Original Article

Conversion motor paralysis disorder: analysis of 34 consecutive referrals

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Study design: We present our cumulative experience with patients sustaining the most dramatic type of Conversion Disorder (CD) – Conversion Motor Paralysis.

Setting: Rehabilitation departments, Reuth Medical Center, Tel-Aviv and Sheba Medical Center, Tel-Hashomer, Israel.

Methods: During the period 1973–2000, 34 patients with neurological symptoms without any anatomical or physiological basis were admitted to both rehabilitation departments. This number consists of less than 1% of the total acute traumatic and non-traumatic spinal cord disorders admitted annually to these centers.

Results: Twenty-five of the subjects were men (mean age of 30 years) and nine were women (mean age of 31.4 years). Neurological symptoms included: paraplegia (complete or incomplete) (18), hemiplegia or hemi paresis (11), tetraplegia (complete or incomplete) (three), monoplegia (one), triplegia (one). The final diagnosis on discharge was CD in 30 of the 34 cases, the remaining four being diagnosed as malingering. Functionally, nine patients had a complete recovery, 10 a partial recovery and 15 remained unchanged.

Conclusion: Disabled people who experienced traumatic events resulting in various disabilities are admitted usually to a rehabilitation center. However, some of them are later diagnosed as having Conversion Disorder or malingering. We believe that their participation in active regular and integrative rehabilitation process is beneficial to most of them. Most of these patients gain functional independence and return to the main stream of life.

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Introduction

Rehabilitation centers admit patients with physical impairment secondary to trauma or disease. The interdisciplinary team approach¹ offers the patients re-integration into society according to the patients' abilities. However, some patients without evidence of organic etiology are also referred. On those occasions a differential diagnosis between paralysis on an organic basis and paralysis and disability due to psychological mechanisms is mandatory.^{2–5}

Even without an organic basis for their signs and symptoms these patients often require comprehensive assessment, treatment and rehabilitation.^{6,7}

Initially, in many cases neither the patient nor the treating staff are aware of the conversion etiology. Patients suspected of malingering or having secondary gain from their disability must be differentiated from those with CD.

We present our cumulative experience with patients sustaining the most dramatic type of CD – weakness or paralysis 'Conversion Motor Paralysis'. These cases are relatively rare and there is no precise epidemiological mapping of the prevalence and incidence.^{3,8} Cases treated at our centers are presented along with the accepted comprehensive treatment and rehabilitation management, with reference to our experience.

Recent, as well as historically important medical literature, including differential diagnosis, pathophysiology, potential psychiatric co-morbidities, accompanying disabilities (mental and others) along with the rehabilitation diagnoses of disability is reviewed and discussed separately.⁹

Subjects and methods

During the period 1973–2000, 34 patients with neurological symptoms without any anatomical or

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physiological basis were admitted to the departments of rehabilitation in Reuth Medical Center (Tel-Aviv) and Sheba Medical Center (Tel-Hashomer), Israel. This number consists of less than 1% of the total acute traumatic and non-traumatic spinal cord disorders admitted annually to these centers.

In both departments, the team consists of physiatrists, nurses, physiotherapists, occupational therapists, social workers and psychologists. In addition, we consult a psychiatrist in cases requiring psychiatric or behavioral involvement. The rehabilitation process is based on the inter-disciplinary team approach.¹

Results

Twenty-five of the subjects were men, with a mean age of 30 years, and nine were women, with a mean age of 31.4 years.

On admission, the neurological symptoms included paraplegia (complete or incomplete) 18, hemiplegia or hemi paresis 11, tetraplegia (complete or incomplete) three, monoplegia one, triplegia one (Table 1).

The initiating trauma was motor vehicle crush 16, fall from a height eight, war injury two and unspecified eight. The final diagnosis on discharge was CD in 30 of the 34 cases, the remaining four being diagnosed as malingering. Functionally, nine patients had a complete recovery, 10 a partial recovery and 15 remained unchanged.

Illustrative cases (1–5 in Table 1) are presented:

Case 1

A 35 year old army officer, with considerable battlefield experience, was injured after being thrown from his armored vehicle when it hit a land mine. There was no loss of consciousness. On admission to the neurosurgery department, he was unable to move his lower limbs and he complained of a dull pain in his lower back. Sphincter control was normal. The patient appeared to exhibit an indifferent attitude to his situation.

Neurological examination revealed paralysis of the lower limbs, with no sensory or autonomic deficits. Reflexes were normal. A stable fracture of the D12 vertebra was noted on X-ray. The CT scan showed preservation of the diameter of the spinal canal although there was a hematoma around the vertebral body, reaching as far as the retro peritoneal space.

