Editor's note: The following is the finest article we have found on the subject of medical causes of severe mental symptoms. We are grateful to Dr. Diamond for his permission to reprint.

The reader should note that this article only covers standard *medical* causes of mental symptoms and does not include many other physical causes, such as nutritional imbalances and metabolic abnormalities, listed in other articles on AlternativeMentalHealth.com. It should also be noted that some studies have shown that, when extensive testing is done, medical causes may account for substantially more than 10% of patients with mental symptoms (particularly Hall [reporting a 46% causal connection], *American Journal of Psychiatry*, 1980 and Koranyi, *Archives of General Psychiatry*, 1979). Lastly, many clinicians believe that patients may suffer from medical conditions, such as hypothyroidism, that can be missed by standard medical lab tests and, therefore, be overlooked on studies applying standard medical screening.

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Psychiatric Presentations of Medical Illness

An Introduction for Non-Medical Mental Health Professionals

Ronald J Diamond M.D.
University of Wisconsin Department of Psychiatry
6001 Research Park Blvd
Madison, Wisconsin 53719

Revised 1/7/2002

Introduction

Every time a patient comes into your office, your emergency room or your hospital, there is a very real possibility that what seems to be a psychological problem is caused by some physical illness. The depressed patient may have an under active thyroid gland. The patient with panic attacks may have a pheochromocytoma, a tumor that secretes epinephrine. And the patient, whose personality change and increased irritability is thought to be caused by his marital problems, may actually have a brain tumor causing the personality changes and exacerbating longstanding marital issues.

How common is this problem? Very...and not very. Most of your clients will not have a medical disease masquerading as an emotional problem. In fact, one of the problems is that most really serious medical illnesses are rare enough that we all get sloppy and stop looking for them. Most of the time our medical workups are unnecessary-but most of the time is not the same as all of the time. It is not necessary to live in abject terror about missing all of the patients with unsuspected medical illnesses that come to you with symptoms of depression or anxiety. On the other hand, medical causes of psychiatric symptoms should always be considered. As a mental health professional, you need to know enough about these medical illnesses to make some basic assessment about whether a further medical assessment is necessary and how to focus that

assessment so as to make it as productive as possible.

Ex.-Johnson (1968) performed detailed physical exams on 250 patients admitted to an inpatient psychiatric unit. 12% of these patients were admitted to the psychiatric unit for problems that seemed to be caused by physical illness

80% of these had been missed by physician before admission
6.6% were initially missed even after the admission workup
60% had abnormal physical findings

Ex.-Hall (1978) performed a detailed assessment on 658 consecutive psychiatric outpatients - 9.1% had a significant medical illness-

Ex.-Slater (1965) studied 85 patients (32 men and 53 women) diagnosed as having "hysteria" - follow up 7-11 years. More than a third proved to have organic disease

Ex.-Sox et. al. (1989) did a thorough medical evaluation on 509 patients in community mental health programs in California.- 200 (or 39%) had at least one active, important, physical disease, Staff at the mental health program was aware of only 47% of these. Research program discovered previously undiagnosed, important diseases in 63 of these patients. 14% had medical illness that was causing or exacerbating their mental illness

Ex.-Koran performed thorough medical assessments on 529 patients drawn from eight community mental health centers in California. 17% were found to have an organic condition that either caused or exacerbated the emotional symptoms for which the person was being treated.

Ex.-Bartsch et. al. performed a comprehensive evaluation on 175 clients from two Colorado CMHCs. A previously undiagnosed physical health problem was found in 20% of the clients. 16% had conditions that could cause or exacerbate their mental disorder. 19 clients had a metabolic abnormality (elevated calcium, etc.).
7 clients had a neurological disorder (memory loss, post concussion syndrome, etc.) 7 clients had an adverse medication effect. 4 clients had some other disorder, including cancer

Conservative estimates suggest that 10% of persons initially seen in outpatient settings for psychological symptoms have an organic disease causing the symptoms. This figure is higher in the elderly, in persons with certain diagnosis such as hysteria, and much higher in inpatient settings.

