, orthostatic pain" that in adults, but not necessarily children [50], arises after a painful event [76]. Spontaneous pain or sensory abnormalities arise but remain unbound by normal dermatomes or nerve distributions, and the pain or sensory abnormality is exceedingly prolonged and disproportionate to the event that caused it [44, 76]. CRPS-I differs from CRPS-II in that CRPS-II, formally known as causalgia, has the "presence of a known nerve injury" [76]. Scoring classifications based on clinical severity of these components have been developed, emphasizing values given to pain and reduction in finger flexion [102]. Pain without the other abnormalities is not CRPS [76]. Sympathetically mediated pain and neuropathic pain are possible phenomena that may be part of or may resemble CRPS [20, 44, 76].

Diagnosis of psychopathological sensory abnormalities is largely dependent on a thorough physical examination

and consideration of the differential diagnoses. Deficits in a glove or stocking distribution pattern should heighten the suspicions of an evaluating health specialist [22, 29, 98]. Normal sensory action potentials after EMG testing would be another sign of psychopathological disorders [98]. Sensory threshold measurements assist in the diagnosis of malingering as the examiner can take advantage of the malingering patient's tendency to exaggerate his or her condition [100]. While a cerebrovascular accident often causes the sudden onset of unilateral weakness or numbness, it would be less likely to cause the same symptoms bilaterally. This is especially true if the weakness or numbness does not include other symptoms [98]. Still, atypical symptoms must not be used as definitive, reliable signs of a conversion disorder [28].

Because of the existing uncertainty regarding the exact mechanism that underlies the development of authentic CRPS-I, differentiating it from psychopathological CRPS is challenging. Thus, it is difficult to make a diagnosis of psychopathological CRPS. The extent of a psychological component to authentic CRPS-I has been studied [31, 43, 59, 91], and recent studies have begun to identify and explore its organic nature [4, 60]. Authentic CRPS may result from the harm that malingerers and patients with factitious disorder inflict upon themselves [76]. Malingerers, factitious disorder patients, and conversion disorder patients can also concurrently have authentic CRPS. Because the pain of CRPS-I can be severe, patients often seem as if they are exaggerating their behavior [96]. It would, however, be incorrect to classify a patient with authentic CRPS as a malingerer or as having a factitious disorder based on this exaggerated behavior [54, 96].

In terms of diagnosing CRPS-I, bone scintigraphy is considered to be a major diagnostic tool [20]. Increased tracer uptake in the CRPS-I affected region is considered by some to be the factor that separates CRPS-I from other conditions [19, 20]. Nevertheless, increased tracer uptake is not pathognomic in shoulder CRPS-I and "Stage III" CRPS-I reportedly has negative bone scintigraphy. In terms of the unofficial use of staging, it has been suggested that no difference exists between stages in the uptake of radionuclide in bone scintigraphy [102]. Alternative causes for changes in tracer uptake exist, as demonstrated by the 15-year-old girl described in a paper titled *Munchausen's syndrome simulating reflex sympathetic dystrophy* [67]. She wrapped a tourniquet around her left wrist, resulting in demineralization of her carpal bones and marked uptake in her bone scans [67]. Another suggested sign of CRPS is osteoporosis. On radiographs of a CRPS-I region, one may note patchy osteoporosis, joint demarcation, and unaffected joint spaces [20], but osteoporosis is an inconsistent and nonspecific feature of CRPS-I [76]. Temperature changes and swelling are clinical features of CRPS [102]. Still, temperature asymmetries mimicking those of CRPS-I can be induced by short-term immobility and dependency of the hand [73]. Factitious lymphedema can cause swelling that resembles that of CRPS. Thus, temperature changes and swelling can be noted in both authentic CRPS-I and psychopathological CRPS [73].

