Medical conditions and depressive, anxiety, and somatic symptoms in older adults with and without generalized anxiety disorder

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Abstract

Objective—The objective of this study was to examine medical illness and anxiety, depressive, and somatic symptoms in older medical patients with generalized anxiety disorder (GAD).

Method—A case-control study was designed and conducted in the University of California, San Diego (UCSD) Geriatrics Clinics. A total of fifty-four older medical patients with GAD and 54 matched controls participated.

Measurements—The measurements used for this study include: Brief Symptom Inventory – 18, Mini International Neuropsychiatric Interview, and the Anxiety Disorders Interview Schedule.

Results—Older medical patients with GAD reported higher levels of somatic symptoms, anxiety, and depression than other older adults, as well as higher rates of diabetes and gastrointestinal conditions. In a multivariate model that included somatic symptoms, medical conditions, and depressive and anxiety symptoms, anxiety symptoms were the only significant predictors of GAD.

Conclusion—These results suggest first, that older medical patients with GAD do not primarily express distress as somatic symptoms; second, that anxiety symptoms in geriatric patients should not be discounted as a byproduct of medical illness or depression; and third, that older adults with diabetes and gastrointestinal conditions may benefit from screening for anxiety.

Keywords

elderly; somatization; depression

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Introduction

Generalized anxiety disorder (GAD) is characterized by excessive and hard-to-control worry, accompanied by symptoms such as restlessness, trouble sleeping or concentrating, irritability, fatigue, and muscle tension (American Psychiatric Association, 2000). With prevalence estimates as high as 7.3%, it is one of the most common anxiety disorders among older adults and may be among the most common psychiatric conditions overall in this age group (Beekman et al., 1998; Flint, 2005; Gum, King-Kallimanis, & Kohn, 2009; Riedel-Heller, Busse, & Angermeyer, 2006). GAD is particularly common in older medical patients and is associated with disability, increased health service use, poorer quality of life, and possibly mortality (de Beurs et al., 1999; Porensky et al., 2009; Roy-Byrne & Wagner, 2004; van Hout et al., 2004; Wetherell et al., 2004). Furthermore, although comorbid anxiety symptoms and medical illnesses negatively affect the quality of life, GAD is frequently unrecognized and untreated in older adults (Cully et al., 2006; Sihvo, Hamalainen, Kiviruusu, Pirkolas, & Isometsa, 2006).

Detection of GAD and other anxiety disorders may be particularly difficult in older people because cardiovascular, endocrine, gastrointestinal, metabolic, neurologic, and pulmonary disorders can produce symptoms that mimic anxiety (Kim, Braun, & Kunik, 2001). Results from psychometric evaluations of anxiety instruments that include somatic items suggest that scores may be inflated among older medical patients (Wetherell & Gatz, 2005).

Approximately half of older GAD patients develop the disorder in the later part of life (Flint, 2005). Risk factors for anxiety in older adults include chronic health conditions, poor self-rated health, and functional limitations (Vink, Aartsen, & Schoevers, 2008). It is therefore likely that, just as some individuals may report anxiety-like symptoms caused by a medical condition, others may have anxiety discounted in the context of physical health problems.

Somatoform disorders and anxiety and depressive disorders commonly co-occur (Lieb, Meinlschmidt, & Araya, 2007). Hanel et al. (2009) found that primary care patients with depression, anxiety, and/or somatoform disorders were significantly older than patients without a mental disorder, which makes accurate diagnoses particularly complicated for older adults reporting anxiety symptoms in the context of medical illness. Data from depression studies also suggest that many older adults express psychological distress through somatic symptoms (Drayer et al., 2005). Older GAD patients are particularly sensitive to somatic sensations, and these symptoms subside with successful treatment (Lenze et al., 2005). Moreover, a 40-year follow-up of GAD patients suggests that the disorder often transforms into somatization disorder with aging (Rubio & Lopez-Ibor, 2007). Thus, somatic symptoms and medical conditions in late-life GAD merit attention given the complexity of the correct classification of symptoms, impact on the quality of life, and healthcare burden.

This study uses a matched case-control design to test the following hypotheses: (1) older GAD patients will report more medical illnesses than other older adults, and (2) older GAD patients will report more somatic symptoms, even after controlling for medical illness and symptoms of anxiety and depression.

