



ZEBRAS OF MEDICINE

DIFFICULTIES IN DIAGNOSING: CONVERSION DISORDER

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Abstract

Review

BACKGROUND: Conversion disorder is characterized by symptoms and signs affecting sensory or motor function that cannot be explained by a neurological or other known medical condition. The symptoms can mimic an organic neurological problem which raises the concern of misdiagnosing.

OBJECTIVE: This review will give an overview of the literature on conversion disorder to summarize the current knowledge of this psychiatric disorder with a focus on the signs to discriminate this disorder from an organic neurological problem.

RESULTS: There is a lack of studies with a high level of evidence within the field of the conversion disorder. Some signs seem to indicate whether neurological symptoms are caused by a conversion disorder or neurological problem. However, only the Hoover's sign was found to discriminate between the before mentioned in more than one study. Hypnosis is recommended as a treatment and open communication towards the patient is very important.

CONCLUSIONS: Conversion disorder has been a recognized psychiatric disorder for several years that can have a great impact on a patient's life. More high-quality research is needed to fill the lack of data on the best way to the diagnose and treat this disorder.

KEYWORDS: Functional disorder, hysteria, Hoover's sign, psychiatry, neurology

Introduction

A 22-year old woman presents herself in the emergency room with an acute paresis of her left arm and the inability to open her eyes. Is this a neurological problem? The symptoms may also be caused by a conversion disorder or neurologic symptom disorder. The conversion disorder is characterized by symptoms and signs affecting sensory or motor function that cannot be explained by a neurological or other known medical condition. It was previously classified as a subtype of hysteria. Egyptian physicians 1900 B.C. attributed the symptoms to wandering of the uterus ('hystera' in Greek) within the body. Nowadays, conversion disorder is formally classified as a psychiatric disorder. In the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) conversion disorder is included in the Somatic Symptom Disorders chapter. In the International Classification of Diseases (ICD-10) the disorder is classified within the spectrum of dissociative disorders [1]. Neurologists recently proposed to adopt the disorder within their field of expertise and change its name into 'Functional Neurological Disorders' (FND) [2,3]. This preference so far did not result in a formal listing in one of the classification systems. The similarities between conversion disorder and organic neurologic disorders raise the concern of misdiagnosing. However, the percentage of misdiagnosis is found to be only 4% in a systematic review of 27 studies of FND [4].

This low number suggests that there are observations that can lead to the right diagnosis. In this review, we aim to provide an overview of this challenging disorder. We will discuss the clues in patient history and neurological exam that can point to this diagnosis. Furthermore, we will cover the management and treatment of conversion disorder.

DSM-5

Patients with conversion disorder present themselves with a variety of neurological symptoms: examples are weakness or paralysis, abnormal movements, swallowing symptoms, speech symptoms, seizures, anaesthesia, and visual or hearing disturbances. However, an organic cause is missing. Standard neurologic exam, as well as, laboratory and imaging results are within normal limits. Conversion disorder differs from simulation and factitious disorder in the sense that patients with conversion disorder are not clearly feigning their symptoms. The term

"conversion" finds its origin in Freud's psychodynamic theory and refers to the phenomenon of converting an intrapsychic conflict into physical symptoms [5]. The precise prevalence of the disorder is unknown. In 5% of the referrals to neurological clinics this diagnosis is made. The incidence of conversion disorder is 4.6/100,000 per year and is two to three times more common in females [6].

The diagnostic criteria for the conversion disorder are stated in The Diagnostic and Statistical Manual of Mental Disorders (DSM) as listed down below (table 1) [7]. In the most recent version of the DSM, the DSM-5, the criterion that a temporal association between psychological factors and the onset or the worsening of symptoms must be present, which was a part of the DSM-4, has been abandoned. The reason for this being that psychological stressors are not always found [3,8]. Therefore 'with' or 'without psychological stressor' is added as a specifier. A background of childhood trauma is correlated with conversion disorder more frequently than in controls [9,10].