A lack of response to traditional therapy for authentic CRPS or a bizarrely abnormal clinical course can assist in the diagnosis of psychopathological CRPS. An example of this diagnostic approach is exemplified by the case report of a woman who developed abnormal posturing, swelling, cold sensation, and discoloration in her upper extremity after multiple injuries. She developed pain and considerable limitation in motion and was diagnosed with CRPS-I. After she did not respond to conventional CRPS-I therapy, she underwent hypnotic anesthesia. During the anesthesia session, she had complete range of motion and was thus diagnosed with a conversion disorder. Hypnosis, supportive psychotherapy, and a viewing of the videotaped hypnosis session resulted in her recovery and return to work [6]. Many times, the discovery of a conversion disorder is made after patients are referred to a hand clinic with an outside diagnosis of CRPS-I; they may have already undergone treatments such as intravenous guanethidine blocks without success [32]. Patients who seem to recover from CRPS but still complain of pain could actually be malingering or a have factitious disorder [54]. A case report described a man who developed symptoms of CRPS-I in his right hand while admitted to a hospital for "chest pain" [12]. Staff at the hospital suspected a factitious disorder after symptoms spontaneously regressed and switched to his opposite hand multiple times. His lies about addresses, lack of identification, lack of visitors, and fluency in medical terminology eventually aided in making a diagnosis of Munchausen syndrome.

Alternative etiologies of psychopathological sensory abnormalities include several differential diagnoses. Examples include cerebrovascular accident [78], diabetic neuropathy, carpal tunnel syndrome [29], ulnar neuritis[29], and thoracic outlet syndrome [29].

Differential diagnoses of psychopathological CRPS and authentic CRPS-I are other sympathetically mediated syndromes [76], disuse and pseudodystrophy [19, 20], arthritis [20], arthrosis [20], tumor [20], adhesive capsulitis [20], myloma [20], and phlebitis [20]. A "disuse-related dystrophy" with similar clinical features as CRPS, pseudodystrophy, has been described [19]. Pseudodystrophy is differentiated from authentic CRPS-I by a lack of pseudoinflammatory signs, usually normal passive joint motility and its scintigraphic characteristics of having normal or decreased tracer uptake [20].

Consideration of the psychological source is necessary when approaching treatment of psychopathological sensory abnormalities. Exposure-based therapy has been used successfully to "convert manifestations of pain from physical to psychological" [13]. Other treatments include transcutaneous nerve stimulation [98], biofeedback [98], intensive exercises [98], and psychotherapy [23]. Patients with sensory symptoms alone carry a better prognosis in terms of pain, physical and social functioning than those with weakness and sensory symptoms, but patients with "sensory-symptoms only" often develop weakness [83].

Treatment of psychopathological CRPS depends largely on whether it is due to a conversion disorder, factitious disorder, or malingering. Supportive psychotherapy is recommended in patients who developed psychopathological CRPS due to a conversion disorder [32]. Videotapes or photographs of patients mobilizing the limbs under general anesthesia or sedative hypnosis can also be motivating and convincing for the patient [19, 20, 32]. Intensive cognitive behavioral pain management, psychological strategy education, stress education, and the development of an activity-based program may be beneficial in patients with authentic CRPS-I to prevent or treat conversion disorders or other psychological manifestations of unexpressed emotion [38, 63].

Conclusion

Psychopathological hand disorders often present with a wide variety of manifestations, making their recognition difficult. Still, the ramifications of not properly diagnosing these disorders can be detrimental to the patient, care providers and the health care system. This review identified the many forms in which psychopathological hand disorders exist and organized them into a streamlined system. By uniting these disorders into one system, communication among those who study and treat them is facilitated and strengthened. A better understanding of the diagnostic, prognostic, and therapeutic implications of each category will be of benefit to the surgeons, therapists, and mental health professionals who encounter these patients on a daily basis.

