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Physical Illness Presenting as Psychiatric Disease

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• **A study of 658 consecutive psychiatric outpatients receiving careful medical and biochemical evaluation, defined an incidence of medical disorders productive of psychiatric symptoms in 9.1% of cases. The most frequent presentations were of depression, confusion, anxiety, and speech or memory disorders. The presence of visual hallucinations was believed to indicate medical etiology until proved otherwise. Major illnesses presenting with psychiatric symptoms in order of frequency were infectious, pulmonary, thyroid, diabetic, hematopoietic, hepatic and CNS diseases. Forty-six percent of these patients suffered from medical illnesses previously unknown to either them or their physician. A plea is made for careful medical evaluation of psychiatric patients.**

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Psychiatric symptoms are nonspecific and commonly occur in medical as well as psychiatric disease. In addition, there is some evidence that a psychiatric diagnosis is associated with a high risk of medical illness. One approach to the symptom nonspecificity dilemma has been an attempt to relate specific psychiatric symptoms to specific medical disease[1-17] or to define the risk of the development of a particular medical illness by psychiatric syndrome.[18-31]

Comroe,[32] in 1936, demonstrated that in 24 of 100 patients labeled neurotic, significant organic disease developed within eight months after their initial evaluation. He suggested that psychiatric and behavioral symptoms often precede the full-blown development of medical illness. Marshall,[33] in 1949, demonstrated a physical morbidity in 44% of patients admitted to a psychiatric unit. In 1958, Meyer,[34] while investigating the relationship of surgery to psychiatry, cautioned against assigning a functional cause to symptoms simply because they arose in the midst of an emotional crisis.

Herridge,[35] conducting one of the first etiologic classification studies in 1960, found a 50% physical morbidity in 209 consecutive psychiatric patients. In spite of previous medical examination, he found a 5% incidence of medical disorders that were considered "casual" of psychiatric symptoms. Twenty-one percent of his patients had significant medical illness that was considered "concomitant" and "apparently contributing" to the onset of psychological symptoms. In 8% of his population, a "consecutive" physical disorder developed that "apparently" resulted from the psychological illness or its treatment. Of the remaining patients, 34% were found to have physical illnesses that required attention.

Davies,[36] in 1965, studied the incidence of physical illness in psychiatric outpatients. He found a 42% incidence of physical disease causative of initial psychiatric complaints; 58% of all patients attending his psychiatric clinic suffered from some physical illness.

Johnson,[37] in 1968, conducted detailed physical examinations of 250 consecutive admissions to an inpatient service and reported a 12% incidence of cases where physical states were important etiological factors in the presenting psychiatric symptoms. Of these illnesses, 80% were "missed" by physicians prior to the patient's admission and 6.6% were "initially missed" after admission; 60% of all patients admitted demonstrated abnormal physical findings. Maguire and Granville-Grossman,[38] in 1968, found a 33.5% incidence of medical illness in 200 consecutive psychiatric inpatients. Seventy percent of these illnesses

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Table 1.—Medical Conditions Considered Definitely Causative of Psychiatric Symptoms*

Psychiatric Diagnosis (No. of Patients)	Medical Diagnosis (No. of Patients)
Neurosis (19)	
Depression (15)	Hypothyroidism (3)
	Pneumonia (2)
	Infectious viral hepatitis (2)
	Hyperthyroidism
	Hyperparathyroidism
	Hepatic insufficiency
	Mononucleosis
	Buncle branch block
	Arteriosclerotic cardiovascular disease
	Hypertension (essential)
	Metastatic carcinoma of the uterus
	Hypochromic anemia
	Peptic ulcer
Anxiety (9)	Hyperthyroidism (2)
	Pneumonia (2)
	Hyperparathyroidism
	Ulcerative colitis
	Bundle branch block
	Arteriosclerotic cardiovascular disease
	Hypothyroidism
	Paroxysmal atrial tachycardia
	Hypochromic anemia
	Scabies
Psychosis (15)	
Reactive, unspecified (6)	Hypertension (2)
	Arteriosclerotic cardiovascular disease (2)
	Neurosyphilis
	Cirrhosis
	Incipient delirium tremens
	Diabetes mellitus
	Congestive heart failure
	Chronic bronchitis
	Sphenoidal ridge meningioma
	Viral upper respiratory infection
	Cerebral insufficiency
	Hypothyroidism
Major Affective (6)	Viral pneumonia
	Rheumatoid arthritis
	Aortic stenosis
	Cerebral anoxia
	Hypothyroidism
	Erythremia
	Pernicious anemia
	Black lung
	Congestive heart failure
Schizophrenia (3)	Diabetes mellitus (2)
	Alzheimer's disease
	Hypoglycemia
Organic brain syndrome (6)	Pneumonia (2)
	Bronchogenic carcinoma
	Cirrhosis
	Pancreatitis
	Hepatoma
	Hypochromic microcytic anemia (2)
	Emphysema
	Congestive heart failure
	Metastatic carcinoma of the uterus
	Hepatic insufficiency
Personality disorder (4)	
Unspecified (2)	Cerebrovascular accident
	Hypertension
	Viral pneumonia
	Rhematoid arthritis
	Anemia (2)
Alcoholism (2)	Cirrhosis
	Pancreatitis
	Hepatoma
Behavior disorder of childhood (1)	Pinworm

