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## Conversion disorder in a neurological emergency department: Restrospective series

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### ABSTRACT

**Objective:** To observe the conversion disorder in a neurological emergency department.

**Methods:** It is common that the initial approach to this patients include the use of various diagnostic exams. In this series we reviewed 94 patients that arrived a neurological emergency room in a 3 year period. **Results:** 72 patients were females (76%), and the initial presumptive diagnosis were: neurovascular syndrome in 36 patients (38.3%), convulsive disorder in 20 patients (21.28%), and conversive disorder in 8 patients (8.51%). 82 patients had motor symptoms and 61 sensitive symptoms. 88 patients (93%) required neuroimaging studies, 77 (81%) patients underwent through basic biochemical panels. Other tests performed were: electroencephalogram in 12 patients (12.77%), electromyography in 11 patients (11.7%), lumbar punction in 8 patients (8.04%) and regarding the medical consult in the care of these patients 11 were evaluated by 1 specialists, 35 (37.2%) by 2 different specialties, 42 (44.63%) patients required evaluation by 3, and 6 patients (6.38%) required evaluation by 4 different specialties. **Conclusions:** Based on this data, we conclude that conversion disorders require a lot of resources in the emergency room and that the similarities with neurological diseases demands a complete workup including expensive diagnostic tools. However, this patients can be discharged safely without requiring hospitalization.

## 1. Introducion

Conversion disorders (functional neurological symptom disorder) is a heterogenous group characterized by the simulation of symptoms and/or neurological diseases [1]. Given its clinical presentation, the initial approach is mainly directed towards discarding the syndrome or disorder that the patients is simulating. Attention is focused on searching clinical and paraclinical etiology of symptoms, consuming expensive health care resources and time.

Usually, neurological symptoms demand for the use of imaging, specialized neurological diagnosis exams and an interdisciplinary approach that causes delays and higher workload given the time patients must spend in the emergency rooms and lack of efective treatment while the initial workup is performed.

Given that literature relevant for this disorders in the Emergency

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Room setting is scarce, we describe the clinical presentation and use of diagnostic resources in patients with conversion disorder in a neurological emergency department.

## 2. Material and methods

The Instituto Neurologico de Colombia is a reference treatment center for neurologic and neurosurgical conditions. It is a small institution in Medellin, Colombia, that receives approximately 4 000 patients visits in the emergency department. This institution offers different specialties as emergency medicine, neurology, neurosurgery, neurooncology, child neurology, neurointerventional procedures, demyelinating diseases, abnormal movement disorders, cephalgia, psychiatry, and neurological and neurosurgical intensive care units. Our emergency department is composed by general physician, and specialized physicians in emergency medicine, neurology and neurosurgery. The other specialties are available upon request or consultation. Patients that arrive spontaneously to the emergency room are initially assessed by general physicians who classify the patients and assign a specialty as their primary care provider. Patients referred from other institutions are directly evaluated by a pre assigned specialty. During night time, patients are usually evaluated by general physicians.

Given our observation that patients with conversion disorders require a significant time and use of resources in the emergency room, a retrospective analysis was performed reviewing electronic medical records of patients with a final diagnosis of somatic symptom disorder (DSM IV) or conversion disorder (DSM V). Patients included in this retrospective series were those who received medical attention in our emergency department between September 2013 and November 2016. The following inclusion criteria were used: chief complaint of neurological symptoms or related conditions suggesting an underlying neurological disorder, absence of previously diagnosed conversion disorder or somatic symptom disorder, and patients in which neurological disorders were excluded after a thorough clinical, paraclinical and specialized assessment. All patients included were discharged from the emergency department and had as final diagnosis in their medical records somatization disorder (ICD 10: F450), undifferentiated somatoform disorder (F451), Other somatoform disorders (F458), somatoform disorder, unspecified (F459) and those in which the specialist evaluation suggested conversion disorder or functional neurological symptoms.

Patients with history of previously diagnosed psychiatric disorders as well as those diagnosed outside the emergency room (hospitalization or outpatient setting) were excluded from this study. The statistical analysis was performed using Excel. This is a retrospective, descriptive study.