References

1. Aduan RP, Fauci AS, Dale DC, et al. Factitious fever and self-induced infection: a report of 32 cases and review of the literature. Ann Intern Med 1979;90:230–42.
2. Agris J, Simmons CW, Jr. Factitious (self-inflicted) skin wounds. Plast Reconstr Surg 1978;62:686.
3. Al-Qattan MM. Factitious disorders of the upper limb in Saudi Arabia. J Hand Surg [Br] 2001;26:414–21.
4. Albrecht PJ, Hines S, Eisenberg E, et al. Pathologic alterations of cutaneous innervation and vasculature in affected limbs from patients with complex regional pain syndrome. Pain 2006;120:244.
5. Amadio PC. Pain dysfunction syndromes. J Bone Joint Surg Am 1988;70:944–9.
6. Anderson RC, Matloub H, Dzwierzynski WW. Reflex sympathetic dystrophy/conversion disorder. Psychol Rep 1996;79:1043–6.
7. Barnert C. Conversion reactions and psychophysiologic disorders: a comparative study. Psychiatry Med 1971;2:205–20.
8. Binzer M, Kullgren G. Motor conversion disorder: A prospective 2- to 5-year follow-up study. Psychosomatics 1998;39:519–27.
9. Carden NL, Schamel DJ. Observations of conversion reactions seen in troops involved in the Viet Nam conflict. Am J Psychiatry 1966;123:21–31.
10. Carney MW. Artefactual illness to attract medical attention. Br J Psychiatry 1980;136:542–7.
11. Cassady JD, Kirschke DL, Jones TF, et al. Case series: outbreak of conversion disorder among Amish adolescent girls. J Am Acad Child Adolesc Psychiatry 2005;44:291–7.
12. Chevalier X, Claudepierre P, Larget-Piet B, et al. Munchausen's syndrome simulating reflex sympathetic dystrophy. J Rheumatol 1996;23:1111–2.
13. Ciano-Federoff LM, Sperry JA. On "converting" hand pain into psychological pain: treating hand pain vicariously through exposure-based therapy for PTSD. 2005;4:57–71.
14. Crabtree LH, Jr. A psychotherapeutic encounter with a self-mutilating patient. Psychiatry 1967;30:91–100.
15. Cramer B, Gershberg MR, Stern M. Munchausen syndrome. Its relationship to malingering, hysteria, and the physician–patient relationship. Arch Gen Psychiatry 1971;24:573–8.
16. Crimlisk HL, Bhatia K, Cope H, et al. Slater revisited: 6 year follow up study of patients with medically unexplained motor symptoms. BMJ (Int Ed) 1998;316:582–6.
17. de Fontaine S, Van Geertruyden J, Preud'homme X, et al. Munchausen syndrome. Ann Plast Surg 2001;46:153–8.
18. Dickes RA. Brief therapy of conversion reactions: an in-hospital technique. Am J Psychiatry 1974;131:584–6.
19. Driessens M, Blockx P, Geuens G, et al. Pseudodystrophy. A conversion disorder mimicking reflex sympathetic dystrophy. Acta Orthop Belg 2002;68:330–6.
20. Driessens M, Dijs H, Verheyen G, et al. What is reflex sympathetic dystrophy? Acta Orthop Belg 1999;65:202–17.
21. Drinker H, Knorr NJ, Edgerton MT, Jr. Factitious wounds. A psychiatric and surgical dilemma. Plast Reconstr Surg 1972;50:458–61.
22. Fishbain DA, Goldberg M, Meagher BR, et al. Male and female chronic pain patients categorized by DSM-III psychiatric diagnostic criteria. Pain 1986;26:181–97.
23. Folks DG, Ford CV, Regan WM. Conversion symptoms in a general hospital. Psychosomatics 1984;25:285–9.
24. Ford CV. The somatizing disorders. Psychosomatics 1986;27:327–31.
25. Friedman B, Yaffe B, Blankstein A, et al. Self inflicted hand injuries: diagnostic challenge and treatment. Ann Plast Surg 1988;20:345–9.
26. Frykman GK, Wood VE, Miller EB. The psycho-flexed hand. Clin Orthop Relat Res 1983;174:153.
27. Galin D, Diamond R, Braff D. Laterlization of conversion symptoms: more frequent on the left. Am J Psychiatry 1977;134:578–80.
28. Gould R, Miller BL, Goldberg MA, et al. The validity of hysterical signs and symptoms. J Nerv Ment Dis 1986;174:593–7.
29. Graham WP, 3rd, Shearer AW, Mackay DR, et al. SHAFT syndrome revisited. Ann Plast Surg 1999;42:411–6; discussion 416–7.