*Conditions were considered causative of psychiatric symptoms if: (1) the psychiatric symptom abated with treatment, or (2) the medical condition clearly caused the initial psychiatric symptoms even though the psychiatric symptoms were not reversed by medical treatment. This table reflects all diagnoses, both medical and psychiatric, made for each patient. Where more than one diagnosis was made, all are shown.

Table 2.—Medical Conditions Considered Probably Causative of Psychiatric Symptoms*

Psychiatric Diagnosis (No. of Patients)	Medical Diagnosis (No. of Patients)
Neurosis (6)	
Depression (3)	Pulmonary infarction
	Pulmonary emboli
	Hypothyroidism
	Diabetes mellitus
Anxiety (3)	Hyperthyroidism (2)
	Hypothyroidism
Obsessive compulsive (1)	Diabetes mellitus
Psychosis (13)	
Reactive, unspecified (5)	Diabetes mellitus (2)
	Hepatitis
	Bronchitis
	Hypochromic microcytic anemia
	Rheumatoid arthritis
	Viral pneumonia
	Mitral stenosis
	Congestive heart disease
Major affective disorder (4)	Hyperthyroidism
	Pulmonary infarction
	Pulmonary emboli
	Congestive heart failure
	Hypertension
	Chronic bronchitis
	Pulmonary insufficiency
	Emphysema
Schizophrenia (5)	Neurosyphilis
	Diabetes mellitus
	Pyelonephritis
	Congestive heart failure
	Infectious hepatitis
Organic brain syndrome (6)	Congestive heart failure (2)
	Neurosyphilis
	Hypertension
	Diabetes mellitus
	Bronchitis
	Pyelonephritis
	Infectious hepatitis
Personality disorder (6)	
Unspecified (2)	Sickle cell anemia
	Mitral stenosis
	Congestive heart failure
	Rheumatic heart disease
Hysterical (1)	Juvenile diabetes mellitus
Sociopathic (1)	Viral pneumonia
Alcoholism (1)	Hepatitis
	Bronchitis
	Hypochromic microcytic anemia
	Rheumatoid arthritis
Drug Dependence (1)	Hyperthyroidism

*Medical conditions were considered probably causative of psychiatric symptoms if they could explain the particular episode of symptoms in patients with definite psychiatric disorders of long standing (ie, altered the patient's normal behavior pattern, but with treatment of the medical problem, the patient's pattern of behavior reverted to what it was previously).