What can one do about it?

Even internists and neurologists, working in academic centers and aware of the possibility of organic illness, miss medical illnesses with disturbing frequency. There is no set of tests that can definitively rule everything out. Some illnesses are hard to diagnose, especially at the beginning. Others are so rare that they are not thought of so that the specific tests that would allow the diagnosis are not considered. Still other times the illnesses present atypically. The patient's symptoms seem different than those described in the medical textbooks, so that a medical illness is missed.

The most common problem, however, is that we do not think about the possibility of medical illness and, therefore, we do not specifically look for medical illness. IF YOU DO NOT LOOK FOR IT, YOU WILL NOT FIND IT. The purpose of this paper is not to get you to the point of being able to diagnose every possible disease. Rather, it is to give you a starting point-to know when to be particularly suspicious (or worried), to know something about the most common illnesses, and to learn enough to communicate with the consulting physician so that you can make sure that your patient gets the best possible evaluation.

There are at least three problems with trying to present this kind of brief review for non-medical mental health professionals.

The first is that there are a huge number of different possible illnesses to worry about. I am not about to try to list all possible illnesses or to give complete descriptions but, rather, to get you to think about some of the common illnesses that you are most likely to see in your practice.

The second problem is that it is almost impossible to talk about medical illnesses without lapsing

into medical jargon. This is half a paper about medical illnesses, and half a paper on learning a new language that will hopefully help you when you need to communicate to other physicians.

The third problem is both more subtle and more serious. Non-medical mental health professionals organize the world according to psychological symptoms. The question is, what medical illnesses can cause depression, anxiety, etc.? The problem is that the depression caused by a brain tumor may be identical to the depression caused by marital discord or by an endogenous depression. What is likely to be different is the patient's history and the associated signs and symptoms apart from the depression. Unfortunately, listing illnesses according to which ones can cause depression or which ones can cause anxiety does not produce a coherent organization. Many illnesses can cause many different psychological symptoms. More importantly, such a listing would not help to understand what other questions to ask to help separate physical from psychological illnesses.

Physicians organize the world much differently. The easiest way to remember all of the separate facts and to see patterns is to organize illnesses according to physiological systems. Throughout this paper I will keep talking about endocrine systems, neurological systems and cardiopulmonary systems. For someone who has been through medical school, this becomes the obvious way to organize things, but it is not always so obvious for the rest of the world. The problem with categorizing according to psychiatric symptoms will become obvious as you go through this paper. A huge number of illnesses can present as depression, and the vast majority of these illnesses can also present as anxiety or delirium. It does not do much good to think about the list of illnesses that can present as depression unless you begin to think about some of the other associated symptoms that those illnesses also have-and the best way to organize these associated symptoms is to understand what organ systems the illness effects.

Having said all of that, I will try to organize illnesses by their psychological effects, and, at the same time, try to introduce the way that physicians would organize their thinking about those illnesses.

Section I

General Approach

A. Always consider the possibility of organic disease- If you do not look for it you will not find it.

1. Be suspicious of "medical clearance".

Unfortunately, physicians tend to dismiss psychiatric patients for several reasons. There is a tendency to assume that all psych patients are just "nuts" without "real illness". Physicians are often uncomfortable around patients who are obviously depressed or who are acting bizarrely, or who they are afraid might act bizarrely. At times these patients behave in ways that make evaluation more difficult, either by being unwilling to give a full history, unable to give an accurate description of symptoms, or too frightened to allow a full physical examination.

2. People with schizophrenia get sick too.

The fact that someone is actively psychotic does not mean that they do not also have a serious medical illness. One should always be concerned that a medical illness might, in fact, be the cause of the psychosis. But even in patients who clearly have schizophrenia or some other diagnosable mental illness and who have had an excellent medical workup in the past, it is important to consider whether their current complaints or recent change in behavior could be related to a medical illness. In fact, psychotic patients are more difficult to evaluate, and if they do happen to have a serious medical illness, it is more likely to get missed.

