Domestic Violence Against Patients With Chronic Neurologic Disorders

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Background: Violent behavior caused by some neurologic disorders has been widely studied. However, the inverse, violence suffered by patients with neurologic disorders, has not been reported. Brain disorders frequently produce a high frequency of social, psychological, or physical disabilities that could leave patients vulnerable to domestic violence.

Objectives: To determine the prevalence of domestic violence among female patients with chronic neurologic disorders and to identify possible diagnoses associated with the battering syndrome.

Design: Cross-sectional, self-administered, anonymous survey.

Setting: Tertiary care center for neurologic disorders in Mexico.

Patients: One thousand consecutive adult female patients with neurologic disorders, separated by medical diagnosis of functional or structural disorders.

Main Outcome Measures: A modified version of the Abuse Assessment Screen was administered. Statistical analysis was performed using Poisson regression to estimate the prevalence ratio by univariate and multivariate analysis.

Results: Overall, 31.2% of women with chronic neurologic disorders were survivors of domestic violence. When separated according to the nature of the disease, 35.3% of patients with functional disorders and 28.1% of patients with brain structural disorders were victims of domestic violence ($P = .02$). Risk increased in relation to duration of marriage, number of children, and work outside the home.

Conclusions: One third of female patients with chronic neurologic disorders in Mexico suffer domestic violence. A higher frequency of domestic violence was endured by patients with diagnosis of functional disorders as essential epilepsy, headache, migraine, trigeminal pain, depression, or vertigo. The possibility of domestic violence should be routinely explored in patients with chronic neurologic disorders of functional origin.

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Some neurologic disorders induce behavioral changes associated with impulsiveness and violence. Conversely, other neurologic disorders induce disabilities that might leave the patient vulnerable to violence on the part of their caregivers. Risks for domestic violence underlying an etiologic factor among women seeking medical attention have been identified in obstetric, psychiatric, ophthalmological, gastrointestinal, and general medical practices, as well as in emergency department admissions. However, to the best of our knowledge, no similar studies have been conducted in neurologic settings.

Reports on the causality of domestic violence indicate that physical, psychological, and sexual abuse take place in the context of power imbalance and sex. Chronic neurologic diseases produce high rates of disability, because the patients are affected in their cognitive, motor, or social functioning; this circumstance places them in a vulnerable position for abuse, as they are frequently dependent on their spouses, caregivers, and relatives for daily activities. There is also the possibility of domestic violence as the origin of neurologic complaints. In a population-based US study, 38% of abused women said they did not seek medical care in the past year when they needed it, compared with 12% of non-

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PATIENTS AND METHODS

We administered a modified version of the Abuse Assessment Screen (AAS)\textsuperscript{11} to 1106 consecutive adult female patients attending the outpatient clinics of the National Institute of Neurology and Neurosurgery of Mexico, Mexico City, the largest reference center for patients with neurologic disorders in the country. Of the original sample, 106 patients (9.6\%) were excluded, 39 because dementia-related symptoms limited their understanding of the questions, 25 because the patient’s husband or an accompanying relative participated in answering the AAS, and 42 because they left crucial questions unanswered. Thus, 1000 patients were included in our study. Although some patients had mixed symptoms, each patient was included with a single diagnosis. When the patient checked in for medical appointment, the team of researchers explained the nature of the questionnaire, with particular emphasis that this was confidential information and that no consequences would follow if she refused to participate. A consent form was then signed. The patient was taken to a silent area where she could answer the AAS. No time limit was set, as participants had ample time to complete the AAS before being called for their consultation. A member of the team was close by for explanations. As shown in the Figure, the AAS had a brief preface stating that violence is a common occurrence in our daily lives. This statement proved very useful, since participants were willing to discuss an experience that is familiar to large segments of society. Women approached the researchers when in doubt and completed the questionnaire. None refused to participate.

The AAS included demographic data on age, schooling, marital status, duration of marriage, number of children, occupation, family income, place of residence, and reasons for medical consultation. Race was not a variable, as all our sample consisted of Mexican mestizos. Our institution serves patients mostly from middle and lower socioeconomic strata.