Methods

Participants

Older adults with GAD in this study (*n* = 54) were a treatment-seeking convenience sample recruited from 2004 to 2007 for research on psychotherapeutic treatment of late-life GAD. Most of them were recruited through responses to a mailing describing the study that was sent to patients in a university-affiliated geriatric medical practice, and some responded to advertisements and flyers. Participants were diagnosed with GAD according to the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) criteria (American Psychiatric Association, 2000) using the Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998) administered over the telephone by a trained research assistant, followed within approximately two weeks (average 12.8 days) by an in-person interview using the Anxiety Disorders Interview Schedule-IV (ADIS-IV; Dinardo, Brown, & Barlow, 1994), administered by a postdoctoral fellow in clinical psychology. A licensed clinical psychologist reviewed videotapes of eight ADIS-IV interviews for those patients whose MINI and ADIS-IV results did not agree, and the consensus diagnosis was assigned. The GAD patients completed the questionnaires and provided data as part of their first study visit, for which they were compensated with $20.

Patients with comorbid psychiatric conditions were included in the study, as long as GAD was the primary (e.g., most severe) diagnosis. Almost half (43%) of the GAD samples were diagnosed with at least one additional psychiatric disorder. Most common diagnoses were major depression (22%) and panic disorder/agoraphobia (13%).

The comparison participants were drawn from a larger study of anxiety, health, and related psychological constructs in a nontreatment-seeking convenience sample of San Diego community residents. This sample included 374 individuals recruited from a mailing list purchased from a private vendor. The mailing list included individuals residing in San Diego County whose names were drawn primarily from the white pages of the local telephone book as well as other public sources of data (e.g., Department of Motor Vehicles records and property deeds). Participants received a 60 min prepaid phone card for their participation and completed the questionnaire by mail. For this study, 54 individuals from this mailing list were matched to the GAD patients by gender and age within 1 year by a computer matching algorithm to form a control group.

This study complied with the ethical rules for human experimentation that are stated in the Declaration of Helsinki. It was approved by the University of California, San Diego's (UCSD) Human Research Protections Program. All participants provided signed informed consent.

Measures

The Brief Symptom Inventory-18 (BSI-18; Derogatis, 2001) was used as a measure of anxiety and depressive symptom severity and somatic symptoms over the past week. The BSI-18 includes anxiety, depression, and somatization subscales, each with six items rated on a five-point Likert scale from not at all to extremely. The somatization subscale includes items assessing dizziness, chest pain, nausea, shortness of breath, numbness/tingling, and

weakness. Internal consistency was high for all subscales (α's>0.90). Participants reported their health problems from a checklist.

Statistical analyses

Analyses were performed with Stata release 10.0 (StataCorp, 2007). First, univariate comparisons of GAD patients and controls were conducted using Student's t-tests, corrected where necessary for unequal variance, Fisher's exact tests, and McNemar's test for the medical conditions. In order to control for family-wise type I error in comparisons for specific health problems, we applied the Holm–Sidàk step-down procedure (Ludbrook, 1998). Odds ratios (ORs) were then calculated for each medical condition separately using the same procedure reported above to control for type I error. Next, a series of three conditional logistic regression equations for matched samples (Breslow, 1982) were calculated using Stata's clogit command, with the presence or absence of a GAD diagnosis as the dependent variable. Conditional regression for case-control studies was initially developed as a remedy for sparse data biases when there are relatively few covariates (Greenland, Schwartzbaum, & Finkle, 2000; Hoshmer & Lemeshow, 1989). The first model included somatic symptoms alone; the second included medical conditions as well as somatic symptoms, controlling for the overall number of medical conditions other than the specific conditions included in the model; and the third included somatic symptoms, medical conditions, and depressive and anxiety symptoms.

Results

Table 1 displays demographic information about the samples. As a group, the GAD patients were more highly educated and were less likely to be widowed than the community controls. They also reported higher levels of anxiety and depressive symptoms, and somatic symptoms. Specific somatic symptoms associated with GAD were numbness or tingling, $t(89.2) = -2.37$, $p = 0.02$, and weakness, $t(98.0) = -2.48$, $p = 0.015$. Although education and marital status differed between the groups, these variables were not related to somatic symptoms, anxiety, depression, overall number of medical conditions, or any of the specific medical conditions except one: higher levels of education were associated with a reduced prevalence of heart disease ($r = -0.20$, $p = 0.04$).