Studies have demonstrated that disliked patients are more likely to have an undiagnosed organic brain syndrome than more likable patients, and it is just those disliked patients that will often get the most cursory and incomplete physical evaluation. My guess is that patients who are most different from their physicians are also more likely to have a medical illness missed, and this is especially true of psychiatric patients.

3. Be alert for presentations, which make medical illness more likely-but do not stop considering medical illness just because these are not present.
o a patient over 40 with no previous psychiatric history
o no history of similar symptoms

o coexistence of chronic disease
o a history of head injury
o a change in headache pattern
o a patient who gets worse when given antipsychotic or anxiolytic medications

4. Look for symptoms, which make medical illness more likely.

o a change in headache pattern
o visual disturbances, either double vision or partial visual loss
o speech deficits, either dysarthrias (problems with the mechanical production of speech sounds) or aphasias (difficulty with word comprehension or word usage).
o abnormal autonomic signs (blood pressure, pulse, temperature)
o disorientation and/or memory impairment
o fluctuating or impaired level of consciousness
o abnormal body movements
o frequent urination, increased thirst (possible symptoms of diabetes)
o significant weight change, gain or loss

5. Do not assume that a certain symptom "must" be of psychological origin.
For example, it used to be thought that male impotence was almost always a psychological problem. A recent study of 105 impotent men reported that 75% had impotency based either on a medical illness such as diabetes mellitus, or were using drugs that were likely to cause impotence. Of 34 men with hormonal problems who accepted medical treatment, 33 had return of sexual function. Fourteen of these men had previously undergone psychotherapy for this same problem.

B*. Be Holistic*

A psychiatric assessment should include the whole person, including the medical history and physiology of that person. This is needed to rule out a medical illness, but also so that you can understand the person's current feelings and functioning within the context of what has happened to the person in the past and what is happening now.

Much of the information that you need to suspect a medical illness is readily available as part of a psychiatric assessment. It is important to know how to organize this information so that it is useful, and to fill in gaps in your information so that important areas are not missed. (Note that a comprehensive psychiatric evaluation would include additional areas such as personal developmental history and current social support system, in addition to the assessment areas discussed below.)

1. *Symptoms*
o Start with a clear description of all of the patient's symptoms.
o How did they begin? How long has he had them? What has the progression of symptoms been like?
o Include a careful review of other "extraneous" symptoms the patient may have-starting at the top with questions about headache and dizziness and ending at the bottom with questions about leg sores and trouble walking. This "review of systems" is an extremely important part of a medical assessment.

2. *History*
o Include history of similar problems in the past
o History of past medical problems including all medical hospitalizations and surgeries
o Family history, both medical and psychiatric

3. *Current medical status*
o Ask about all current medical illnesses
o Ask about all current medications (Include specific questions about vitamins, birth control, over the counter meds, etc.)
o Ask about past medical problems, past surgeries, past medical hospitalizations
o Ask about any head injury, coma, periods of unconsciousness, seizures.
o Obtain name of person's physician--date of last contact--for what purpose

4. *Current habits*
o Ask about drug use, starting with questions about tobacco, caffeine and alcohol and proceeding on

to questions about other drugs
o Ask about exercise and activity patterns, sleep patterns

5. *Observation.*
The assessment starts when you first meet the patient, not when you first sit down to begin talking in your office.
o General appearance: How does the person look? How are they dressed? Do they appear ill? Then go to more specific observations.
o Skin: Is it very dry or abnormally colored? Extremely pale skin or lips may suggest anemia. A yellow skin may indicate jaundice and liver disease. Dry skin and hair may be a sign of hypothyroidism.
o Eyes: Are they focused? Are the pupils equal? Are they aligned with each other? Differences in pupil size may indicate brain masses such as tumors. Wildly dilated pupils may indicate a variety of drugs including hallucinogens, stimulants, and anticholinergics. Constricted pupils may indicate opiates. Bulging eyes can be a sign of hyperthyroidism.
o Observe body movement to rule out weakness, clumsiness, ataxia, facial asymmetry, asymmetry of movements, choreiform movements ("worm-like" or other involuntary movements, usually occurring less than 2 times/second), tremors. Observe for other neurological abnormalities such as motor stereotypy (repetitive stereotyped movements).
o Gait disturbance is a very common finding in a wide range of medical conditions.
Dubin (1983) studied 1140 patients cleared medically on a psychiatric service.
o 38 subsequently found to have a medical illness
o 14 of the 38 had either gait disturbance, weight loss, hypertension, abnormal vital signs or significant medical history