Diagnostic tests

In order to diagnose a patient with conversion disorder, it is not enough to exclude organic pathology: it is not a 'diagnosis of exclusion'. The

Table 1: DSM-5 criteria for the diagnosis of conversion disorder (functional neurological disorder) [7]

A.	The patient has ≥ 1 symptoms of altered voluntary motor or sensory function.
B.	Clinical findings provide evidence of incompatibility between the symptom and recognized neurological or medical conditions.
C.	The symptom or deficit is not better explained by another medical or mental disorder.
D.	The symptom or deficit causes clinically significant distress or impairment in social, occupational, or other important areas of functioning or warrants medical evaluation.

diagnosis is far and foremost based on incongruence and inconsistencies. Incongruence means that the symptoms do not fit a known organically determined pattern. An example: the sternocleidomastoid muscle is bilaterally innervated and therefore usually spared within an organic hemiparesis. When patients thus have a paralyzed limb on the left side and also the inability to rotate the head to the left side, this collides with the pattern of muscle weakness one would expect.

The term inconsistency is used for finding different patterns over time or when distracted. For example, a patient has a paralytic arm but when the arm is passively lifted and released it does not fall down immediately. These inconsistencies and incongruences are called positive signs. There are about 40 positive signs described in the literature, however, there is a wide range in sensitivity and specificity for these tests and observations. In general, it is hard to validate them because of the lack of a golden standard for diagnosing functional disorders. We will now discuss frequently observed positive signs in conversion disorder.

La belle indifférence

La belle indifférence is one of the positive signs often described by doctors as an indication of functional neurological disorder. It is defined as 'a relative lack of concern about the nature or implications of the symptoms' [11]. In a systematic review of eleven studies with a total of 356 patients with conversion disorder and 157 patients with organic disease, it was shown that the prevalence of la belle indifférence was 21% in the group of patients with conversion symptoms and 29% in patients with an organic disease. Seven out of the eleven studies concluded that la belle indifférence was not useful for distinguishing patients with FND from patients with organic disease. In the remaining four studies there was no comment on its value [12]. Based on these studies, it can be questioned whether la belle indifférence is a useful clinical sign.

Pronator drift

When performing the pronator drift, also known as the Barré sign, the patient is asked to fully extend both arms with palms facing upwards and eyes closed. In the presence of an upper motor neuron disorder the patient's arm will pronate and a drift can occur. Drifting in absence of this pronation was described by Babinski to be a sign of hysterical paresis. To verify if this drifting in absence of pronation is indeed a positive sign, Daum et al. performed this test in 26 patients with conversion disorder and 28 patients with an organic neurological condition [13]. All patients with conversion disorder were found to have a positive drift without pronation sign, whereas this was only found in two patients of the control group. From this, one can conduct a sensitivity of 100% and specificity of 93% of this sign for conversion disorder. However, the fact that the examiners in this study were not blinded for the diagnosis of the patients should make one cautious in interpreting these percentages.

Hoover's sign

Hoover's sign, first described in 1908 by Charles Hoover, is used to detect a functional paresis of the lower extremity [14]. It is based on the principle of contralateral synergic movement; when the left hip is flexed against resistance, the right leg will involuntarily extend. When there is weakness in voluntarily hip extension, but a normal involuntary hip extension is found when flexing the contralateral hip, it is called a positive Hoover's sign. The involuntarily extension can be perceived by the examiner by placing his hand under the weak leg. In a systematic review the sensitivity of Hoover's sign was found to be 94% and the specificity 99% based on four studies [15,16].

