Characteristics Of Patients Assigned Multiple Nonthreatening Medical Diagnoses

Robert J. Gregory, M.D.

Background: Medical diagnoses can be separated on the basis of whether or not they are associated with significant 1-year mortality risk, i.e., "threatening" versus "nonthreatening," by employing the Charlson Comorbidity Index (CCI). The author examined the psychosocial characteristics and medical utilization patterns of patients assigned multiple nonthreatening medical diagnoses.

Method: The study population included 125 general medical outpatients seen in psychiatric consultation. The author employed blinded reviews of medical charts, psychological measures, and billing records to assess patients' psychosocial characteristics and medical utilization.

Results: The number of nonthreatening diagnoses correlated significantly with age ($r = 0.35$, $p \leq .001$), diagnosis of somatoform disorder ($r = 0.29$, $p \leq .001$), somatosensory amplification ($r = 0.36$, $p \leq .001$), number of ambulatory medical visits ($r = 0.24$, $p \leq .01$), and emergency room visits ($r = 0.18$, $p \leq .05$), but did not correlate with CCI scores or medical hospitalization. By contrast, the number of threatening diagnoses, as measured by the CCI, did not correlate with a diagnosis of somatoform disorder or somatic amplification, but did correlate with age and all measures of medical utilization, including hospitalization ($r = 0.19$, $p \leq .05$).

Conclusion: Patients with multiple nonthreatening medical diagnoses have different psychosocial characteristics and medical utilization patterns than patients with multiple threatening diagnoses. The association between the number of nonthreatening medical diagnoses assigned to a given patient and measures of somatization suggests that psychosocial factors contribute to diagnostic assignment in patients with multiple nonthreatening medical diagnoses.

(Primary Care Companion J Clin Psychiatry 2001;3:164–167)

From the Department of Psychiatry, SUNY Upstate Medical University, Syracuse, N.Y.

Presented as a poster at the 47th annual meeting of the Academy of Psychosomatic Medicine, November 16, 2000, in Palm Springs, Calif.

Reprint requests to: Robert J. Gregory, M.D., Department of Psychiatry, SUNY Upstate Medical University, 750 East Adams St., Syracuse, NY 13210 (e-mail: gregoryr@upstate.edu).

Only 13% of patients consume over 50% of health care resources.[1] These data underscore the expense of caring for patients with debilitating and life-threatening illnesses. However, many patients with high medical utilization have been demonstrated to have high psychiatric comorbidity, including somatoform disorders.[2] There is also evidence that unrecognized psychosocial factors and emotional distress play a prominent role in health care utilization.[3,4]

An important psychosocial factor that has been associated with increased medical utilization in adults is a childhood history of physical or sexual abuse.[5] Childhood abuse has been correlated with an increased number of medical problems in adulthood[6] and an increased risk of developing somatization disorder.[7,8]

A psychological trait associated with high medical utilization is alexithymia.[9] *Alexithymia* is a term first introduced by Sifneos[10] to describe psychological characteristics of patients with psychosomatic diseases. The construct includes difficulties identifying and describing feelings, impoverishment of fantasy life, and excessive preoccupation with physical symptoms and external events. Alexithymia has been associated with somatization[11] and somatosensory amplification.[12]

As originally conceived by Barsky et al.,[13] *somatosensory amplification* refers to a tendency in hypochondriacal patients to scrutinize their bodies for somatosensory input and then to amplify and misinterpret the sensation as representing a pathological process. Somatosensory amplification has been strongly associated with DSM-III-R diagnosis of hypochondriasis and somatization disorder in medical outpatients.[13,14]

The present study examines the psychosocial characteristics of a unique group of high-utilizing patients—those assigned multiple nonthreatening medical diagnoses. Medical diagnoses can be separated on the basis of whether or not they are associated with significant 1-year mortality risk (i.e., threatening versus nonthreatening diagnoses) by employing the Charlson Comorbidity Index (CCI).[15] This study tests the hypothesis that psychosocial factors play a greater role in the assignment of nonthreatening medical diagnoses than in the assignment of threatening diagnoses.

