Evaluation of Fatigue in a Family Practice

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A retrospective chart review describing the rates of occurrence, methods of evaluation, and diagnoses of patients complaining of fatigue in a university family medicine teaching practice was performed. After excluding patients in whom an unequivocal explanation for the fatigue was reached at the initial encounter, 118 patients aged 15 years and over were identified during a two-year study in a practice with about 6,000 active adult patients (9.9/1,000 patients per year). The age and sex distributions of the cases were identical to those of the active patient population. The average laboratory examination cost approximately $48. An average of 2.7 laboratory tests per patient were ordered. Although 12 percent of laboratory tests were abnormal, laboratory tests were important in securing a diagnosis in only 9 of the 118 patients. Clinical diagnoses were classified as either primarily biomedical or primarily psychosocial. Psychosocial diagnoses were identified in 50 percent of patients, while primarily biomedical diagnoses were found in 22 percent. No diagnosis was made in 28 percent of patients. Sixty-eight percent of patients had at least one follow-up visit. Failure to follow up was uncommon in patients with depression or biomedical diagnoses other than viral syndromes but was common with other primarily psychosocial diagnoses.

When presented with a patient complaining of fatigue, the family physician is confronted with a challenging differential diagnosis. Because fatigue may be a component of many physiologic syndromes, the clinician must differentiate between conditions that are potentially treatable and those that are benign and self-limited. The dilemma is confounded by there being no single definition of the term *fatigue* that is shared by both physicians and laymen. The patient may use the term fatigue to denote experiences as diverse as the excessive need for sleep, the inability to satisfactorily perform physical tasks compared with previous capability, or a pervasive sense of lethargy.

Previous studies of the epidemiology and etiology of fatigue in family practice settings[1,2] have confirmed that it is a common problem in the domain of the family physician. These studies have provided conflicting estimates of the relative contributions of biomedical and psychosocial factors in the development of fatigue. Varying recommendations regarding the appropriate laboratory examination of the patient complaining of fatigue have been proposed. Morrison[2] has emphasized that such proposals have occasionally been made without regard to specific data or to well-defined patient populations. In addition, although Morrison noted that a high proportion of patients complaining of fatigue had no documented follow-up, little information exists regarding the characteristics of those patients.

The purpose of the present study was to evaluate the incidence, methods of evaluation, associated diagnoses, and outcome of patients with fatigue in a university family medicine teaching practice. An attempt was made to determine the degree to which the laboratory evaluation of fatigue provided clinically significant information as

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well as to determine the degree to which patients with potentially serious and treatable conditions returned for follow-up care.

Methods

Patients aged at least 15 years seen at the University of Washington Family Medical Center between July 1, 1979, and June 30, 1981, for whom the diagnosis of "fatigue, tiredness, or malaise" (ICHPPC 7807) was recorded by the physician were identified by review of a computerized listing of all patient encounters during the study period. The listing was provided by the University of Washington Department of Family Medicine Network Information Management System (NIMS) computer service.[3] Patients in whom a definitive etiologic diagnosis was made at the initial encounter were excluded from analysis. This exclusion was made because diagnoses rather than specific symptoms were recorded, and it would have been impossible to accurately identify all patients complaining of fatigue. Thus, only patients in whom the etiology of fatigue was not identified at the initial visit are included in the study. There were about 6,000 active adult patients in the practice during the study period.

Each medical record was reviewed by one of the authors (JS). An audit sheet recording age, sex, provider characteristics (ie, staff or resident physician), results of physical examination and laboratory tests, differential diagnosis at initial visit, final diagnosis, and number of visits within six months subsequent to the initial complaint of fatigue were recorded.

Laboratory results were assessed with respect to normal values provided by the University Hospital laboratory. However, an attempt was made to classify even borderline laboratory results as abnormal so as not to obscure significant contributions of laboratory results to clinical decision. Thus, a hematocrit level of 35 percent in a 25-year-old woman with a previous hematocrit level of 40 percent was considered evidence of anemia in spite of the lack of proof that the degree of anemia was sufficient to account for all the symptoms of fatigue. Similarly, even if fatigue resolved while an abnormal laboratory result persisted (ie, an elevated sedimentation rate in an elderly patient), the laboratory result was considered to be abnormal. Finally, an attempt was made to sort diagnoses into two categories—primarily psychosocial and primarily biomedical. To minimize the possibility of inappropriately coding fatigue as psychogenic, clinical diagnoses such as "postviral syndrome" were accepted as biomedical even when objective evidence supporting the relation of the diagnosis to the fatigue was lacking.

Results

One hundred fifty-four charts were audited. Thirteen patients had no documentation of fatigue in the chart, and a specific diagnosis was reached at the first visit in an additional 23 patients. Thus the diagnosis of fatigue was recorded in 118 patients (9.9/1,000 patients per year).

The age and sex distributions of cases were not different from those of the active adult patient population (Figure 1). The mean age of patients was 39 years, and there was no difference in mean age between those seen by staff physicians and those seen by residents. Approximately 75 percent of the study population was female.