According to the unconditional tests, GAD patients were also more likely ($p<0.001$) to report chronic pain, heart disease, diabetes, and respiratory, gastrointestinal, and neurological conditions as well as cancer. However, as shown in Table 2, when matched case-control analyses were used, only diabetes remained significantly different between GAD patients and community controls: McNemar's $\chi^2(1) = 7.14$; $p = 0.0075$; OR = 6.0 (95% CI: 1.34, 55.20). Likewise, there was a trend for gastrointestinal conditions to be more prevalent among GAD patients: McNemar's $\chi^2(1) = 3.56$; $p = 0.059$; OR = 2.6 (95% CI: 0.87, 9.30). None of the other medical conditions differed between the groups.

Table 3 displays results from three logistic regression models. In the first model, somatic symptoms were associated with the presence of GAD (OR = 1.12, SE = 0.06; $z = 2.15$, $p = 0.031$). The pseudo-R^2 for this model was 0.08 ($p = 0.019$). In the second model, containing diabetes and gastrointestinal conditions in addition to somatic symptoms, only diabetes was

a statistically significant predictor of GAD (OR = 7.92, SE = 6.9; z = 2.39, p = 0.017). The pseudo-R^2 for this second model was 0.205 (p = 0.002). The effect of diabetes remained significant after controlling for the total number of medical conditions other than diabetes and gastrointestinal problems (OR = 7.4, SE = 6.2; z = 2.38, p = 0.017). In the third model, which included diabetes, depressive and anxiety symptoms, and somatic symptoms, only anxiety symptoms (OR = 3.06, SE = 1.46; z = 2.34, p = 0.019) were significantly associated with GAD. The pseudo-R^2 for this final model was 0.876 (p<0.001). When anxiety symptoms were removed from this final model, only depressive symptoms remained significant (OR = 1.75, SE = 0.3; z = 3.10, p = 0.002).

Discussion

In this sample of older medical patients with GAD and matched community controls, those with GAD were more likely to report diabetes and gastrointestinal conditions. They also endorsed higher levels of somatic, anxiety, and depressive symptoms. In models including medical conditions, depressive, anxiety, and somatic symptoms, only elevated anxiety symptoms were associated with the presence of GAD. Moreover, the specific somatic symptoms reported by older GAD patients did not include dizziness or nausea, symptoms that might be expected to accompany diabetes or gastrointestinal conditions. Rather, the symptoms more frequently endorsed were relatively nonspecific complaints of numbness and general weakness.

Other research has documented elevated rates of GAD in patients with gastrointestinal conditions and diabetes (Grigsby, Anderson, Freedland, Clouse, & Lustman, 2002; Härter, Conway, & Merikangas, 2003). Even more evidence links GAD and other anxiety disorders to cardiovascular conditions (Barger & Sydeman, 2005). The fact that we did not find such an association in this study may be due to the high levels of education among the GAD patients in our sample, in conjunction with the inverse relationship between education and heart disease.

Limitations of the study include the fact that control participants were not evaluated for mood or anxiety disorders and therefore may have included individuals with GAD or other psychiatric conditions. However, the inclusion of such individuals in the comparison group would, if anything, lead to more conservative estimates of the associations among medical conditions, somatic complaints, and anxiety and depressive symptoms in late-life GAD. Investigation in a larger sample with diagnostic data from the control group is needed to confirm these preliminary results. A second limitation is the fact that medical conditions were self-reported and may therefore not be entirely accurate. For example, if the control group underreported medical conditions relative to the GAD patients, medical illness may play a smaller role in late-life GAD than our results suggest. Finally, 43% of the GAD patients had at least one co-existing psychiatric disorder; so, it is possible that the results could be partially explained by comorbid conditions. We chose to include patients with as well as without psychiatric comorbidity in this investigation because GAD is frequently accompanied by other anxiety and mood disorders; thus, to exclude individuals without co-occurring disorders would result in an unrepresentative sample. We did include a measure of depression, the most common co-existing diagnosis, in our model.