The patient was started on an immediate comprehensive rehabilitation program. During his stay in the rehabilitation unit the staff noted a certain discrepancy between his function and the 'subjective losses'. He was able to get to the shower and toilet without assistance and was observed to be moving his legs freely during sleep. The staff did not confront him but offered encouragement and provided positive reinforcement regarding the need to work hard. As a result the patient progressed well.

He was then transferred to the psychiatric service, where he continued to receive physiotherapy. His

diagnosis was 'a conversion reaction as a result of post traumatic stress disorder' (PTSD). After 3 weeks the patient was discharged with no neurological deficit.

Case 2

Following a motor vehicle crash in which his car overturned, a 19 year old soldier sustained head trauma. There was an initial loss of consciousness for several minutes. On admission to hospital he was diagnosed with mild brain concussion. In addition X-rays showed a stable fracture of the L1 and L2 vertebrae, with no clinical neurological loss. Skull X-ray was normal. Two days later, he developed a right-sided weakness. He had a history of stuttering since early childhood, following his mother's death.

Neurological examination, on admission to our center, revealed a right hemiplegia, with no sensory or autonomic deficits. Tendon reflexes were intact and he had full control of his sphincters. CT scan of the brain was normal. He was started on a fully comprehensive rehabilitation program.

The medical staff noted that during physical activity his 'paralyzed' limbs occasionally moved. After ruling out malingering and post-concussion syndrome, CD was considered as the most probable diagnosis. He continued in the intensive rehabilitation program, but no neurological improvement was attained.

At discharge, the right hemiplegia still persisted, as did the speech defect in the form of stuttering. Follow-up visits have revealed the development of further neuro-psychological symptoms such as impaired concentration, rage attacks and confusion all of which point towards an organic brain syndrome. Socially he has not worked since the time of injury and spends most of his time in a sports and recreation center for army veterans.

Case 3

A 25 year old, divorced woman was involved in a motor vehicle crash. Three weeks later she was admitted to hospital with a right hemiplegia. After a month of rehabilitation she was discharged in a wheelchair. She was issued with crutches and a walking frame. Since she was also incontinent she was also sent home with self-catheterization equipment.

One year later she was admitted to the outpatient service for follow-up. She was in the process of a lawsuit regarding the accident. She stated that she had been diagnosed as an incomplete paraplegic. Neurological examination revealed no muscle atrophy, no sensory or autonomic deficits and full sphincter control. Her walking pattern was noted to be bizarre and she refused to undergo any psychological or urodynamic studies. She wore a soft cervical collar and remained wheelchair bound for most of the time, although it was noted that activities of daily living and transfers were performed with relative ease. Ambulation was achieved only with great difficulty and for

Table 1 Demographic and clinical characteristics of conversion motor paralysis patients treated at the rehabilitation departments in Reuth Medical Center and Sheba Medical Center, Israel (1973–2000)

	<i>Psychological diagnosis</i>	<i>Recovery</i>	<i>Clinical presentation</i>	<i>Clinical findings</i>	<i>Cause</i>	<i>Age</i>	<i>Sex</i>
1	Conversion	Yes	Incomplete paraplegia	Fracture D12	Fall – war injury	35	M
2	Conversion	No	Right hemiplegia	Fracture L1-2	Motor vehicle crash	19	M
3	Malingering	Partial	Right hemiplegia	None	Motor vehicle crash	25	F
4	Conversion	No	Left hemiplegia	None	Fall – work accident	38	F
5	Conversion	Partial	Incomplete tetraplegia	None	Motor vehicle crash	22	F
6	Conversion	Yes	Complete paraplegia	Fracture dislocation L1-2	Motor vehicle crash	19	M
7	Malingering	Yes	Right hemiplegia	None	Motor vehicle crash	45	M
8	Conversion	Yes	Incomplete tetraplegia	None	Fall – work accident	17	M
9	Conversion	No	Triplegia	None	Fall	35	M
10	Conversion	No	Right hemiplegia	None	Motor vehicle crash	36	M
11	Conversion	Partial	Left hemiplegia	None	Motor vehicle crash	27	M
12	Conversion	Partial	Right hemiplegia	None	Motor vehicle crash	20	F
13	Conversion	No	Incomplete paraplegia	None	Motor vehicle crash	30	F
14	Conversion	Yes	Incomplete tetraplegia	None	Fall	27	M
15	Malingering (35 years!)	No	Complete paraplegia	None	Motor vehicle crash	21	M
16	Conversion	No	Late incomplete paraplegia	Fracture D12	Motor vehicle crash	30	M
17	Conversion	No	Incomplete paraplegia	None	Laminectomy	22	M
18	Conversion	Yes	Left hemiplegia	None	Motor vehicle crash	35	M
19	Conversion	No	Left hemiplegia	None	War injury	25	M
20	Conversion	No	Complete paraplegia	None	Unknown	26	M
21	Conversion	Yes	Recurrent incomplete paraplegia	None	Unknown	32	F
22	Conversion	Partial	Recurrent Incomplete paraplegia	None	Fall	20	M
23	Conversion	Partial	Incomplete paraplegia	Fracture dislocation D11-12	Motor vehicle crash	20	M
24	Conversion	No	Incomplete paraplegia	None	Hypertension	55	M
25	Malingering	Partial	Incomplete paraplegia	None	Low back pain	43	M
26	Conversion	Partial	Incomplete paraplegia	Fracture L1	Fall – work accident	61	M
27	Conversion	No	Incomplete paraplegia	Fracture L4	Motor vehicle crash	18	F
28	Conversion	Partial	Incomplete paraplegia	None	Motor vehicle crash	28	M
29	Conversion	Yes	Incomplete paraplegia	None	Unknown	21	M
30	Malingering (?)	No	Complete paraplegia	None	Motor vehicle crash	19	M
31	Conversion	Yes	Complete monoplegia (leg)	Tibial fracture	Motor vehicle crash	28	M
32	Conversion	No	Right hemiparesis	None	Unknown	35	F
33	Conversion	No	Complete paraplegia	None	Fall – Work accident	33	M
34	Conversion	Partial	Right hemiplegia	Old cerebral infarct	Stroke 2 years previously	63	F