Table 3.—Medical Disorders Believed Causative of Presenting Psychiatric Symptoms

System*	Disease	No. of Patients
Cardiovascular (22)	Hypertension	5
	Congestive heart failure	5
	Arteriosclerotic cardiovascular disease	3
	Cerebral insufficiency	2
	Aortic stenosis	2
	Paroxysmal atrial tachycardia	1
	Right-sided heart failure	1
	Mitral stenosis	1
	Conduction defect	1
	Rheumatic heart disease	1
Endocrine (21)	Thyroid disease	12
	Hypothyroidism	7
	Hyperthyroidism	5
	Diabetes mellitus	7
	Hypoglycemia	1
	Hyperparathyroidism	1
Infections and parasitic disease (14)	Pneumonia	6
	Neurosyphilis	2
	Infectious hepatitis	2
	Mononucleosis	1
	Pyelonephritis	1
	Scabies	1
	Pinworms	1
Pulmonary (12)	Pneumonia	6
	Viral	2
	Pneumococcal	2
	Klebsiella	1
	Unspecified	1
	Emphysema	2
	Black lung disease	1
	Pulmonary insufficiency	1
	Pulmonary embolism	1
	Pulmonary infarction	1
Gastrointestinal (9)	Cirrhosis	2
	Infectious hepatitis	2
	Hepatic insufficiency	1
	Alcoholic hepatitis	1
	Malnutrition	1
	Ulcerative colitis	1
	Peptic Ulcer	1
Hematopoietic (8)	Hypochromic microcytic anemia	5
	Pernicious anemia	1
	Erythremia	1
	Sickle cell anemia	1
Central nervous system (5)	Neurosyphilis	2
	Sphenoid ridge meningioma	1
	Alzheimer's disease	1
	Cerebrovascular accident	1
Malignancies (4)	Bronchiogenic carcinoma	1
	Hepatoma	1
	Endometrioma of uterus	1
	Sphenoid ridge meningioma	1

*Numbers in parentheses indicate number of patients.

Table 4.—Psychiatric Diagnosis in Patients With Medical Disorders Believed Causative of Psychiatric Symptoms*

Diagnosis	No. of Patients
Neurosis	**31**
Depressive	18
Anxiety	12
Obsessive-compulsive	1
Psychosis	**42**
Reactive, unspecified	16
Depressive reaction	3
Schizophrenia	15
Major affective	8
Organic brain syndrome	**12**
Personality Disorder	**13**
Unspecified	6
Inadequate	1
Hysterical	1
Antisocial	1
Alcoholism	3
Drug dependence	1
Behavioral disorders of childhood	**1**

*When a multiple diagnosis was made, all are shown.

were considered severe, and 49% were previously unknown to either the patient or his physician.

The dilemma of assigning physical or psychological causality to particular psychiatric symptoms remains and is of critical import both for the diagnosis of the individual patient and for the rational design of a mental health care delivery system. This prospective study was undertaken in an attempt to define the significance of physical illness in psychiatric outpatients.

SUBJECTS AND METHODS

Six hundred fifty-eight consecutive outpatients coming to a surburban community mental health center underwent a detailed initial evaluation consisting of a thorough medical and psychiatric history, mental status examination, physical examination, and physical symptom checklist. The review of systems checklist was adapted from one used on the medical service of the Johns Hopkins Hospital, Baltimore, Md. The study continued until 100 patients showed four or more symptoms on the symptom checklist. These 100 symptom-positive patients and the first 100 symptom-negative controls underwent a biochemical screening. Previous medical records, current illness, and treatment data were requested for all patients.

Patients with laboratory or physical evidence of disease continued to be followed up at the center as well as being referred to appropriate medical specialists for further evaluation and treatment. Data concerning improvement of initial psychiatric symptoms with medical treatment was obtained and analyzed. Patients underwent reevaluation for the presence of initial psychiatric symptoms two weeks after the treating physician believed maximal medical improvement had occurred. Medical disorder was considered causative of psychiatric symptoms if (1) psychiatric symptoms abated significantly with medical treatment; (2) medical symptoms seemed clearly related to the onset of psychiatric symptoms; or (3) the presence of a medical disorder, even though untreatable (ie, progressive arteriosclerotic cardiovascular disease with cerebral impairment), explained the patient's symptom pattern.

Medical and psychiatric symptoms were factor analyzed for frequency of presentation in patients in whom medical conditions were thought to be causative of the initial psychiatric complaint. Data concerning whether the medical illness had been previously known to the family physician were analyzed.