Spinal Injuries Center Test

Another test used to identify lower leg functional weakness is the Spinal Injuries Center test. The patient lies on his back and the examiner

passively lifts and flexes the patient's knees on the bed. When the examiner gently releases his hand and the patient maintains the upheld position of the knees, the test is considered positive. In severe paralysis, the affected leg will fall back on the bed immediately. Based on a study with 14 patients with functional leg paresis and a control group of 48 patients, sensitivity and specificity were found to be 100% and 97.9% respectively [17]. The examiners in this study, however, were not blinded for the diagnosis of the patients and the results should therefore be interpreted with caution. Moreover, this test can only be used in patients who present themselves with severe leg paresis.

Excluding organic causes

When uncertainty remains about the diagnosis, MRI images, a lumbar puncture or laboratory tests can be used to rule out specific medical disorders. However, clinicians must always keep in mind that additional tests can lead to false positives when there is a low a priori chance. Moreover, doctors must be aware of the existence of the so-called 'functional overlay'; patients can both show functional neurological symptoms and have a neurological disease. For example, about one-third of the patients with Parkinson's disease are found to have functional symptoms [16].

Psychiatric comorbidity

About one-third of patients diagnosed with conversion disorder presenting with motor symptoms also meet criteria for other 'axis I psychiatric diagnoses', and 50% meet criteria for axis II (personality disorder) diagnoses [18].

Management and treatment

There is no specific cure for FND and management is often challenging, but since FND can have a significant impact on quality of life, it is important to have knowledge of the possible treatment options.

The Dutch multidisciplinary guideline for the treatment of SOLK or somatization disorders (2011) recommends hypnosis as treatment for conversion disorder [19]. However, a Cochrane review evaluating evidence for various treatment modalities concluded that more research was required [20]. Several specialised psychiatric clinics in The Netherlands offer treatment programmes for conversion disorder.

It can be very hard for people to accept that no organic cause is found for their symptoms. This not only holds true for the functional neurological disorders but also for functional somatic syndromes such as fibromyalgia and irritable bowel syndrome. Therefore, explaining the diagnosis to patients to the point wherein they get confidence in the diagnosis as well is the first step of treatment. Henningsen et al. suggests that for this first step it is important to reassure the patient with a positive explanation of the functional disorder; show the patient a positive clinical sign, and do not only mention the negative test results. If necessary, symptomatic measures, pain relief for instance, should be used. It is important to keep the patients mobilised, the symptoms will not be improved by bed rest. On the contrary, it is more likely that they will worsen because of deconditioning. Finally, Henningsen et al. states that psychoeducation in the form of advising on illness behaviour should be part of the management of a functional disorder. When this is insufficient one should consider referring to a psychotherapist [21].

Transcranial magnetic stimulation is an upcoming treatment for conversion disorder. It is a neurophysiological technique based on electromagnetic induction. With the use of a short magnetic pulse, an electric current is induced in the brain to stimulate the different brain areas. Controlled trials looking into this new treatment method have not been completed yet, however, preliminary results show some promise

in the seizure type of FND. There are also some case reports wherein transcranial magnetic stimulation was found to reduce the symptoms of FND [22].

Prognosis

The overall prognosis of functional motor symptoms is disadvantageous. In a systematic review of 24 studies, it was shown that in 20 studies over 30% of the patients had the same or even worse symptoms at follow-up. The duration of symptoms is found to be related to delay in seeking treatment and psychiatric comorbidity [23].

It is shown that the quality of life of patients with FND is even worse than for patients with an organic neurological disorder. Patients with FND scored significantly lower on 5 of the 8 domains of the Short Form 36 item scale for health-related quality of life. The five domains are amongst others social functioning and bodily pain [24].

Conclusion

In conclusion, it is challenging to differentiate between a neurological disorder and a functional neurological disorder and crucial to choose the right treatment. In this way, the prognosis for patients such as the 22-year old woman may be significantly improved. Positive signs can help doctors with the diagnosis. For functional neurological symptom disorders it is essential to perform a full medical history and a thorough neurological exam to support your diagnosis with full confidence. In the management of FND open communication and respect towards the patient is key!

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