this she required bilateral lower limb orthoses and elbow crutches.

The treating staff was tending towards a diagnosis of malingering. Subsequently she was video taped (covertly) by the insurance company walking normally without aids.

Case 4

A 38 year old, generally healthy, married secretary, fell down in the office. She developed an immediate weakness of her left hand. Routine X-ray and physical examination revealed no abnormal findings. She was given a soft cervical collar, analgesics and a few days of sick leave. Her condition worsened and she was

diagnosed as having ‘shoulder–hand syndrome’ (Complex Pain Syndrome Type I), low back pain and a personality disorder (histrionic personality).

Electromyography demonstrated denervation and absence of F-waves in the hand, consistent with a C8 radiculopathy and/or a peripheral nerve injury. Following a short period of rehabilitation there was a mild improvement in her physical condition. Over the next 5 months, however, she showed a gradual deterioration, resulting in a flaccid weakness of the left side. During this period she also stopped functioning in daily chores.

She was admitted for evaluation and rehabilitation. Assessment on admission showed a flaccid weakness on the left side, reduced superficial and deep sensation

on the left and normal deep tendon reflexes. She had full sphincter control. Peripheral vascular status was normal. During rehabilitation she demonstrated no improvement.

Several years later the patient presented with triplegia, completely dependent in activities of daily living but in excellent spirits. Her mood improved further after her divorce.

We can assume that in this case there was a genuine organic problem. The patient sustained a mild cervical injury, with physiological evidence of the trauma. Later, she developed CD, due to the secondary gain achieved by the aggravation of her symptoms.

Case 5

A 22 year old female pedestrian was struck by a motor vehicle. She lost consciousness for a few seconds and subsequently developed post-traumatic amnesia. On admission to hospital she complained of neck pain and a torticollis was noted on physical examination. Imaging tests revealed no fractures.

A week after injury she presented with a sudden onset of severe weakness in all four limbs, clonus, but without any sensory involvement. She was put in skeletal traction and the symptoms resolved for 24 h, but then reappeared. She was treated with steroids and transferred to our center. On admission she exhibited an indifferent attitude to her situation.

Neurological examination revealed severe spastic weakness in all four limbs, with no sensory or autonomic deficits and full control of the sphincters. The skeletal traction was removed and an intensive comprehensive rehabilitation program introduced. One week later, the patient was discharged walking, although a mild weakness of her limbs persisted. Psychological tests supported CD.

Discussion

The terms, definitions and historical background of CD were reviewed separately.⁹

In our series of 34 patients, four were eventually diagnosed as malingerers, but the remaining 30 were diagnosed with CD. The inter-disciplinary in-patient team management approach offers the benefits of a comprehensive assessment and treatment.¹

Most of our patients were young males. All displayed various neurological pictures ranging from monoplegia to tetraplegia. Definite traumatic events were experienced by 25 patients, while the rest suffered from: laminectomy, low back pain, essential hypertension, cerebral stroke and some unknown etiologies.

All underwent a comprehensive rehabilitation process and during this period, the CD or malingering diagnoses were made. Functional outcomes were favorable: Out of 34, nine patients had a complete recovery, ie they have returned to their previous function. Ten patients recovered partially: they im-

proved, but remained with incomplete paralysis; they could ambulate, and were independent in ADL. Fifteen had not improved and remained with the same neurological and functional picture similar to admission.