6. *Mental status examination*
o appearance
o degree of cooperation
o presence of perceptual distortions (hallucinations and illusions)
o mood (both appropriateness and quality)
o speech (both quality and content)
o motor activity
o general cognitive abilities
- attention
- memory
- judgment
- fund of knowledge
o Also consider evidence of specific neurological deficits:
- aphasias (difficulties with speech) can be broken down into
v word finding difficulties (nominal aphasias)
v difficulty understanding speech (receptive aphasias) or
v difficulty producing speech (expressive aphasia)
- agnosias (recognition of complex shapes)
- apraxias (execution of proper manipulation of objects)
- perseveration (inability to switch tasks or mental sets)
Each of these can occur with varying degrees of severity.

7. *Physical exam*.
A full physical examination is obviously not possible if you are not a physician, and even psychiatrists rarely perform a physical examination themselves. Some parts of a physical examination are easy, even for non-physicians.
o Blood pressure, preferably lying and standing (or you can ask a patient about any recent blood pressure checks, or ask them to get their blood pressure taken at one of the blood pressure machines that seem to be in every bank and drugstore)
o Pulse for evaluation of rate and arrhythmias (irregularities of heart rhythm)
o Check eyes to see if they move equally and fully in all directions, equal and reactive pupils, and nystagmus (small "jerky" movements of eyes when client looks up or to the side)
o Assessment of the condition of the patient's skin, looking for such things as dryness, dehydration, nutritional status, rashes, edema, petechiae

A useful screen for picking up physical disease in psychiatric patients includes:
o Laboratory tests: TSH (thyroid test), CBC (complete blood count), SGOT (liver function test), Fasting glucose [or random glucose if fasting not possible] (screen for diabetes), serum albumin,

serum calcium, vitamin B12, and urinalysis
o History of epilepsy, emphysema, asthma, diabetes, thyroid disease, history of blood or pus in the urine, or history of high blood pressure
o HIV positive or history of high risk behavior for HIV
o Symptoms of chest pain while at rest, headaches associated with vomiting or loss of control of urine or stool
o Physical findings of high blood pressure
(adapted from Sox et al 1989)

C. *Develop a "differential diagnosis"* that systematically considers possible medical illnesses. Consider all of the medical illness that could fit the set of symptoms. What further information would help distinguish between these various possibilities?
o As a way of organizing your information about the patient
o focusing your attention
o and targeting what further information is needed.

The goal is not to come up with a specific diagnosis. The goal is to organize the data that you collect about the patient so that you can decide what to do next, how worried you need to be, and when and how and what to say to your consulting physician if you decide further medical assessment is necessary.

The basic mental health assessment must, of course, be supplemented with appropriate outside consultation, which will include a physical examination and appropriate laboratory tests, but this should be focused by the differential diagnosis. BOTH YOU AND THE DOCTOR ARE MORE LIKELY TO FIND IT IF YOU ARE LOOKING FOR SOMETHING SPECIFIC THAN IF YOU ARE GROPING RANDOMLY. For Example:
o with "hysterical" symptoms, consider MS
o with mental status changes occurring over days to weeks, together with alcoholism or chronic headache, consider subdural hematoma (slow bleed inside the skull under the dura membrane that covers the brain)
o with depression along with weight gain, ask about cold intolerance and dry skin and consider hypothyroidism

