RESEARCH PAPER

Hospital revisit rate after a diagnosis of conversion disorder

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ABSTRACT

Objective To estimate the hospital revisit rate of patients diagnosed with conversion disorder (CD).

Methods Using administrative data, we identified all patients discharged from California, Florida and New York emergency departments (EDs) and acute care hospitals between 2005 and 2011 with a primary discharge diagnosis of CD. Patients discharged with a primary diagnosis of seizure or transient global amnesia (TGA) served as control groups. Our primary outcome was the rate of repeat ED visits and hospital admissions after initial presentation. Poisson regression was used to compare rates between diagnosis groups while adjusting for demographic characteristics.

Results We identified 7946 patients discharged with a primary diagnosis of CD. During a mean follow-up of 3.0 (±1.6) years, patients with CD had a median of three (IQR, 1–9) ED or inpatient revisits, compared with 0 (IQR, 0–2) in patients with TGA and 3 (IQR, 1–7) in those with seizures. Revisit rates were 18.25 (95% CI, 18.10 to 18.40) visits per 100 patients per month in those with seizures. Revisit rate ratio for repeat ED visits or hospitalisations was 0.89 (95% CI, 0.86 to 0.93) for seizure disorder and 0.32 (95% CI 0.31 to 0.34) for TGA.

Conclusions CD is associated with a substantial hospital revisit rate. Our findings suggest that CD is not an acute, time-limited response to stress, but rather that CD is a manifestation of a broader pattern of chronic neuropsychiatric disease.

INTRODUCTION

Conversion disorder is a type of somatic symptom disorder, which is characterised by a number of involuntary neurological symptoms that cannot be explained by an underlying organic condition. Symptoms may include weakness, numbness, diplopia, blindness, deafness, convulsions and abnormal movements; these symptoms are frequently reported and are typically, but not necessarily, associated with psychological stressors.¹⁻⁴ Conversion disorder remains a diagnosis of exhaustive exclusion as it lacks established pathophysiology, biomarkers and imaging correlates. Positive clinical signs are only now being validated.⁵⁻⁶ The incidence is historically approximated to be 4–12 cases per 100 000 per year.⁷

Standard textbooks posit that conversion disorder often rapidly remits;⁸⁻¹⁰ however, the natural history of the disorder remains an area of active investigation. A systematic review of patients with motor symptoms due to conversion disorder reports that anywhere from 10% to 90% of patients are symptom-free at follow-up.¹¹ Patients with psychogenic non-epileptic seizures, though generally thought to have unfavourable outcomes, have highly variable cure rates from as low as 16% to as high as 78%.¹²⁻¹⁴ The use of emergency care services and inpatient hospital care by patients with conversion disorder has not been examined, and it is unclear whether a hospital visit for conversion disorder represents a transient event or part of a chronic pattern of recurrent visits. We therefore used statewide administrative claims data to assess the emergency department (ED) and hospital revisit rate after a diagnosis of conversion disorder.

METHODS

Design In order to evaluate the revisit rate for patients diagnosed with conversion disorder, we used administrative claims data from California, Florida and New York. All non-federal EDs and acute care hospitals in these states use standardised methods to collect data about all discharges and transmit these data to respective state agencies. After quality-checking, the data are de-identified and provided to the Agency for Healthcare Research and Quality for its Healthcare Cost and Utilisation Project. An anonymous, unique record for each patient allows longitudinal tracking of ED encounters and hospitalisations.¹⁵ As this publicly available database includes only de-identified data, our study was certified as exempt from review by our institutional review board.

Patients We identified all patients discharged from a non-federal California, Florida or New York ED or acute care hospital between January 2005 and December 2011 with a primary discharge diagnosis of conversion disorder. Conversion disorder was defined by the International Classification of Diseases, 9th Edition, Clinical Modification (ICD-9-CM) code 300.11. As control groups, we identified all patients discharged with a primary discharge diagnosis of seizure (345.x) or transient global amnesia (TGA) (437.7). We selected seizure disorder as a control group because it represents a chronic neurological disease known to have a large healthcare resource burden.¹⁶⁻¹⁷ We chose TGA as a negative control because it is an acute neurological disorder without a significant healthcare burden.¹⁸

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For incident cases of conversion disorder, we excluded cases with any concurrent secondary diagnoses of seizure or TGA at baseline. In order to maximise our ability to assess follow-up ED visits and inpatient admissions, we excluded patients who were not California, Florida or New York residents at baseline.

Measurements
The primary outcome was the combined rate of ED visits and hospital admissions per 100 patients per month after initial presentation. In addition, for each patient, we counted the number of different institutions visited (either ED visits or hospital admissions) during the follow-up period. Last, we tabulated the most frequent primary discharge diagnoses recorded at the time of revisit.