30. Greipp ME, Thomas AF. Skin lesions occurring in clients with reflex sympathetic dystrophy syndrome. J Neurosci Nurs 1994; 26:342–6.
31. Grunert BK, Devine CA, Sanger JR, et al. Thermal self-regulation for pain control in reflex sympathetic dystrophy syndrome. J Hand Surg [Am] 1990;15:615–8.
32. Grunert BK, Sanger JR, Matloub HS, et al. Classification system for factitious syndromes in the hand with implications for treatment. J Hand Surg [Am] 1991;16:1027–30.
33. Hafeiz HB. Hysterical conversion: a prognostic study. Br J Psychiatry 1980;136:548–51.
34. Hendler N. Skin lesions occurring in clients with reflex sympathetic dystrophy syndrome. J Neurosci Nurs 1995; 27:206.
35. Heruti RJ, Levy A, Adunski A, et al. Conversion motor paralysis disorder: overview and rehabilitation model. Spinal Cord 2002; 40:327–34.
36. Heruti RJ, Reznik J, Adunski A, et al. Conversion motor paralysis disorder: analysis of 34 consecutive referrals. Spinal Cord 2002;40:335–40.
37. Honing ML, Kon M. Dysfunctional postures of the hand as part of a conversion reaction. J Hand Surg [Br] 1996;21: 271–5.
38. Jaworowski S, Allen RC, Finkelstein E. Reflex sympathetic dystrophy in a 12-year-old twin with comorbid conversion disorder in both twins. J Paediatr Child Health 1998;34: 581–3.
39. Justus PG, Kreutziger SS, Kitchens CS. Probing the dynamics of Munchausen's syndrome. Detailed analysis of a case. Ann Intern Med 1980;93:120–7.
40. Kasdan ML, Soergel TM, Johnson AL, et al. Expanded profile of the SHAFT syndrome. J Hand Surg [Am] 1998;23:26.
41. Kimball CP, Blindt K. Some thoughts on conversion. Psychosomatics 1982;23:647–49.
42. Knorr NJ, Edgerton MT, Hoopes JE. The "insatiable" cosmetic surgery patient. Plast Reconstr Surg 1967;40:285–9.
43. Koelman JH, Hilgevoord AA, Bour LJ, et al. Soleus H-reflex tests in causalgia–dystonia compared with dystonia and mimicked dystonic posture. Neurology 1999;53:2196–8.
44. Koman LA, Smith TL, Smith BP, et al. The painful hand. Hand Clin 1996;12:757–64.
45. Kramer KK, La Piana FG, Appleton B. Ocular malingering and hysteria: diagnosis and management. Surv Ophthalmol 1979;24: 89–96.
46. Lazare A. Current concepts in psychiatry. Conversion symptoms. N Engl J Med 1981;305:745–8.
47. Louis DS, Jebson PJ. Mimickers of hand infections. Hand Clin 1998;14:519–29.
48. Lyell A. Cutaneous artifactual disease. A review, amplified by personal experience. J Am Acad Dermatol 1979;1:391–407.
49. Mace CJ, Trimble MR. Ten-year prognosis of conversion disorder. Br J Psychiatry 1996;169:282–8.
50. Maillard SM, Davies K, Khubchandani R, et al. Reflex sympathetic dystrophy: a multidisciplinary approach. Arthritis Rheum 2004;51:284–90.
51. Mallott IF, Earley LW, White WL. Psychic disturbances and wound healing. Plast Reconstr Surg 1958;21:272–8.
52. Maloney MJ. Diagnosing hysterical conversion reactions in children. J Pediatr 1980;97:1016–20.
53. Mannion SJ, Mehta JS, Spencer JD. Oedeme bleu. J R Soc Med 1998;91:491–2.