Laboratory and other diagnostic tests should be used to pursue specific parts of the differential diagnosis list. Diagnostic tests are much more likely to give useful results when you and the doctor are clear what question you have in mind and what specific test is needed to answer that specific question. For Example:
o EEG detects abnormal brain function
o CAT scan detects abnormal anatomy

If you are asking for a "drug screen" to find out if the client has recently used an illicit drug, find out if your laboratory can measure the drug or drugs that you expect this person might be using, and whether blood or urine tests are better depending on the particular drug and time since ingestion. Most labs can test for the presence of cocaine, but LSD is used in much smaller amounts and may not be detectable even if recently used. This kind of question can be answered by a call to the chemistry lab of the local hospital, but such a call requires that you step out of your typical "non-medical" role and interact with a strange and often forbidding medical system.

D. *Work with and actively involve the consulting physician.*
At different times with different doctors and different clinical situations this will mean different things. It always means making the consultation request as clear as possible. What kind of answer do you want back from the doctor? What are you most worried about? What information do you already have about the client? You might think that your job is just to get the client to see the doctor, and the rest of the job is up to the doctor. This is true-and not true. The doctor will typically spend less than 15 minutes with the patient to collect a history, do the physical, order the tests and write a note in the chart.

If the client is less than articulate, important information is likely to get lost. This is a particular problem with older clients, those who are hard of hearing or who have other communication problems, or those who are less organized or less clear in their thinking. It is also a problem when the symptoms you want evaluated are vague, or your concerns leading to the referral do not relate to a particular "medical" symptom. Your job must include organizing the information that you have

collected and transmitting it to the doctor in such a way as to do your client the most good.

Telling the client to see his local doctor, or phoning the local internist with a request to "Please do a physical exam on this client." is much less likely to lead to a reasonable consultation result than a request, "This client has a depression that seems very atypical. Could you please see if there could be a medical illness involved?" Or even better yet, "This patient is complaining of depression with decreased energy level, but he is also complaining of increased weight, cold intolerance, decreased libido and extremely dry skin. He was treated for hyperthyroidism 15 years ago. Could you see if any thyroid problems or any other medical problems might be increasing his depression?"

Most of the time you will not be able to frame a consult request with as much detail as this last example-but in all cases the more the better. Often, the referral to the physician is based on a pattern suggesting a higher probability of medical illness, rather than any particular symptom suggesting a particular illness. For example, any client who initially develops psychiatric symptoms over the age of 40 should have a medical workup. If this is the reason you are referring the client, then the physician needs to have that information.

Finally, there are differences of communication styles between mental health professionals and physicians. The social worker or psychologist is likely to want to give the physician a complete description of the patient and the problem in a phone discussion that may go on for many minutes. The physician is likely to be in the middle of office hours, with a clinic full of patients waiting to be seen. A brief, succinct and very focused description and problem statement with a focused consultation request is likely to be better received by a physician than the more complete communication often expected between psychotherapists.

Common assumptions that lead to missed diagnosis:
o mistaking symptoms for their causes
o listening without fully considering all possibilities
o equating psychosis with schizophrenia
o relying on a single information source

Section II
Psychosis-
Patients that Appear Out of Touch with Reality

A. *Consider Organic Disease*
If you do not look for it you will not find it. Be suspicious of "medical clearance".

1. Other symptoms that suggest organic disease include:
o a patient over 40 with no previous psychiatric history
o hallucinations that are visual and vivid in color, that change rapidly
o olfactory (smell) hallucinations
o illusions: misinterpretations of stimuli
o large recent weight changes

2. A brief, minimal neurological exam can be easily and rapidly done, even on very agitated patients (even by someone who is not a physician).
o Observe gait and body movement to rule out weakness, paralysis, ataxia and other gait disturbances and choreoathetoid movements
o Check eyes:
- Make sure pupils are equal and reactive to light.
- Check to see if eyes move fully in all directions.
- Check for vertical and horizontal nystagmus: refers to rapid movements of jerking of the eyes, and can be either up and down (vertical) or back and forth (horizontal). It is most easily seen if the client is asked to look up or over to the side as far as possible. Nystagmus is frequently present with drug intoxications, and vertical nystagmus is never a normal finding in functional psychosis.
o Observe face for asymmetries.
o Observe speech for slurring, aphasias, word finding difficulties, and perseveration.