To test this hypothesis, differences in the psychosocial characteristics and medical utilization pattern of patients

assigned threatening versus nonthreatening medical diagnoses were examined. A significant correlation between the number of nonthreatening medical diagnoses assigned and the presence of characteristics commonly associated with somatization, including diagnosis of a somatoform disorder, alexithymic traits, somatosensory amplification, and history of childhood abuse, was predicted.

METHOD

The setting for the study was a university hospital general medical clinic. Attending physicians and residents combine their practices at this site. A psychiatrist (R.J.G.) is on site weekly to provide consultations as requested by the medical staff. Due to the ease of referral on site, a relatively large proportion (approximately 5%) of the patients are seen for psychiatric consultation. The study population included all patients seen by the consulting psychiatrist between 1995 and 1999 (N = 307). As part of routine consultations, all patients were asked to complete questionnaires assessing anxiety, depression, somatosensory amplification, and alexithymia. Retrospective reviews were performed on the charts of patients selected for the study. Information was collected on patient demographics, psychiatric diagnoses, histories of abuse, psychological measures, and medical diagnoses or problems.

Emotional distress was determined by scores on the anxiety and depression subscales of the Brief Symptom Inventory. The Brief Symptom Inventory is a symptom checklist derived from the Hopkins Symptom Checklist and has been shown to have good validity and reliability.[16] Currently, the most commonly used and best research measure of alexithymia is the Toronto Alexithymia Scale (TAS).[17] A 20-item modified version of this scale, the TAS-20, was employed in the present study.[18,19] The 10-item Somatosensory Amplification Scale (SSAS) was designed and validated by Barsky et al.[14] to provide a measure of somatosensory amplification.

Psychiatric diagnoses were assigned during clinical evaluations by the consulting psychiatrist (R.J.G.) according to DSM-IV criteria. Childhood sexual and physical abuse were elicited by clinical history and documented in the chart. For the purposes of this study, medical diagnoses and problems were counted if (1) a diagnosis or problem was assigned to the patient by the primary care physician during the year prior to consultation and documented in the progress notes or patient problem list, or (2) a previous diagnosis was still an issue of ongoing treatment or investigation (e.g., a 10-year history of hypothyroidism still being treated with thyroxine).

Charlson et al.[15] developed the Charlson Comorbidity Index in a general medical patient population and further validated the scale in a cohort of breast cancer patients. The researchers examined a broad array of medical diagnoses and prospectively determined which diagnoses contributed significantly to 1-year mortality and which did not. Diagnoses that contribute to 1-year mortality are assigned a weight of 1 to 6 according to their relative risk. For example, a patient with moderate-to-severe liver disease would have a CCI score of 3. Diagnoses that do not significantly contribute to 1-year mortality risk, such as migraine headache, would have a CCI score of 0 and be classified in this study as a nonthreatening diagnosis or problem. The final CCI score is tallied from the sum of the weighted scores of all the medical diagnoses in a given patient.

Reviews of medical diagnoses and computation of CCI scores were performed by a single physician investigator (R.J.G.) blinded to scores on psychological measures. Medical utilization data, including all nonpsychiatric visits with physicians and hospital bed days for the year prior to consultation, were obtained from computerized billing records and tallied by a secretary blinded to other patient data. Patients who could not complete questionnaires due to illiteracy in English, mental retardation, dementia, or acute psychosis were not included in the study (N = 55). Because of the methodology used to count medical diagnoses and in order to obtain longitudinal utilization data, patients who had been admitted to the general medicine clinic less than a year prior to consultation were also excluded (N = 127). The remaining 125 patients who met inclusion criteria had a mean age of 43 ± 12 years with a range from 18 to 74 years of age. Gender was mainly female (72%), and 29% of patients were married. Whites (72%) and African Americans (26%) were the most common racial groups. There were no significant differences in patient demographics between the study population and the excluded patients.