Table 5.—Probable Medical Symptoms in Order of Frequency

Symptom	No. of Patients
Sleep disorder	28
Severe weakness	22
Extreme fatigue	22
Inability to concentrate	19
Memory loss	19
Change in speech	19
Auditory hallucinations	18
Chest pain	18
Intermittent tachycardia	18
Recent nocturia	17
Recent-onset confusion	17
Tremulousness	16
Productive sputum	15
Urinary frequency	15
Dyspnea on exertion	15
Recent personality change	15
Paresthesias	14
New cough	13
Polyuria	12
Pleuritic pain	12
Visual hallucinations	12
Lymphadenopathy	12
Severe anorexia	12
Dyspnea	12
Arrhythmia (perceived by patient)	12
Paroxsymal nocturnal dyspnea	10
Costal vertebral angle pain	10
Chest pain	9
Wheezing	9
Diminished coordination	9
Skin has recently become dry	9
Lost all desire to eat	9
Recent fragility of hair	9
Ankle and/or pretibial edema	9
Diminished sense of touch	9
New and different headache	8
Neck pain	8
Difficulty with mastication	7
Two-pillow orthopnea	7
Recent change in menstrual periods	7
Recent muscular weakness	6
Dysuria	5

RESULTS

Of the patients having four or more positive responses on the symptom checklist (9.1% of the total sample of 658) 60% showed significant laboratory evidence of disease, as compared to only 3% (0.4% of the total sample of 658) of those patients who were symptom-negative. Twenty-three percent of the symptom-positive patients with laboratory indication of disease had medical illnesses known to their physician, while 77% of that group had illnesses that were previously unrecognized. Sixty-five percent of the index

group and 68% of the control group reported that they had a family physician whom they saw regularly; 72% of all patients with a family physician had not been physically examined during the preceding year.

Data were tabulated to depict medical and psychiatric diagnoses of those patients whose medical conditions were considered definitely or probably causative of initial psychiatric symptoms (Tables 1 and 2); the type of medical illness by symptoms or etiologic category (Table 3); the initial psychiatric diagnoses for those patients who were subsequently thought to have psychiatric symptoms caused by an underlying medical illness (Table 4); and the reported medical symptoms, in order of frequency, for the index population (Table 5). If initial diagnostic nomenclature was not precise, patients were placed, by the authors, in the most appropriate specific or general category. Where patients carried multiple diagnoses, all are shown. Where patients suffered from more than one illness, all significant illnesses are shown in their respective categories.

No meaningful sex, race, or age differences were apparent between the index and control groups. The mean age for the control group was 37 years, while that of the index group was 43 years. The average age for patients with multiple medical disorders thought to be definitely or probably causative of psychiatric symptoms was 57 years. Of the patients having a medically induced psychiatric disorder, 26% were under the age of 30. The average age of patients by system or etiologic category was cardiovascular disorders, 56 years old; pulmonary disease, 55 years; CNS disease, 54 years; malignancy, 47 years; gastrointestinal disorders, 47 years; hematologic disease, 44 years; infectious disease, 38 years; and endocrine disorders, 37 years.

The percentage of the patients with a medical condition that was thought to be definitely or probably causal of their psychiatric symptoms was 9.1. Cardiovascular and endocrine disorders were the most frequent causes of psychiatric symptoms, followed by infection, pulmonary disease, gastrointestinal disorders, hemopoietic disease, CNS disease, and malignancy.

The most frequent specific diagnoses made in patients with a medically induced psychiatric disorder were psychoneurotic depression, organic brain syndrome, and anxiety neurosis. It is noteworthy that the condition of 28% of the index group was diagnosed as functionally psychotic. Depression, anxiety, sleep disturbance, appetite disorders, diminished concentration, impaired recent memory, speech difficulty or a recent change of speech pattern, sensory flooding, auditory or visual hallucinations or both, recent personality change, or a sudden intensification of premorbid personality were the most characteristic psychiatric findings in these patients.

Twenty percent of the patients with a medically induced psychiatric disorder experienced visual hallucinations, distortions, or pronounced visual illusions as compared to only 0.5% of the population having psychiatric symptoms that were not thought to be medically related. Recent and extreme weakness, fatigue, agitation, chest pain, intermittent tachycardia or other arrhythmia, tremulousness, pain, changes in micturition, paresthesia, respiratory distress, skin or hair changes, and headaches were the most frequently seen medical symptoms in these patients.