We could not draw any conclusions analyzing the outcome according to the initial clinical presentation. For example, those who fully recovered had suffered initially from incomplete paraplegia (three), monoplegia (one), hemiplegia (one), incomplete tetraplegia (two), complete paraplegia (one). Those who had not regained any functional improvement suffered from incomplete paraplegia (five), hemiparesis (five), triplegia (one), and complete paraplegia (four). Finally, those who partially recovered had incomplete paraplegia (four), incomplete tetraplegia (one and hemiparesis (three).

During the long rehabilitation process, the experienced team can easily differentiate between organic, CD and malingering etiologies.^{6,10-12} Once a disabled person is diagnosed with CD, we recommend the payers and authorities to cover all the patients' medical, rehabilitation, and financial needs.

The number of malingering patients is too small to draw any conclusions. We gave them the opportunity to benefit from hospitalization during which time they can be 'cured' successfully, but only one 'had fully recovered'.

The term *Conversion Disorder (Hysterical Neurosis - Conversion type)* is listed in the DSM-IV⁸ under Somatoform Disorder group (code 300.11), and is described as a psychological disorder, characterized by somatic symptoms with no physiological abnormalities, but with an underlying psychological basis. The diagnostic process consists of precise medical history, thorough physical examination and the use of other diagnostic tools.

When there is an apparent discrepancy between objective findings and clinical presentation, it is important to consider the possibility of disability due to a psychological mechanism, at the earliest contact. Inaccurate diagnostic labeling may expose patients to unnecessary treatments with the potential for significant side effects.¹³ This in turn will have a long term detrimental impact on medical management.

Several important points arise from our experience, and the review of the literature:⁹

- Complete medical and rehabilitation assessments are essential in order to rule out any possibility of an organic etiology.¹⁴ This is especially important in those patients that were involved in trauma.
- Taking a complete educational, vocational, medical, psychological and social history of the patient.² The psychosocial history should include prior functional disturbances, family dynamics, secondary gain, etc.
- Time factor – Successful rehabilitation can not be accomplished in a short period of time. The time required for proper diagnosis and treatment is relatively long.³ A rehabilitation process should

continue even after patients' discharge from the center.

- Repeated neurological examinations are inconsistent, especially the sensory part.^{7,9}
- Other clinical elements suspicious of conversion origin include normal respiration (in the presence of acute tetraplegia or hemiplegia), normal muscle tone and deep tendon reflexes, full control of sphincters, 'la belle indifference'.⁹
- Fractures, head injuries or other associated injuries may mask the psychological basis of the paralysis.

These elements do not assist differentiating CD from malingering. There should be a significant psychological conflict, and in its absence, it is probably malingering.⁸ In addition to the guidelines given in this article, it is important to rely on clinical judgment and experience, and on long-term follow-up.

Important points concerning treatment include:^{9,11,13}

- Define a clear and definitive treatment contract, without the assurance of a dramatic cure. All elements of the inter-disciplinary treatments should be defined clearly. All steps should be described from the beginning.
- Encourage involvement in an active treatment as early as possible.
- Validate the suffering of the patient, but with positive reinforcement and an emphasis on maximal restoration of function, including psychosocial, vocational and leisure activities.
- Do not rush to remove the defense mechanism of the traumatic etiology, although there should be positive reinforcement of the potential for recovery.
- Support the patient with possible origin for his state ('fabricated diagnosis'). 'Organic' etiology should not be ignored, but psycho-social factors should be explained.
- Team communication – a unified message of expected improvements and the importance of restoring function.¹⁵
- Avoid opiates and benzodiazepines because of the potential for abuse.
- Remember that CD is similar to organic disabilities in that it affects the occupational and social aspects of the patient's life.^{16,17}
- Plan for a long-term treatment relationship with a slow rate of improvement, including the social and occupational aspects of rehabilitation.^{18,19}

Conclusion

Disabled persons who experienced traumatic events resulting in various disabilities are admitted usually to a rehabilitation center. However, some of them are later diagnosed with Conversion Disorder or malingering. We believe that their participation in active regular and integrative rehabilitation process is beneficial to most of them. Most of these patients

gain functional independence and return to the main stream of life.

The inter-disciplinary in-patient team management approach in a rehabilitation setting offers the benefits of a comprehensive assessment and treatment for patients with conversion motor paralysis. It is important to note that this diagnosis is temporary and conditional, since there may be a long delay until the appearance of organic findings (as in a systemic disease). A complete medical assessment is essential in order to rule out any possibility of an organic etiology. In as many as 25% to 50% of patients diagnosed as conversion, an organic medical diagnosis was found.

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