The above observations are possible on a completely uncooperative patient. Summers et. al. have outlined a very rapid physical exam for screening purposes (see bibliography).

3. Consider medical emergencies that can present as psychiatric illness
a. Hypoglycemia (low blood sugar): symptoms can be variable and include delirium or coma. Can include palpitations, sweating, anxiety, tremor, vomiting. If in doubt, give candy or orange juice sweetened with sugar. In an emergency room, give 50 cc. of 50% dextrose for both treatment and diagnosis.
b. Diabetic Ketosis or non-ketotic hyperosmolarity (blood sugar so high that it upsets body chemistry): delirium with history of diabetes, increased breathing, sweet smell of acetone on breath (can be mistaken for smell of alcohol), dehydration, decreased blood pressure.
c. Wernickes-Korsakoff's syndrome: acute thiamine (vitamin B6) deficiency so severe that it can cause rapid brain damage. Usually found in alcoholics. Symptoms include nystagmus (rapid small jerking movements of eyes), cerebellar ataxia (person moves as if drunk), evidence of peripheral neuropathy, ocular palsies (inability to move both eyes together in all directions) If in any doubt, give thiamine l00 mg. IM. This is not diagnostic but will prevent any further brain damage.
d. DT's (delirium tremens): drug withdrawal from alcohol or other sedative hypnotics. Frequently missed and can be medically very serious. Symptoms include elevated autonomic signs, agitation, visual and tactile hallucinations and history of alcohol abuse. Onset is usually three to four days after reduction or discontinuation of alcohol.
e. Hypoxia (low blood oxygen): from pneumonia, heart attack, COPD (chronic obstructive pulmonary disease), arrhythmias (abnormal heart rhythm), etc.
f. Meningitis (infection of the covering of the brain): be alert for stiff neck and fever.
g. Subarachnoid hemorrhage (rapid arterial bleeding into the brain): stiff neck, fluctuating consciousness and headache. If there is a fluctuating consciousness along with stiff neck and headache, a spinal tap for diagnosis needs to be done immediately.
h. Subdural hematoma (bleeding from veins under the outside covering of the brain, which compresses the brain over hours to weeks or even longer): symptoms are variable but frequently (not invariably) there is a history of head trauma.
i. Anticholinergic (atropine) poisoning: from overdose of tricyclics or over-the-counter drugs, or from organophosphate insecticides. Classic symptoms include:
o Flushing "red as a beet"
o Mouth dry "dry as a bone"
o Dilated pupils "blind as a bat"
o Delirious "mad as a hatter"
These patients will also have increased pulse and sometimes elevated blood pressure. Most fatalities are from cardiac arrhythmias, although seizures are not uncommon.

B. *Differentiate psychosis from delirium*
Psychosis refers to an impairment in reality testing because of hallucinations, delusions or grossly disorganized thinking. Psychosis can be caused by organic diseases where we know the cause or by a variety of mental illnesses ranging from a brief reactive psychosis to schizophrenia.

Delirium refers to an acute organic brain syndrome causing a global cognitive impairment, with disorientation, memory impairment, and disturbance of consciousness. Illnesses causing deliriums are often life threatening, and a delirium should be considered to be a medical emergency.
Symptoms of delirium include:
o disorientation or memory impairment
o fluctuating or impaired level of consciousness, decreased awareness of environment
o labile affect
o impaired judgment or impaired insight
o abnormal autonomic signs (changes in blood pressure, pulse, temperature, abnormal sweating, flushing, etc)