A preliminary pilot study with the original AAS was performed to validate the instrument and to estimate sample size. To assess content validity, the questions were revised. Two questions were added, and in 2 others, the time frame was changed. Although violence in general is known to urban dwellers, the term “domestic violence” remains ill defined. The first 3 questions of the AAS remained unchanged, as they have proven to be the most sensitive.\textsuperscript{11}

The pilot study indicated that women were confused in regard to the frequency of abuse, giving vague answers such as often, never, or sometimes; therefore, after each question, numbers of times were given as choices. When asked if they had been victims of physical abuse, some women gave a negative answer, but when the question was more specific, requiring that they select slapping, kicking, or hitting, their answer was yes, thereby illustrating that although they were victims of domestic violence, the label was foreign to them. We excluded the body map, as the areas were not clearly marked or the question was ignored.

In the question of abuse during pregnancy, the time frame was changed from a current pregnancy to any pregnancy. In the question of forced sexual intercourse, some participants in the pilot study stated that they had been forced the last year and throughout their lives. For this reason, the time frame was modified.

Given that loss of consciousness is a frequent phenomenon in neurologic syndromes, we added a question on whether the patient had experienced it as a result of abuse. Domestic violence is slowly emerging as a health priority in Mexico.\textsuperscript{12} Help-seeking behavior is an index of the severity of the abuse, as traditionally most forms of moderate abuse are usually kept within the confines of the family. Thus, an additional question was whether the respondent had sought medical attention because of the abuse. The extended family is common in Mexico; for this reason we included fathers as possible perpetrators of violence against single and married women.

To summarize the categories and to probe them as main-effect variables, neurologic disease was coded into 1 of the following 2 groups: functional disorders, such as essential epilepsy, headache, migraine, trigeminal pain, sleep disturbances, and vertigo, and structural disorders, such as brain neoplasms (ie, hypophyseal adenoma, hemangiomia, lymphoma, meningioma, and schwannoma), hydrocephalus, infections (ie, cysticercosis and meningitis), immune-mediated diseases (ie, Guillain-Barré syndrome and multiple sclerosis), accidental head trauma, and degenerative diseases (ie, ataxia, Parkinson disease, dyskinesia, and cerebrovascular disease).

Mean ± SD was used to describe the data distribution for continuous variables. Comparison between such means was made using the t test for independent variables. In the categorical variables analysis, we compared the prevalence of current vs past abuse and of some lifetime vs no abuse for each of the independent variables. When appropriate, significance of these differences was estimated using the χ² statistic with Yates correction or 2-tailed Fisher exact test. Marital status, job, education, duration of marriage, and number of children were factorized to conform dummy variables. The chosen measure of association was prevalence ratio (PR). Therefore, we performed a Poisson regression to estimate by univariate and multivariate analysis. The crude and adjusted PRs, 95\% confidence intervals (CIs), and P values are reported. Alpha value was set at .05. Poisson regression was selected over logistic regression to be consistent with the type of association measures derived from the descriptive analysis. Prevalence was the calculated frequency measure. We designed models for some lifetime abuse and violence within the last year that included demographic variables and type of disorder (functional and structural).

RESULTS

Mean age for the sample of 1000 patients was 39 ± 16 years (age range, 14-84 years). Marital status was single for 410 women, divorced or separated for 64, widowed for 63, and...
legally married or living in a common-law marriage (hereafter referred to as married) for 462. One woman did not report marital status. Mean duration of marriage was 20 ± 13 years (range, 1-57 years). Mean number of children was 2 ± 3 (range, 1-18). Mean duration of schooling was 9 ± 5 years, divided as follows: 350 had completed 1 to 6 years; 211, 7 to 9 years; 214, 10 to 14 years; 171, 15 to 20 years; and 47 had no formal schooling but could read and write. Seven women did not answer the question. Occupations were distributed as follows: 631 were homemakers; 238 worked outside the home; 106 were students; and 25 did not mention occupation. The grouping according to the neurologic diagnosis was functional disorder in 450 patients (16.7%) by a close relative; 51 (16.3%) by an exhusband, boyfriend, or other; and 31 (9.9%) by a stranger. Five women (1.6%) did not state the perpetrator. The frequencies of abuse were as follows: mean age, 40 ± 14 years (age range, 16-81 years); mean duration of schooling, 9 ± 5 years (range, 1-19 years); single, divorced, separated, or widowed, 150 (48.1%); and married, 162 (51.9%). For the latter group, the mean duration of marriage was 20 ± 13 years. Mean number of children was 4 ± 3; mean occupation was homemaking in 197 (63.1%). One hundred fifty-nine patients (35.3% of the original 450 patients) had a brain structural disorder. Comparison between these figures was significant (P = .02).