54. Masson C, Audran M, Pascaretti C, et al. Different patterns of extension and recurrence in algodystrophy. Acta Orthop Belg 1998;64:71–6.
55. McDonough JJ. Classification system for factitious syndromes in the hand. J Hand Surg [Am] 1992;17:976.
56. McKegney FP. The incidence and characteristics of patients with conversion reactions. I. A general hospital consultation service sample. Am J Psychiatry 1967;124:542–5.
57. Mitchell WM. Self-insertion of urethral foreign bodies. Psychiatr Q 1968;42:479–86.
58. Moldofsky H. Occupational cramp. J Psychosom Res 1971;15: 439–44.
59. Moseley GL. Imagined movements cause pain and swelling in a patient with complex regional pain syndrome. Neurology 2004; 62:1644.
60. Oaklander AL, Rissmiller JG, Gelman LB, et al. Evidence of focal small-fiber axonal degeneration in complex regional pain syndrome-I (reflex sympathetic dystrophy). Pain 2006;120:235.
61. Oberfield RA, Reuben RN, Burkes LJ. Interdisciplinary approach to conversion disorders in adolescent girls. Psychosomatics 1983;24:983–9.
62. Orenstein A, Friedman B, Yaffe B, et al. Factitious lymphedema of the hand: a diagnostic challenge. Cutis 1987;39:427–8.
63. Parisod E, Murray RF, Cousins MJ. Conversion disorder after implant of a spinal cord stimulator in a patient with a complex regional pain syndrome. Anesth Analg 2003;96:201–6.
64. Reading G. Secretan's syndrome: hard edema of the dorsum of the hand. Plast Reconstr Surg 1980;65:182.
65. Rees TD, Daniller A. Self-mutilation: some problems in reconstruction. Plast Reconstr Surg 1969;43:300–3.
66. Reich P, Gottfried LA. Factitious disorders in a teaching hospital. Ann Intern Med 1983;99:240–7.
67. Rodriguez-Moreno J, Ruiz-Martin JM, Mateo-Soria L, et al. Munchausen's syndrome simulating reflex sympathetic dystrophy. Ann Rheum Dis 1990;49:1010–2.
68. Roelofs K, Naring GW, Moene FC, et al. The question of symptom lateralization in conversion disorder. J Psychosom Res 2000;49:21–5.
69. Saferin EH, Posch JL. Secretan's disease: post-traumatic hard edema of the dorsum of the hand. Plast Reconstr Surg 1976;58:703–7.
70. Sennwald G. Expanded profile of SHAFT Syndrome. J Hand Surg [Am] 1998;23A:1118–9.
71. Serafin D, Dimond M, France R. Factitious vesicocutaneous fistula: an enigma in diagnosis and treatment. Plast Reconstr Surg 1983;72:81–9.
72. Simmons B, Vasile R. The clenched fist syndrome. J Hand Surg [Am] 1980;5:420–4.
73. Singh HP, Davis TR. The effect of short-term dependency and immobility on skin temperature and colour in the hand. J Hand Surg [Br] 2006;31:611–5.
74. Smith RJ. Factitious lymphedema of the hand. J Bone Joint Surg Am 1975;57:89–94.
75. Spiro HR. Chronic factitious illness. Munchausen's syndrome. Arch Gen Psychiatry 1968;18:569–79.
76. Stanton-Hicks M, Janig W, Hassenbusch S, et al. Reflex sympathetic dystrophy: changing concepts and taxonomy. Pain 1995;63:127–33.
77. Stefanis C, Markidis M, Christodoulou G. Observations on the evolution of the hysterical symptomatology. Br J Psychiatry 1976;128:269–75.