COMMENT

This study supports the concensus of previous investigators[32-38] that the presentation of psychiatric symptoms frequently belies medical illness. Reports of causative incidence range from 5% to 42%,[35-36] reflecting population and selection variables. The 9.1% incidence of medically induced psychiatric symptoms observed in this study indicates that a meaningful population of patients in a self-referred outpatient psychiatric system required detailed medical evaluation and treatment. Of note is the fact that the presence of a physician of record was not helpful in differentiating high- and low-risk patient groups. Demographic variables did not predict, in any meaningful way, risk, with the possible exception of an increased incidence of significant medical illness with advancing age.

Patients placed in high- and low-risk groups by the symptom checklist evidenced a 60% vs a 3% yield of biochemical laboratory abnormality. All of those patients had significant physical disease. A medical review of symptoms checklist thus seems to provide a simple and efficient instrument for defining those patients who are at high risk for underlying medical illness. The tandem use of a symptom checklist and biochemical screening provides a system helpful in defining those patients who require intensive medical investigation. This screening combination has direct applicability in the office practice of psychiatry, student and general mental health clinics, community mental health centers, and industrial psychiatric settings.

Visual hallucinations, distortions, and illusions were the symptoms most discriminative of medically induced psychiatric disorders. This finding strongly suggests that in patients who complain of visual hallucinations or distortions, medical impairment should be considered until proved otherwise.

The 28% diagnostic incidence of functional psychosis should also be noted, as these diagnoses carry with them the implication of long-term drug treatment, potential hospitalization, and possible changes in the patient's legal status. In the majority of the patients whose conditions were diagnosed as functionally psychotic, symptoms cleared rapidly with appropriate medical treatment and the patients remained healthy. Misdiagnosis and the application of psychiatric labels to medically ill patients reduces their chances for improvement and may result in a worsening of their physical health. Adequate medical investigation, on the other hand, is reassuring to both the patient and his physician.

CONCLUSION

The following conclusions seem to be justified from this study:

1. Medical illness often presents with psychiatric symptoms.
2. It is difficult to distinguish physical disorders from functional psychiatric disorders on the basis of psychiatric symptoms alone.
3. Detailed physical examination and laboratory screening are indicated as a routine procedure in the initial evaluation of psychiatric patients.
4. A review-of-systems checklist is useful in identifying

patients at high risk for physical illness.

5. Most patients are unaware of the medical illness that is causative of their psychiatric symptoms.

6. The presence of a family physician does not protect either the patient or the treating psychiatrist from unrecognized medical illness.

7. Cardiovascular, endocrine, infectious, and pulmonary disorders are the most frequent medical causes for psychiatric symptoms.

8. The conditions of patients with medically determined psychiatric symptoms are most likely to be diagnosed as psychoneurotic depression, organic brain syndrome, or anxiety neurosis.

9. The conditions of patients with medically induced symptoms are often initially misdiagnosed as a functional psychosis.

10. Visual hallucinations, distortions, and illusions are the psychiatric symptoms most discriminative of underlying medical disorder. Their occurrence necessitates medical evaluation.