In contrast to other studies that found it difficult to differentiate among anxiety, somatization, and medical illness, older medical patients with GAD in this study did not express their emotional distress primarily through physical concerns or complaints (Hanel et al., 2009; Lieb et al., 2007). This is likely because the GAD patients in this sample were seeking treatment for anxiety. These data do suggest that elevated levels of anxiety in late-life GAD cannot be explained by medical conditions or depression. Furthermore, although older GAD patients frequently report somatic symptoms (Lenze et al., 2005), these may not be as important as other anxiety symptoms when assessing GAD in older adults. Therefore, the primary screening mechanism should be anxiety focused and may be particularly warranted for older individuals with diabetes and gastrointestinal conditions. Finally, older adults may be accurately representing their anxiety symptoms in medical settings and should be referred to appropriate psychiatric care if anxiety symptoms are reported.

Acknowledgments

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Table 1

Sample demographics and clinical data.

Variable	GAD patients ($n = 54$)	Community controls ($n = 54$)	χ^2 or t	p
Women	70.4%	70.4%	0.00	1.00
Age (years)	71.7 (6.5)	71.8 (6.5)	0.00	0.95
Caucasian	81.5%	87.0%	0.63	0.43
Education (years)	15.6 (2.9)	13.9 (3.2)	−2.88	0.005
Marital status			11.97	0.007
Never married (%)	7.4	1.9		
Married (%)	53.7	44.4		
Divorced (%)	22.2	9.3		
Widowed (%)	16.7	44.4		
Anxiety	6.3 (4.5)	1.2 (1.8)	−7.66	<0.001
Depression	6.9 (5.2)	1.4 (3.0)	−6.68	<0.001
Somatization	4.0 (4.2)	2.1 (3.4)	−2.53	0.01

Table 2

Distribution of medical conditions and conditional McNemar's χ^2 test results.

Variable	GAD (%)	Controls (%)	*p*	OR (95% CI)[a]
Osteoarthritis	50.0	55.6	0.590	0.8 (0.4, 1.8)
Other chronic pain conditions	38.9	27.8	0.180	1.9 (0.7, 5.5)
Hypertension	48.1	46.3	0.835	1.1 (0.4, 2.7)
Heart disease	16.7	20.4	0.617	0.8 (0.2, 2.3)
Diabetes	24.1	5.6	0.008	6.0 (1.3, 55.2)
Respiratory conditions	7.4	5.6	0.706	1.33 (0.2, 9.1)
Gastrointestinal conditions	25.9	11.1	0.059	2.6 (0.9, 9.3)
Neurological conditions	7.4	1.9	0.180	4.0 (0.4, 197.0)
Cancer	13.0	7.4	0.317	2.0 (0.4, 12.4)
Total number of medical conditions, Mean (SD)	2.3 (1.4)	1.8 (1.4)	0.050	3.0 (0.9, 12.8)

Note:

[a] Conditional ORs and CIs.

Table 3

ORs and 95% CIs for somatic symptoms, medical conditions, and depression and anxiety associated with generalized anxiety in older medical patients.

Variable	Model 1		Model 2		Model 3	
	b^a (95% CI)	OR (p)	b (95% CI)	OR (p)	b (95% CI)	OR (p)
Somatic symptoms	**0.12 (0.01, 0.22)**	**1.12 (0.031)**	0.10 (−0.02, 0.22)	1.10 (0.096)	−0.56 (−1.17, 0.05)	0.57 (0.070)
Diabetes	–	–	**2.07 (0.37, 3.77)**	**7.92 (0.017)**	3.93 (−4.05, 11.92)	51.1 (0.334)
Gastrointestinal	0.77 (−0.40, 1.93)	2.15 (0.196)	2.51 (−4.5, 9.5)	12.4 (0.483)		
Depression	–	–	–	–	0.41 (−0.10, 0.93)	1.51 (0.115)
Anxiety	–	–	–	–	**1.12 (0.18, 2.05)**	**3.06 (0.019)**

Notes: Model 1, somatic symptoms; Model 2, somatic symptoms and medical conditions; Model 3, somatic symptoms, medical conditions, depression, and anxiety. Numbers in bold font indicate statistically significant effects.

aLogistic coefficients.