On institutional review board approval, data were entered into a computer database for analyses using Statistica software (Statistica, Tulsa, Okla.). Correlations between variables were assessed by Pearson product-moment correlation coefficients. Because of the skewed distribution of hospital bed days, hospitalization was converted into a dichotomous measurement of being present or absent over the past year. Significant predictors of nonthreatening medical diagnoses were entered into stepwise regression equations.

RESULTS

The number of nonthreatening medical diagnoses was normally distributed in this population with a mean of 2.4 ± 1.7 diagnoses per patient and a range from 0 to 7. The most common nonthreatening medical diagnoses or problems in descending order were chronic lower back pain (N = 27), hypertension (N = 25), gastroesophageal reflux (N = 15), degenerative joint disease (N = 14), irritable bowel syndrome (N = 14), and migraine headache (N = 14). The most common threatening diagnoses as measured by the CCI were asthma, peptic ulcer disease,

Table 1. DSM-IV Diagnostic Categories Identified in the Study[a]

Diagnosis	N	CCI Scores (r)	Nonthreatening Medical Diagnoses (r)
Major depression	65	0.13	0.05
Other depression	23	–0.07	–0.07
Somatoform disorder	20	0.03	0.29[b]
Anxiety disorder	38	–0.03	0.16
Personality disorder	24	–0.11	0.09
Substance use disorder	39	0.14	–0.04

[a]Abbreviation: CCI = Charlson Comorbidity Index.
[b]Significant correlation, $p \leq .001$.

Table 2. Correlations Between Sociodemographic Characteristics and the Assignment of Threatening Versus Nonthreatening Medical Diagnoses[a]

Characteristic	CCI Scores (r)	Nonthreatening Medical Diagnoses (r)
Age	0.29[b]	0.35[b]
Gender	0.09	0.15
Physical abuse	0.10	0.16
Sexual abuse	0.01	0.09

[a]Abbreviation: CCI = Charlson Comorbidity Index.
[b]Significant correlation, $p \leq .001$.

Table 3. Correlations Between Psychological Markers and the Assignment of Threatening Versus Nonthreatening Medical Diagnoses[a]

Scale	CCI Scores (r)	Nonthreatening Medical Diagnoses (r)
BSI-A	0.00	0.11
BSI-D	0.15	0.05
SSAS	0.02	0.36[b]
TAS-20	0.00	0.14

[a]Abbreviations: BSI-A = Brief Symptom Inventory, anxiety subscale, BSI-D = Brief Symptom Inventory, depression subscale, CCI = Charlson Comorbidity Index, SSAS = Somatosensory Amplification Scale, TAS-20 = 20-item Toronto Alexithymia Scale.
[b]Significant correlation, $p \leq .001$.

Table 4. Correlations Between Medical Utilization and the Assignment of Threatening Versus Nonthreatening Medical Diagnoses[a]

Type of Medical Utilization	CCI Scores (r)	Nonthreatening Medical Diagnoses (r)
Number of medical visits	0.25[b]	0.24[b]
Number of emergency room visits	0.21[c]	0.18[c]
Hospitalization	0.19[c]	0.08

[a]Abbreviation: CCI = Charlson Comorbidity Index.
[b]Significant correlation, $p \leq .01$.
[c]Significant correlation, $p \leq .05$.

and chronic obstructive pulmonary disease. The mean CCI score in this population was 1.2 ± 1.5.

For statistical purposes, depressive disorders were dichotomized into major depressive disorder and other depression (dysthymic disorder and depressive disorder, not otherwise specified). Depressive disorders were common (Table 1) but were not significantly correlated with the assignment of medical diagnoses. By contrast, the presence of a somatoform disorder was significantly associated with the assignment of nonthreatening medical diagnoses. The mean number of nonthreatening medical diagnoses in patients having a somatoform disorder was 3.6 ± 1.5, or 50% higher than in patients who were not diagnosed with a somatoform disorder.