The type of abuse was physical in 124 women (39.7%), psychological in 95 (30.4%), both in 83 (26.6%), and not specified in 10 (3.2%). The husband was the main perpetrator in 115 women (36.8%), whereas 58 women (16.3%) had been abused by more than 1 person; 52 (16.7%) by a close relative; 51 (16.3%) by an exhusband, boyfriend, or other; and 31 (9.9%) by a stranger. Seven women did not answer the question. Occupations were distributed as follows: 631 were homemakers; 238 worked outside the home; 106 were students; and 25 did not mention occupation. The grouping according to the neurologic diagnosis was functional disorder in 450 patients (16.7%) by a close relative; 51 (16.3%) by an exhusband, boyfriend, or other; and 31 (9.9%) by a stranger. Five women (1.6%) did not state the perpetrator. The frequency of abuse was 1 to 5 times per year in 139 women (44.6%), 6 to 10 times in 33 (10.6%), 11 to 15 times in 15 (4.8%), and more than 15 times in 109 (34.9%). Six-
Prevalence of Abuse*

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<th>Variable</th>
<th>Model 1 PR (95% CI)</th>
<th>Model 2 PR (95% CI)</th>
<th>Model 3 PR (95% CI)</th>
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<tr>
<td>1-3</td>
<td>1.62 (1.21-2.19)</td>
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<td>4-8</td>
<td>1.88 (1.34-2.63)</td>
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*PR indicates prevalence ratio; CI, confidence interval; and ellipses, that the variable did not enter the regression model. Models are described in the “Results” section. Estimated risks for having been abused during lifetime were calculated using Poisson regression analysis.

did not state frequency. The type of abuse was hitting in 74 women (23.7%), verbal in 59 (18.9%), physical and psychological in 49 (15.7%), and slapping, kicking, and strangling in 40 (12.8%). Ninety women (28.8%) did not state the nature of the abuse. Medical attention due to the abuse had been sought by 37 women (11.8%); 28 (9.0%) had lost consciousness as a result of abuse. Abuse during pregnancy was reported by 72 women (23.1%); 111 (35.6%) were forced to have sexual intercourse sometime in their lives. Of the patients who reported abuse, 83 (26%) were afraid of their situation. Of these, 29 were afraid of their husband; 15, of a stranger; 12, of their ex-husband; and 27, of their boyfriend or father. The prevalence of domestic violence according to the diagnosis of functional disorder was similar among patients (P = .57).

For the group of 312 women who reported having been abused, the prevalence of reported abuse within the previous year was 17.9%. Among these 356 women, the husband was the perpetrator in 26 (46.4%); the ex-husband, in 6 (10.7%); the father, in 8 (14.3%); the boyfriend, the mother, a brother, or a stranger, in 15 (14.7%); and more than 1 person, in 6 (10.7%). One woman (1.8%) did not explain. The frequency of abuse during the previous year was 1 to 5 times in 27 women (48.2%), 6 to 10 times in 8 (14.3%), and more than 15 times in 15 (26.8%). Six women (10.7%) did not explain. The type of abuse was hitting in 17 women (30.4%), kicking in 2 (3.6%), slapping and other types of physical abuse in 20 (35.7%), and more than 1 type in 13 (23.2%). Four women (7.1%) did not explain.

Univariate Poisson regression analysis revealed an increase of 0.9% per each year of marriage in the risk for having been abused sometime in the lives of these women (P = .02). Number of children was associated with a risk of 6.8% per each child (P = .001). Being married was associated with a higher risk vs being single, separated, divorced, or widowed (PR = 1.25; P = .05); occupation of homemaker, vs that of student (PR = 1.74; P = .02); occupation of worker, vs that of student (PR = 2.13; P = .003); and having a functional disorder, vs having a structural disorder (PR = 1.26; P = .04). In patients with functional disorders, the risk associated with the probability of having been abused in the past year, expressed through crude PRs, was 1.61-fold. Increments in the risk depended on an older age, a longer marriage, and more children. In a similar way, married women had a 1.8-fold higher probability of being abused compared with single, separated, divorced, or widowed women.