Statistical analysis
We used medians and IQR to report the total number of revisits and total number of different hospital facilities visited. Pairwise comparisons of medians were performed using the rank-sum test. We used survival statistics to calculate incidence rates and Poisson regression with robust SEs to evaluate relative differences in revisit rates among our three baseline diagnosis groups (ie, conversion disorder, seizures and TGA) while adjusting for demographic characteristics (age, sex, race, insurance status and income quartile). All analyses were performed using Stata MP (V.13, College station, Texas, USA). The threshold of statistical significance allowed for an α-error of 0.05.

RESULTS
We identified 7946 patients discharged with a primary diagnosis of conversion disorder. As compared to patients with seizure or TGA, patients with conversion disorder were younger and more often women (table 1). The cohort of patients with conversion disorder, as compared to TGA, had a higher proportion of non-white patients and Medicaid beneficiaries. Payment source information was missing in less than 1% of the patients in each group.

During a mean follow-up of 3.0 (±1.6) years, patients with conversion disorder had a median of 3 (IQR, 1–9) ED or inpatient revisits, compared with 0 (IQR, 0–2) in patients with TGA and 3 (IQR, 1–7) in those with seizures. The number of revisits was significantly higher in patients with conversion disorder than those with seizures (p<0.001) or TGA (p<0.001). Patients with conversion disorder visited a median number of 2 (IQR, 1–3) different hospitals on follow-up, compared with 1 (IQR, 1–2) in patients with TGA and 2 (IQR, 1–3) in those with seizures. The number of different hospitals revisited was also significantly higher in patients with conversion disorder than in those with seizures (p<0.001) or TGA (p<0.001).

Revisit rates were 18.25 (95% CI, 18.10 to 18.40) visits per 100 patients per month in those with conversion disorder, 3.90 (95% CI, 3.84 to 3.95) in those with TGA and 17.78 (95% CI, 17.75 to 17.81) in those with seizures. After adjusting for demographic variables, conversion disorder was associated with a higher rate of ED or hospital revisits. As compared to the conversion group, the incidence rate ratio for repeat ED visits or hospitalisations was 0.89 (95% CI, 0.86 to 0.93) for seizure disorder and 0.32 (95% CI 0.31 to 0.34) for TGA. Patients with seizures often had revisits for seizures, while patients with conversion disorder had revisits for a host of non-specific diagnoses (table 2).

DISCUSSION
In a large, population-based cohort of patients diagnosed with conversion disorder, we found a high rate of subsequent ED visits and hospital admissions as compared to patients with seizures and TGA. Consistent with prior studies, patients with conversion disorder were younger and more likely to be non-white and Medicaid beneficiaries.19–21 After adjusting for demographic variables, the rate of repeat ED visits or hospital admissions remained higher for patients with conversion disorder than for the other groups, and patients with conversion disorder had the highest total number of visits throughout follow-up. In addition, consistent with prior work,22 23 the primary discharge diagnoses at revisits in patients with conversion disorder infrequently included organic neurological disease.

Our study is the first contemporary examination of the rate of repeated hospital visits after a diagnosis of conversion disorder. Contrary to beliefs that conversion disorder consists of acute, time-limited episodes, existing literature describes its association with substantial disability, unemployment and emotional distress.19 20 24 25 and studies of prognosis show highly variable rates of recovery.11 13 Our findings show that there are high numbers of ED and hospital revisits among patients with conversion disorder; this further challenges the notion that conversion disorder is an isolated and time-limited response to stress, and shows that it is instead a manifestation of a chronic tendency to present for acute medical care.

Our assertion that conversion disorder represents a chronic illness is further substantiated by our finding that patients with conversion disorder re-presenting for treatment are frequently discharged with non-specific, symptom-based diagnoses. Our results show that while patients with seizure disorder often revisit hospitals with seizures, patients diagnosed with conversion disorder return to the hospital with a variety of non-specific problems. The three most common revisit diagnoses were the symptom-based diagnoses of non-specific chest pain, abdominal pain and headache (table 2). These non-specific discharge diagnoses may represent a variety of non-organic or

### Table 1 Demographic characteristics of patients diagnosed with conversion disorder, seizure or transient global amnesia

<table>
<thead>
<tr>
<th></th>
<th>Conversion</th>
<th>Seizure</th>
<th>TGA</th>
<th>P Value*</th>
<th>P Value†</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>7946</td>
<td>205 918</td>
<td>11 749</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td>42.2 (15.5)</td>
<td>47.3 (19.1)</td>
<td>64.6 (11.5)</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>6102 (76.8)</td>
<td>99 822 (48.5)</td>
<td>6304 (53.7)</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Non-white, n (%)</td>
<td>3194 (40.2)</td>
<td>84 971 (41.3)</td>
<td>2093 (17.8)</td>
<td>0.05</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Medicare, n (%)</td>
<td>1534 (19.3)</td>
<td>66 130 (32.1)</td>
<td>5340 (45.5)</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Medicaid, n (%)</td>
<td>1722 (21.7)</td>
<td>44 402 (21.6)</td>
<td>249 (2.1)</td>
<td>0.85</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