The mean cost of laboratory examination was \$49.63 (SD = \$32.97) when ordered by staff physicians and \$47.86 (SD = \$31.93) when ordered by residents ($P > .7$, not significant). The mean number of laboratory tests per patient was 2.7 (SD = 1.5). The specific laboratory tests ordered and percentage of abnormal tests are found in Table 1. Of the abnormal laboratory tests, however, there were only nine patients in whom a positive laboratory test significantly affected treatment. The diagnoses associated with these patients are found in Table 2. All diagnoses in Table 2 were initially made after the first visit. Thus, only 17 of 325 (5.2 percent) tests (ordered either as individual tests or as multichannel panels) were used by clinicians to secure a diagnosis that required specific treatment. Furthermore, the specific treatment was limited to rest in two of the nine patients.

In 59 patients (50 percent), a diagnosis primarily psychosocial in nature was identified by the clinician. A presumed biomedical diagnosis was reached in 26 (22 percent) patients. The clinical diagnoses are found in Table 3. In 33 (28 percent) patients, no specific diagnosis was tendered, regardless of the number of visits.

Several trends regarding the tendency of patients to return for a follow-up visit were identified (Table 3). Whereas 39 percent of patients in whom stress was posited to be of primary significance in the etiology of fatigue did not return for follow-up, only 8.6 percent of patients in whom depression

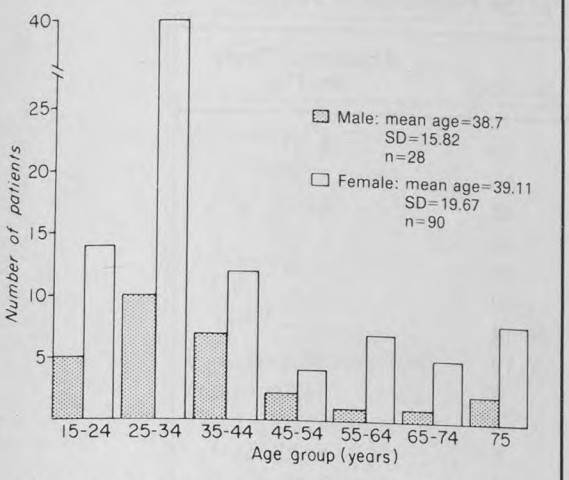

Figure 1. Age and sex distribution of cases

was suspected at the initial visit or was ultimately diagnosed did not return ($\chi^2 = 5.05$, $P < .025$). Furthermore, only one patient with an abnormal laboratory result (atypical lymphocytes on the peripheral smear) failed to return for a follow-up visit. With the exception of three patients in whom the diagnosis of hypothyroidism was initially entertained but not confirmed, no person in whom serious biomedical illness was suspected at the first visit failed to return for follow-up.

Discussion

Several attempts have been made to elucidate the epidemiology and nature of fatigue in family and general practice. The only population-based prospective study of the problem was performed by Jerrett, a British general practitioner.[1] In a practice of 2,075 patients, 300 individuals complaining of lethargy over a two-year period were evaluated with a history, physical examination, complete blood count, urine test for sugar and albumin, and other laboratory tests for which there were specific indications. Organic causes were identified in 37.7 percent of patients. However, Jerrett found that the routine laboratory tests "proved of no value at all" in making biomedical diagnoses. Rather, the history and physical examination were the diagnostic maneuvers of choice.

Morrison,[2] in a retrospective chart review of fatigue in three metropolitan Denver family practices, found an equal distribution of physical and psychological diagnoses in 176 cases of patients for whom the diagnosis of fatigue was recorded in a 12-month study of 7,600 active patients. Interestingly, a significantly greater proportion of physical diagnoses were identified in private practices than in a university teaching practice. He also found that the laboratory evaluation of fatigue was not rewarding, although the same panel of tests was not applied to every patient. Thus, while he commended the complete blood count, serum potassium, and Monospot as useful tests in the evaluation of fatigue, no measure of the specific clinical circumstances in which the tests were performed was available. In addition, although the distribution of the abnormal laboratory tests was reported, no indication of the contribution of various abnormalities to clinical management was provided; that is, while atypical lymphocytes on a peripheral smear may provide confirmatory evidence of a clinical diagnosis of a viral syndrome, the significance of the abnormal test is minimal compared with an elevated level of thyroid-stimulating hormone in hypothyroidism. Morrison also noted that approximately 50 percent of patients had no follow-up after the initial diagnosis of fatigue, although he did not describe any characteristics that differentiated between patients who did and did not return for a subsequent visit.

In the present study, approximately 1 percent of adult patients presenting to a university family medicine teaching program offered a complaint of fatigue not explainable by the physician at the initial visit. Morrison, in his study of almost identical design, identified 176 cases among 7,600 (2.3 percent) active patients during a 12-month period.[2] These figures definitely underestimate the number of patients actually complaining of fatigue, as patients in whom the cause was initially obvious were excluded from study. In his prospective study including all patients complaining of fatigue, Jerrett found an annual incidence of 7.3 percent.[1] Thus, fatigue is clearly a significant problem in the domain of the family physician.