Multivariate Poisson regression analysis defined 3 statistically significant models. Each included patients with a diagnosis of a functional disorder. These women had 26% to 33% higher risk for suffering violence at some point in their lives. The risk for being abused increased according to the following variables: functional vs structural disorders (PR = 1.33; 95% CI, 1.06-1.66; P = .01); 1 to 3 vs no children (PR = 1.62; 95% CI, 1.21-2.19; P = .001); 4 to 18 vs no children (PR = 1.88; 95% CI, 1.34-2.63; P < .001); and homemaker vs worker outside the home (PR = 1.85; 95% CI, 1.41-3.10; P = .02). In the second model, the risk for being abused increased with the following variables: diagnosis of functional vs structural disorder (PR = 1.28; 95% CI, 1.03-1.60; P = .03) and married vs single, divorced, separated, or widowed (PR = 1.24; 95% CI, 1.10-1.41; P < .001). In the third model, the risk for being abused increased with the following variables: diagnosis of functional vs structural disorder (PR = 1.26; 95% CI, 1.00-1.59; P = .05); married for 1 to 14 years vs not married (PR = 1.48; 95% CI, 1.09-1.99; P = .01); married for 15 to 30 years vs not married (PR = 1.51; 95% CI, 1.12-2.03; P = .008); and married for 31 to 57 years vs not married (PR = 1.55; 95% CI, 1.07-2.24; P = .02) (Table).
Female patients attending the Institute of Neurology and Neurosurgery of Mexico had a prevalence of domestic violence of 31.2%, similar to that reported for the general population in Mexico. This figure further stresses the need for routine screening for domestic violence in all health care settings. More important, however, was the finding that patients with neurologic diagnoses of functional disorders reported a higher rate (35.3%) of domestic violence, compared with the rate of domestic violence against patients with brain structural disorders (28.1%). Our results suggest that, contrary to our initial hypothesis, the neurologic complaints more likely associated with domestic violence are not those that produce physical disability secondary to a structural brain disorder. A neurologically handicapped woman seems to be at lower risk for violence, perhaps because her evident physical vulnerability may act as a deterrent for violence, although this finding may be in contrast to the figures reported for abuse during pregnancy. These results vary from those of other studies, where chronically ill patients are more vulnerable to violence; an important difference might be the type of questionnaire used and the fact that we excluded demented patients as well as those unable to answer the self-administered instrument. These patients with structural brain disorders may in fact be at high risk for abuse. A notable proportion of abused women (9.0%) reported having lost consciousness because of the abuse; this figure shows the severity of violent acts that may even play an etiologic role in the neurologic disorder, although the type of epidemiological study chosen did not allow us to draw causal inferences. Frequently, battered women do not seek medical care for the direct effects of the abuse, and they may not relate these effects to the symptoms that they experience, sometimes long after the actual abusive incident.

Our study addressed specifically the presence of domestic violence in patients with neurologic disorders; however, other reports have also linked headache, anxiety, and depression with domestic violence. Supporting the idea that many symptoms of nervous dysfunction are caused or worsened by violence inside the home.

The multivariate analysis demonstrated an increased risk for abuse against patients with neurologic disorders sometime in their lives if they were older, if they had been in the relationship for a long time, or if they had many children. These demographic risk factors show that many neurologic complaints could be the result of chronic abuse and may take a long time to become clinically noticeable. The risk for abuse during the previous year increased if the woman worked outside the home, suggesting that as the male-female roles begin to change in Mexico (ie, more women working outside the home), there may be more stress or conflict related to changing roles, which makes abuse more probable.

Our results indicate the importance of screening for past and present circumstances of domestic violence during medical consultation. For women with functional neurologic problems, this screening seems to be of paramount value. If the abuse is ongoing, treatment is needed for the neurologic complaint and the underlying violence. If the abuse has already ended, the antecedent is still important for investigation of its possible etiologic role and for integral treatment of the neurologic disorder.

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