## 3. Results

From September 2013 to November 2016, 266 patients were identified. After excluding patients using the previously described criteria, 94 patients diagnosed with somatization disorder and/or patients that met the DSM V criteria for conversion disorders (functional neurological symptoms) were included. The hospital stay length was less than 24 hours for all patients. The variables considered in our study were: sex, age, presumptive initial diagnosis, diagnostic exams performed and number of different medical specialties involved in the patient care. The final diagnosis was confirmed by either psychiatry or by one of the specialists of the emergency room as well as the absence of alternative diagnosis 3 months after de initial emergency room visit. The follow up was performed reviewing outpatient medical records, health insurance medical records and follow up telephone calls to patients.

In the demographic data 72 (76.6%) of the patients were females while 22 (23.4%) were male patients. 23 (24.4%) patients belonged to the group of patients between 13 and 25 years of age, 52 patients (55.32%) belonged to those between 26 and 50 years of age and finally 19 (20.21%) patients comprised those 51 years of age and older.

The initial presumptive diagnosis (simulated disorders) were: neurovascular syndromes in 38.3% of the patients (stroke in 34 patients, Transient ischemic attack in 2 patients), seizure disorder in 21.28% of patients (first seizure episode or single seizure in 16 patients, epilepsy in 2 patients, and status epilepticus in 2 patients), conversion disorder in 8.51% of patients, myelopathy in 7.44% (3 patients simulated cord compression) and less frequently cephalgia, syncope, polyneuropathy, quadriparesis, and optic neuritis (Table 1). Sixty-one (64.89%) of patients experienced sensitive symptoms while as 82 (87.23%) experienced motor symptoms.

**Table 1**  
Initial presumptive diagnosis.

Diagnosis	Frequency (number of patients)	Percentage(%)
Neurovascularsyndromes	36	38.30
Seizuredisorder	20	21.28
Conversiondisorder	8	8.51
Myelopathy	7	7.44
Cephalgia	6	6.38
Syncope	4	4.25
Polyneuropathy	3	3.19
Quadriparesis	2	2.13
Optic neuritis	2	2.13
Other	6	6.38
Total	94	100.00

Regarding diagnostic exams performed, 77 patients (82%) underwent basic biochemical panels (Complete Blood Count, electrolytes, Blood urea nitrogen (BUN), creatinine, pregnancy assay). 52 patients (55.3%) required magnetic resonance imaging

(MRI), 25 patients (26%) computed tomography (CT), 11 patients (11.7%) underwent both MRI and CT scans and 6 patients (6.3%) no imaging. Other diagnostic studies performed included: 12 patients (12.77%) were assessed through electroencephalogram, 11(11.7%) had electromyography, 8 required lumbar puncture, 4 (4.2%) underwent video monitoring, 2 (2.12%) patients had neck vessels ultrasound, and 1 (1.06%) patient required evoked potentials.

Finally, in relation with the different specialties involved in the evaluation and care of these patients: 11 patients (11.7%) were evaluated only by one physician, 35 patients (37.1%) required evaluation from physicians of 2 different specialties, and 48 patients (51%) required evaluation from physicians of 3 or more medical specialties (Table 2).

**Table 2**

Number of medical specialties involved in the evaluation and care of patients with final diagnosis of conversion disorder.

Medical specialty	Frequency	Percentage (%)
General medicine – Neurology	26	27.66
General medicine, Neurology and Psychiatry	23	24.47
Emergency medicine, Neurology and Psychiatry	15	15.96
Neurology	7	7.45
General medicine, Emergency medicine, neurology, and Psychiatry	6	6.38
Emergency medicine - Neurology	7	7.45
General medicine, Emergency medicine, Psychiatry	4	4.26
Emergency medicine	4	4.26
Emergency medicine, Psychiatry	2	2.13
Total	94	100.00

#### 4. Discussion

Recently classified as part of the group of somatization disorders in the DSM V, conversion disorders or functional neurological symptoms[1-3] may present with a frequency close to 30% in outpatient specialized neurology clinics[4-7]. Other authors have reported a frequency close to 22% in general clinics and others have stated that up to 9% of these patients require inpatient hospital admission adding up to 10% of the total health care system total costs[8-10].