References

1. Hall RCW, Reading A: Steroid psychosis. *New Physician* 20:20-23, 1971.
2. Hall RCW: Psychiatric complications of chronic renal hemodialysis and renal transplantation. *New Physician* 20:255-258, 1971.
3. Hall RCW, Joffe JR: Hypomangnesemia. *JAMA* 224:1749-1751, 1973.
4. Schwab JJ: Psychiatric illness produced by infections. *Hosp Med* 5:98-108, 1969.
5. Whybrow PC, Prange AJ, Threadway CR: Mental changes accompanying thyroid gland dysfunction. *Arch Gen Psychiatry* 20:48-63, 1969.
6. Dalessio DJ, Benchimol A, Dimond EG: Chronic encephalopathy related to heart block. *Neurology* 15:499-503, 1965.
7. Perlas AP, Faillace LA: Psychiatric manifestations of carcinoma of pancreas. *Am J Psychiatry* 121:182, 1964.
8. Rosenblatt S, Faillace LA: The psychiatric manifestations of hyperparathyroidism. *Tex Med* 73:59-60, 1977.
9. Ullman M, Gruen A: Behavioral changes in patients with strokes. *Am J Psychiatry* 117:1004-1009, 1961.
10. Goldstein NP, Ewert JC, Randall RV, et al: Psychiatric aspects of Wilsons disease. *Am J Psychiatry* 124:1555-1561, 1968.
11. Himmelhoch J, Pincus J, Tucher G, et al: Sub-acute encephalitis: Behavioral and neurological aspects. *Br J Psychiatry* 116:531-538, 1970.
12. Mitchell WM: Etiological factors producing neuropsychiatric syndromes in patients with malignant disease. *Int J Neuropsychiatry* 3:464-468, 1967.
13. Hall RCW, Popkin MK: Psychological symptoms of physical origin. *Female Patient* 2(10):43-47.
14. Korolenko CP, Yevseyeva TA, Volkov PP: Data for a comparative account of toxic psychoses of various aetiologies. *Br J Psychiatry* 115:273-279, 1969.
15. Surridge D: An investigation into some psychiatric aspects of multiple sclerosis. *Br J Psychiatry* 115:749-764, 1969.
16. Ford RG, Siekert RG: Central nervous system manifestation of periarteritis nodosa. *Neurology* 15:114-122, 1965.
17. Glaser GH, Newman RJ, Schafer E: Interictal psychosis in psychomotor temporary lobe epilepsy: An EEG-psychological study, in *EEG and Behavior*. New York Basic Books Inc, 1963, pp-345-365.
18. Bourestom NC, Howard MT: Personality characteristics of three disability groups. *Arch Phys Med Rehabil* 46:626-632, 1965.
19. Moos RH: Personality factors associated with rheumatoid arthritis: A review. *J Chronic Dis* 17:41-55, 1964.
20. Wittkower ED: Studies of the personality of patients suffering from urticaria. *Psychosom Med* 15:116-126, 1953.
21. Cobb S, Rose RM: Hypertension, peptic ulcer and diabetes in air traffic controllers. *JAMA* 224:489-492, 1973.
22. Engle GL: Studies of ulcerative colitis: III. The nature of the psychological processes. *Am J Med* 19:231-256, 1955.
23. Freeman EH, Gorman FJ, Singer MT, et al: Personality variables and allergic skin reactions: A cross validation study. *Psychosom Med* 29:312-332, 1967.
24. McFadden ER Jr, Kiser R, DeGroot WJ: Acute bronchial asthma. *N Engl J Med* 288:221-235, 1973.
25. Cleveland SE, Johnson DL: Personality patterns in young males with coronary disease. *Psychosom Med* 24:600-610, 1962.
26. Davies M: Blood pressure and personality. *J Psychosom Res* 14:89-104, 1970.
27. Friedman M, Byers SO; Rosenman RH: Coronary-prone individuals (type A behavioral patterns) growth hormone response. *JAMA* 217:929-932, 1971.
28. Friedman M, Rosenman RH, Straus R: The relationship of behavioral pattern 'A' to the state of the coronary vasculature. *Am J Med* 44:525-537, 1968.
29. LaBarba RC: Experiential and environmental factors in cancer: A review of research with animals. *Psychosom Med* 32:259-274, 1970.
30. Hagnell O: The premorbid personality of persons who develop cancer in a total population investigated in 1947 and 1957. *Ann NY Acad Sci* 125:846-855, 1966.
31. Crisp AH: Some psychosomatic aspects of neoplasia *Br J Med Psychol* 13:313-331, 1970.
32. Comroe BI: Follow-up study of a 100 diagnosed as neurosis. *J Nerv Ment Dis* 83:679-684, 1936.
33. Marshall H: Incidence of physical disorders among psychiatric inpatients. *Br Med J* 2:468-470, 1949.
34. Meyer BC: Some psychiatric aspects of surgical practice. *Psychosom Med* 20:203-214, 1958.
35. Herridge CF: Physical disorders in psychiatric illness: A study of 209 consecutive admissions. *Lancet* 2:949-951, 1960.
36. Davies DW: Physical illness in psychiatric out-patients. *Br J Psychiatry* 111:27-33, 1965.
37. Johnson DAW: The evaluation of routine physical examination in psychiatric cases. *Practitioner* 200:686-691, 1968.
38. Maguire GP, Granville-Grossman KL: Physical illness in psychiatric patients. *Br J Psychiatry* 115:1365-1369, 1968.

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