*Compares conversion and seizures.
†Compares conversion and TGA.  
TGA, transient global amnesia.
medically unexplained symptoms, which are common in somatic symptom disorders, and is thereby suggestive of the chronic neuropsychiatric nature of conversion disorder. Further, our findings are consistent with prior work demonstrating high rates of healthcare utilisation among somatic symptom disorder patients in general. The lack of repeated conversion disorder diagnoses at the time of repeat visits may indicate that acute care providers often evaluate individual symptoms in isolation and thereby fail to recognise a pattern of repeat visits for non-specific symptoms, which taken together may represent a chronic neuropsychiatric illness. Alternatively, faced with a patient with new and different somatic symptoms, physicians may be uncomfortable giving a second diagnosis of conversion disorder. On the other hand, the absence of repeat conversion disorder diagnoses may indicate that the initial diagnosis of conversion disorder is often incorrect and thus the frequent repeat visits may indicate an underlying disease that eludes diagnosis. Last, a final possibility is that the non-specific revisit diagnoses may simply represent a general pattern of poor health. Given the high rate of acute care visits seen in our data, further research to distinguish between these possibilities will be important in devising strategies to address the burden of conversion disorder.

This study has several important limitations. First, by limiting our study to admissions and ED visits, we likely selected for patients with more substantial symptoms and disability. The same bias, however, applies to all three diagnosis groups and therefore would not be expected to affect our relative comparisons. Second, our assessment of diagnoses was limited by ICD-9-CM diagnosis codes, which lack clinical information. Third, it is possible that certain patients were readmitted to hospitals in a different state than where the initial diagnosis was given, but this is likely a rare occurrence as we only included patients who were residents of the states from which the claims data were drawn and additionally, applies to all three subgroups. Drawing on data from three large states, our results are readily generalisable.

In summary, patients diagnosed with conversion disorder during an ED visit or hospital admission have high rates of subsequent revisits to the ED or hospital. Our findings do not support the notion that conversion disorder is only an acute, time-limited response to psychiatric stress, but instead suggest that conversion disorder is a manifestation of a broader pattern of chronic neuropsychiatric illness with a significant hospital-based burden of disease.

**Contributors** AEM, NSP, HK conceived and designed the study and drafted and revised the manuscript for intellectual content. SC, AC, NCA, BBN, drafted and revised the manuscript for intellectual content.

**Competing interests** HK has served on a medical advisory board and serves on a speakers bureau for Genentech.

**Ethics approval** Institutional review board.

**Provenance and peer review** Not commissioned; externally peer reviewed.

### REFERENCES


**Table 2** Most common primary discharge diagnoses for repeat visits

<table>
<thead>
<tr>
<th>Conversion</th>
<th>Per cent</th>
<th>Seizure</th>
<th>Per cent</th>
<th>TGA</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-specific chest pain</td>
<td>6.9</td>
<td>Epilepsy; convulsions</td>
<td>27.0</td>
<td>Non-specific chest pain</td>
<td>5.2</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>5.9</td>
<td>Alcohol-related dis</td>
<td>3.0</td>
<td>Sup. injury; contusion</td>
<td>3.3</td>
</tr>
<tr>
<td>Headache</td>
<td>4.9</td>
<td>Headache</td>
<td>2.8</td>
<td>Cardiac dysrhythmias</td>
<td>2.9</td>
</tr>
<tr>
<td>Spondylosis</td>
<td>3.6</td>
<td>Sup. injury; contusion</td>
<td>2.6</td>
<td>Spondylosis</td>
<td>2.9</td>
</tr>
<tr>
<td>Sprains and strains</td>
<td>3.3</td>
<td>Abdominal pain</td>
<td>2.6</td>
<td>Abdominal pain</td>
<td>2.8</td>
</tr>
<tr>
<td>Mood disorders</td>
<td>3.1</td>
<td>Non-specific chest pain</td>
<td>2.5</td>
<td>Sprains and strains</td>
<td>2.2</td>
</tr>
<tr>
<td>Epilepsy; convulsions</td>
<td>2.8</td>
<td>Mood disorders</td>
<td>2.2</td>
<td>Osteoarthritis</td>
<td>2.1</td>
</tr>
<tr>
<td>Other nervous system dis</td>
<td>2.6</td>
<td>Sprains and strains</td>
<td>2.1</td>
<td>Urinary tract infections</td>
<td>2.1</td>
</tr>
<tr>
<td>Connective tissue disease</td>
<td>2.2</td>
<td>Spondylosis</td>
<td>2.0</td>
<td>CAD, other heart dis.</td>
<td>2.0</td>
</tr>
<tr>
<td>Urinary tract infections</td>
<td>2.1</td>
<td>Schizophrenia</td>
<td>2.0</td>
<td>Syncpe</td>
<td>1.9</td>
</tr>
</tbody>
</table>

CAD, coronary artery disease; dis, disorders; sup, superficial; TGA, transient global amnesia.