Conversion disorders and somatic symptom disorders are entities that occur when patients present with the loss of sensitive or motor functions despite the incompatibility between the symptoms and the existence of a true neurological or medical condition discarded through a complete medical and diagnostic assessment. These patients experience these type of symptoms due to changes in the function and not in the structure of their nervous system[1,11], in specific clinical context, up to 10-20% of these patients may present with psychogenic seizures, 5% with psychogenic movement disorders, 30% with psychogenic syncope or pseudostroke[12-14]. Symptoms described include: weakness, gait disorders, tremor, dizziness, speech and deglutition disorders, and visual, auditory and sensitive

abnormalities[12]. 60% of these patients are females between 20 and 30 years of age, with a 1.8:1 female to male ratio. However these disorders have been also reported in all age groups including children of early ages[9,11,12,15,16].

In general, 50% of these patients present with sudden onset symptoms specially those that describe experiencing weakness or movement disorders. These patients tend to present very symptomatic in front of health care providers, and usually the physical exam findings are not congruent with the symptomatic description provided by patients. The sudden onset of symptoms, emotional event related to the onset of symptoms, paroxysmal and migratory fashion of the symptoms experienced may be elements of the history in favor of a conversion disorder. Most importantly, symptoms should not be related with neuroanatomical abnormalities and some patients may improve with distractions. However, no indicators may absolutely be used to define a conversion[17,18].

Commonly, this type of patients may have associated disorders like depression, anxiety or even post traumatic stress disorder before the conversion episodes. Many undergo through emotional triggers or other psychiatric comorbidities as a consequence to the disability that they experience given that through time, symptoms may evolve in severity and migrate[12,13].

If this disorder is considered as the principal diagnosis, the treatment include explaining the diagnosis to the patient as well as treating other possible psychiatric comorbidities. Ideally these patients should be evaluated by neurologists and psychiatrists[17,19-21].

It is important to understand that conversion disorder is a condition with a slow recovery which may be frustrating. It has been described that patients with symptoms lasting less than 2 weeks and children usually recover faster than other patients. Only 50% of the patients report feeling better after 8 months as compared to 72% of patients that report a significant improvement after 1 year when assessed by an multispecialty group of care[22-24].

Limited literature describing the clinical presentation of adult patients in the Emergency Room is available. However, it is clear that conversion disorder should be considered among highly symptomatic patients with an abrupt onset of symptoms. In case of convulsive syndromes, it is suggested to include a videomonitoring study given the low sensitivity of an electroencephalogram during the asymptomatic period. In case of pseudo stroke or spinal cord related symptoms, MRI could be the test of choice[13,14].

It is important to know that physicians may have a high capacity to initially approach these patients[11]. However, it is necessary to avoid a “snow ball” syndrome in which the patient consumes and consumes clinical and paraclinical resources without a real need. Even if a correct diagnosis is made, patients may show no improvement through time. If symptoms are correctly categorized, less than 1% of the patients will experience changes in their diagnosis through time[22,25]. It is possible that as a neurological disorder, the diagnostic error rate could be close to 4%, misdiagnosing epilepsy, movement disorders and multiple sclerosis[26].

Different to other studies, in this registre, we found a higher rate of

neurovascular syndromes as the simulated condition. We think that this is given that in the Instituto, hyperacute changes in function are approach initially ruling out vascular conditions and this explains that one third of our patients to have as a presumptive diagnosis a neurovascular syndrome. However, similar to other reports, the use of clinical and paraclinical (including human resources) resources is very high [11]. This confirms that even in emergency rooms this conditions have a high impact and represent a heavy working load to the emergency and health care systems. Patients included in this series were discharged from the emergency department and none experienced complications or alternative diagnosis that could suggest a bad or erroneous primary evaluation in the emergency department. It is very important for primary care providers to be aware of these conditions and consider them as diagnosis early in their patients evaluations. This could avoid an overload to the health care system by reducing the use of unnecessary diagnostic tools and represent an impact in the care of this patients by performing early interventions reducing chronic symptoms that this patients may experience.

### Conflict of interest statement

The authors report no conflict of interest.

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