78. Stern DB. Handedness and the lateral distribution of conversion reactions. J Nerv Ment Dis 1977;164:122–8.
79. Stevens H. Conversion hysteria: a neurologic emergency. Mayo Clin Proc 1968;43:54–64.
80. Stinnett JL. The functional somatic symptom. Psychiatr Clin North Am 1987;10:19–33.
81. Stone MH. Factitious illness. Psychological findings and treatment recommendations. Bull Menninger Clin 1977;41:239–54.
82. Stone J, Sharpe M, Carson A, et al. Are functional motor and sensory symptoms really more frequent on the left? A systematic review. J Neurol Neurosurg Psychiatry 2002;73:578–81.
83. Stone J, Sharpe M, Rothwell PM, et al. The 12 year prognosis of unilateral functional weakness and sensory disturbance. J Neurol Neurosurg Psychiatry 2003;74:591–6.
84. Stone J, Carson A, Sharpe M. Functional symptoms in neurology: assessment and diagnosis. J Neurol Neurosurg Psychiatry 2005;76 Suppl 1:i2–12.
85. Stone J, Carson A, Sharpe M. Functional symptoms in neurology: management. J Neurol Neurosurg Psychiatry 2005; 76 Suppl 1:i13–21.
86. Stone J, Smyth R, Carson A, et al. Systematic review of misdiagnosis of conversion symptoms and "hysteria". BMJ (Int Ed) 2005;331:989–94.
87. Stone J, Smyth R, Carson A, et al. La belle indifference in conversion symptoms and hysteria: systematic review. Br J Psychiatry 2006;188:204–9.
88. Sutherland AJ, Rodin GM. Factitious disorders in a general hospital setting: clinical features and a review of the literature. Psychosomatics 1990;31:392–9.
89. Swift DW, Walker SE. The clenched fist syndrome. A psychiatric syndrome mimicking reflex sympathetic dystrophy. Arthritis Rheum 1995;38:57–60.
90. Verdugo RJ, Ochoa JL. Abnormal movements in complex regional pain syndrome: assessment of their nature. Muscle Nerve 2000;23:198–205.
91. Verdugo RJ, Bell LA, Campero M, et al. Spectrum of cutaneous hyperalgesias/allodynias in neuropathic pain patients. Acta Neurol Scand 2004;110:368–76.
92. Wallace PF, Fitzmorris CSJ. The S-H-A-F-T syndrome in the upper extremity. J Hand Surg [Am]. 1978;3:492–4.
93. Weddington WW, Jr. Conversion reaction in an 82-year-old man. J Nerv Ment Dis 1979;167:368–9.
94. Weinstein EA, Eck RA, Lyerly OG. Conversion hysteria in Appalachia. Psychiatry 1969;32:334–41.
95. Weintraub MI. Hysteria. A clinical guide to diagnosis. Clin Symp 1977;29:1–31.
96. Wemyss-Gorman PB. Munchausen's syndrome and chronic pain. Hosp Med 1998;59:738.
97. Whitney TM, Jones NF. Magnetic resonance imaging findings in Secretan's disease. J Hand Surg [Am] 1995;20:464.
98. Withrington RH, Wynn Parry CB. Rehabilitation of conversion paralysis. J Bone Joint Surg Br 1985;67:635–7.
99. Woodruff RA, Jr., Clayton PJ, Guze SB. Hysteria: an evaluation of specific diagnostic criteria by the study of randomly selected psychiatric clinic patients. Br J Psychiatry 1969;115:1243–8.
100. Yarnitsky D, Sprecher E, Tamir A, et al. Variance of sensory threshold measurements: discrimination of feigners from trustworthy performers. J Neurol Sci 1994;125:186–9.
101. Young LD, Harsch HH. Factitious illness v conversion disorder. JAMA 1983;249:3304–5.
102. Zyluk A. Scoring system in the assessment of the clinical severity of reflex sympathetic dystrophy of the hand. Hand Clin 2003;19:517–21.