Although a number of routine laboratory studies are frequently advocated,[4,5] it appears that the yield of such studies may not justify their costs. Although fatigue may be a component of a wide variety of clinical entities, in the great majority of cases some symptom other than fatigue accompanies most biomedical illnesses. Although it was difficult to quantify, most cases with positive laboratory tests were accompanied by an additional element in the history or physical examination such as weight loss, rales, or a history of heavy menstrual periods. In fact, in a number of medical

Table 1. Laboratory Tests Performed in the Evaluation of Fatigue

Laboratory Test	Number	Abnormal Tests No. (%)
Complete blood count (CBC)	79	9 (11)
Urinalysis	46	5 (10)
Sedimentation rate	44	6 (14)
Serum chemistries	44	7 (16)
Thyroid function tests	30	0 (0)
Hematocrit (without CBC)	18	0 (0)
Tuberculosis skin test	14	3 (21)
Monospot	12	0 (0)
Chest roentgenogram	6	3 (50)
Liver function tests	5	1 (20)
Electrocardiogram	5	1 (20)
Other	22	2 (9)
Total	325	39 (12)

Table 2. Abnormal Laboratory Tests Significantly Affecting Therapy

Diagnosis	Abnormal Tests
Diabetes mellitus	Urinalysis, glucose, potassium
Systemic lupus erythematosus	White blood count, antinuclear antibody, urinalysis
Hepatitis	SGOT, SGPT, lactic acid dehydrogenase
Anemia	Hematocrit
Mononucleosis	Peripheral smear
Hypoglycemia	Glucose tolerance test
Tuberculosis	White blood count, alkaline phosphatase, sedimentation rate, chest roentgenogram, tuberculosis skin test (PPD)
Iron deficiency	Iron, total iron-binding capacity (hematocrit = 37%)
Anemia	Hematocrit, serum urea nitrogen, creatinine

records it was noted that the fatigue had resolved at the time of the initial follow-up visit. Because of the high rate of psychosocial diagnoses more amenable to counseling than to biomedical interventions, it would appear that a second visit might be a more appropriate diagnostic and therapeutic strategy than a battery of low-yield laboratory tests. To the extent that laboratory testing itself is a therapeutic agent, an inexpensive "spun hematocrit" may be as reassuring to the patient as a full series of chemical and hematological tests.

The overall follow-up rate of 68 percent compares favorably with the 49 percent found by Morrison.[2] However, rates of follow-up varied strikingly with diagnosis. With the exception of one patient with suspected hypoglycemia, the only patients with biomedical diagnoses who failed to return for follow-up were those presumptively considered to have a diagnosis of viral or postviral syndromes. Assuming that the diagnoses were accurate, these patients suffered from benign self-limited syndromes for which the appropriate medical therapy is limited to reassurance and the prescription of rest. A somewhat different situation was evident in patients with primarily psychosocial diagnoses. Although over 90 percent of depressed patients were seen at least twice, those with other presumptive psychosocial diagnoses

Table 3. Associated Diagnoses and Rates of Failure to Follow Up

	No. (%)	Failure to Follow Up No. (%)
Primarily Psychosocial Diagnoses		
Depression	23	2 (9)
Stress	30	12 (39)
Anxiety	2	2 (100)
Other	4	2 (50)
Total	50 (50%)	
Primarily Biomedical Diagnoses		
Viral or postviral	11	3 (36)
Hypoglycemia	2	1 (50)
Anemia	2	0
Nasal congestion	1	0
Obesity	1	0
Systemic lupus erythematosus	1	0
Viral hepatitis	1	0
Mononucleosis	1	0
Tuberculosis	1	0
Poor diet	1	0
Gastrointestinal reflux	1	0
Gastritis	1	0
Diabetes mellitus	1	0
Hypokalemia	1	0
Total	26 (22%)	
No diagnosis	33 (28%)	16 (48)
Total patients	118	38 (32)

frequently failed to return for follow-up. Several explanations for this observation are possible. The symptoms of those under stress may have resolved as the stresses decreased, or they may have been reassured by the physician's initial findings of a normal physical examination. Patients seeking a biomedical explanation may have sought care elsewhere if dissatisfied with the absence of an organic explanation for their symptoms.

A prospective population-based study would be helpful in tracking the outcome of patients presenting with fatigue. Fatigue is, after all, a symptom rather than a diagnosis. No diagnosis was reached in a substantial number of patients in this study. Furthermore, in a number of cases the causal relationship between the clinical diagnosis and fatigue was far from compelling. It may be, for instance, that there are fatigue-prone personalities and that the presence of "stress" or a viral syndrome during episodes of fatigue is coincidental.

What is known about the weary and lethargic patient is far exceeded by that which is not. Further research into the epidemiology, causes, and outcome of fatigue will assist in delivering appropriate care while decreasing the utilization of unproductive and expensive diagnostic evaluation.

Acknowledgment

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