In Table 2, age is correlated with the number of medical diagnoses assigned, regardless of whether or not the diagnosis was threatening. There was a modest correlation between childhood history of physical abuse and assignment of nonthreatening medical diagnoses, but this factor did not reach statistical significance ($p = .07$).

As hypothesized, the assignment of nonthreatening diagnoses correlated with measures of somatic amplification, but CCI scores did not (Table 3). This association did not appear to be mediated by depression or anxiety given the lack of association between Brief Symptom Inventory scores and the number of nonthreatening diagnoses. Alexithymic traits had a modest positive correlation with the number of nonthreatening diagnoses assigned that did not reach statistical significance. Depression severity was correlated more with CCI scores (medical diagnoses contributing to 1-year mortality) than with nonthreatening diagnoses, suggesting a depressive reaction to serious medical illness in some patients.

Table 4 demonstrates that assignment of both threatening and nonthreatening medical diagnoses correlated with outpatient and emergency room visits, but only CCI scores correlated with inpatient visits. Further analysis demonstrated that the number of nonthreatening medical diagnoses and CCI scores was not significantly correlated with one another ($r = –0.03$), indicating that each measure represented a different reason for increased utilization.

Factors that significantly correlated with the number of nonthreatening diagnoses at $p < .05$ were entered into a stepwise regression equation as independent variables. These included SSAS scores, age, diagnosis of somatoform disorder, outpatient medical utilization, and emergency room utilization. When entered into the equation, the latter 2 variables were no longer significantly correlated with the number of nonthreatening medical diagnoses, indicating that utilization was determined by the remaining 3 variables. The combination of SSAS scores, age, and diagnosis of somatoform disorder together accounted for 27% of the variance in assignment of nonthreatening medical diagnoses.

DISCUSSION

Some of the hypotheses were confirmed by this study, and others were not. Although alexithymia and history of

childhood abuse modestly correlated with the number of nonthreatening medical diagnoses, they did not appear to be important or significant predictors. As hypothesized, however, somatosensory amplification and diagnosis of somatoform disorder significantly correlated with the number of nonthreatening medical diagnoses assigned and did not correlate with assignment of diagnoses contributing to 1-year mortality as measured by the CCI. These data suggest that psychosocial factors in patients contribute to the assignment by physicians of multiple nonthreatening medical diagnoses. The mechanisms are unclear but may involve direct effects of stress on pathophysiology, increased patient distress about symptoms, increased symptom production, and/or changes in the physician-patient relationship.[20] Alternatively, it could be argued that the presence of poor physical health, as reflected in multiple nonthreatening medical diagnoses, induces somatosensory amplification in patients. However, if this were the case, scores on the CCI would also correlate with SSAS scores.

The study also highlights the utility of separating medical diagnoses and problems into those that contribute to 1-year mortality and those that do not. These 2 groups of diagnoses were independent of one another and had differences in correlations to the variables measured in this study. It is important to note that this study does not indicate that nonthreatening diagnoses are unreal or unimportant. Most of the illnesses assigned to the nonthreatening group have well-documented pathophysiologic mechanisms and serious medical complications.

The correlation of age with number of nonthreatening medical diagnoses also indicates that biological factors are important to diagnostic assignment. For example, hypertension has a well-established biological basis and potential for life-threatening complications. Yet, it is also established that psychosocial factors have important etiologic roles in hypertension through various neuroendocrine mechanisms.[21] This is consistent with George Engel's biopsychosocial model of illness.[22] The present study suggests that psychosocial factors become more important as the number of nonthreatening diagnoses assigned increases. An exclusive focus by providers on a strictly biomedical model of illness may cause providers to overlook important psychosocial contributors to illness and illness behavior, thereby fostering inappropriate medical utilization in such patients.

The assignment of multiple nonthreatening medical diagnoses has advantages as an indicator of possible psychosocial contribution to illness and illness behavior. It can be assessed easily by chart review, encompasses a biopsychosocial model of illness, and avoids physician or patient bias in attribution.

The main limitation of the present study is that patients were selected on the basis of referral for psychiatric consultation. Hence, there is a predilection toward excessive psychopathology in the study group. However, the relatively large proportion of patients in this primary care population receiving psychiatric consultation, the inclusion of measures to control for severity of medical and psychiatric pathology, and the independence of the threatening versus nonthreatening categorization from psychiatric diagnostic attribution (other than somatoform disorders) suggest that these findings could be generalized to other primary care patients. Further studies are needed, however, to replicate the findings in other medical populations.

Drug name: levothyroxine (Synthroid, Levoxyl, and others).

REFERENCES

1. Zook CJ, Moore FD. High-cost users of medical care. N Engl J Med 1980; 302;996–1002
2. Katon W, Von Korff M, Lin E, et al. Distressed high utilizers of medical care: DSM-III-R diagnoses and treatment needs. Gen Hosp Psychiatry 1990;12:355–362
3. Connelly JE, Smith GR, Philbrick JT, et al. Healthy patients who perceive poor health and their use of primary care services. J Gen Intern Med 1991; 6:47–51
4. Johnson J, Weissman MM, Klerman GL. Service utilization and social morbidity associated with depressive symptoms in the community. JAMA 1992;267:1478–1483
5. Arnow BA, Hart S, Scott C, et al. Childhood sexual abuse, psychological distress, and medical use among women. Psychosom Med 1999;61: 762–770
6. Lechner ME, Vogel ME, Garcia-Shelton LM, et al. Self-reported medical problems of adult female survivors of childhood sexual abuse. J Fam Pract 1993;36:633–638
7. Pribor EF, Yutzy SH, Dean JT, et al. Briquet's syndrome, dissociation, and abuse. Am J Psychiatry 1993;150:1507–1511
8. van der Kolk BA, Pelcovitz D, Roth S, et al. Dissociation, somatization, and affect dysregulation: the complexity of adaptation to trauma. Am J Psychiatry 1996;153:83–93
9. Lumley MA, Norman S. Alexithymia and health care utilization. Psychosom Med 1996;58:197–202
10. Sifneos PE. The prevalence of alexithymia characteristics in psychosomatic patients. Psychother Psychosom 1973;22:255–262
11. Shipko S. Alexithymia and somatization. Psychother Psychosom 1982;37: 193–201
12. Wise TN. The relationship between somatosensory amplification, alexithymia, and neuroticism. J Psychosom Res 1994;38:515–521
13. Barsky AJ, Goodson JD, Lane RS, et al. The amplification of somatic symptoms. Psychosom Med 1988;50:510–519
14. Barsky AJ, Wyshak G, Klerman GL. The somatosensory amplification scale and its relationship to hypochondriasis. J Psychiatr Res 1990;24: 323–334
15. Charlson ME, Pompei P, Ales KL, et al. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. J Chron Dis 1987;40:373–383
16. Derogatis LR, Melisaratos N. The Brief Symptom Inventory: an introductory report. Psychol Med 1983;13:595–605
17. Taylor GJ, Ryan DD, Bagby RM. Toward the development of a new self-report alexithymia scale. Psychother Psychosom 1985;44:191–199
18. Bagby RM, Parker JDA, Taylor GJ. The Twenty-Item Toronto Alexithymia Scale, 1: item selection and cross-validation of the factor structure. J Psychosom Res 1994;38:23–32
19. Bagby RM, Taylor GJ, Parker JDA. The Twenty-Item Toronto Alexithymia Scale, 2: convergent, discriminant and concurrent validity. J Psychosom Res 1994;38:33–40
20. Epstein RM, Quill TE, McWhinney IR. Somatization reconsidered: incorporating the patient's experience of illness. Arch Intern Med 1999;159: 215–222
21. Zimmerman RS, Frohlich ED. Stress and hypertension. J Hypertens Suppl 1990;8:S103–S107
22. Engel GL. The need for a new medical model: a challenge for biomedicine. Science 1977;196:129–136