DSM IV Diagnostic criteria for Delirium
A. Disturbance of consciousness (i.e., reduced clarity of awareness of the environment) with reduced ability to focus, sustain, or shift attention.
B. A change in cognition (such as memory deficit, disorientation, language disturbance) or the development of a perceptual disturbance that is not better accounted for by a preexisting, established, or evolving dementia.
C. The disturbance develops over a short period of time (usually hours to days) and tends to fluctuate during the course of the day.
D. There is evidence from the history, physical examination, or laboratory findings that the disturbance is caused by the direct physiological consequences of a general medical condition.
(From DSM-IV, 4th edition 1994, APA Press)

C. *Medical Illnesses that Can Present as Psychosis*

1. *Progressive neurological diseases*
a. Multiple sclerosis: no typical signs or symptoms. It may begin very suddenly and affect any part of the neurological system. Early in its course, diagnosis may be extremely difficult.
b. Huntington's chorea: hereditary illness that includes movement disorder but can present with psychosis initially.
c. Alzheimer's disease and Pick's disease: progressive diseases that cause dementia, but can initially present in a wide variety of ways. Alzheimer causes diffuse dementia, while Pick's primarily affects the frontal lobes of the brain.

2. *Central nervous system infections*
a. Encephalitis (viral infection of the brain-usually Herpes Simplex): usually presents with fever and seizures, but various mental symptoms including catatonia or psychosis may present before any clear cut neurological symptoms. Usually has a fluctuating mental status.
b. Neurosyphilis (syphilis of the central nervous system).
c. HIV infections: HIV encepalopathy commonly includes apathy, decreased spontaneity and depression and may present before any other signs of AIDs are present. AIDS can also first present as delirium with paranoia and other prominent psychotic features.

3. *Space occupying lesions within the skull*
a. Brain tumors
b. Bleeding within the skull
c. Brain abscess

4. *Metabolic disorders*
a. Accumulation of toxins from severe liver or kidney disease.
b. Disturbances in electrolytes, either too low a serum level of sodium or too high a serum level of calcium.
c. Acute intermittent porphyria (disease of porphyrin metabolism): very rare, but may present as classical psychosis. Often has abdominal pain or other gastrointestinal symptoms such as vomiting.
d. Wilson's disease: abnormality of copper metabolism that causes damage to brain and liver if untreated.
e. Systemic lupus erythematosis (autoimmune disease): usually a slowly progressive illness with joint and muscle pain, but it can present very suddenly. The nervous system is commonly involved and can present with depression, dyscontrol syndromes (unexpected impulsive or aggressive behavior), or psychosis.

5. *Endocrine disorders*
a. Myxedema (underactive thyroid gland-hypothyroidism)
b. Cushing's syndrome (too much cortisol caused by overactive adrenal gland or overactive pituitary gland)
c. Hypoglycemia, either from insulin secreting tumor or administration of insulin

6. *Deficiency states*
a. Thiamine deficiency: Wernicke-Korsakoff amnestic syndrome
b. Pellegra (nicotinic acid deficiency) and other B complex deficiencies
c. Zinc deficiency

7. *Temporal lobe epilepsy* (or partial complex seizure disorder)

8. *Drugs*-
a. prescription
· oL-DOPA
· oAmphetamine
b. illicit drugs
· cocaine, crack, methamphetamine, stimulants
· hallucinogens

D. *Consider other mental illness in addition to schizophrenia*

Not all psychosis is schizophrenia. Do not over diagnose. Without a history, it is impossible to distinguish an acute psychotic episode that will rapidly resolve from an exacerbation of schizophrenic illness that will continue to be an ongoing problem.

Section III
Anxiety

A. *Think About the Phenomenology of Anxiety*
1. Psychological manifestations: Inner feelings of terror, tension, apprehension and dread, derealization, depersonalizations, fear of impending insanity

2. *Intellectual disturbances*: Decreased concentration, disorganized thinking, sensory flooding

3. *Somatic manifestations:* Autonomic or visceral symptoms, including palpitations, chest pain, tachycardia, fatigue, weakness, perspiration, flushing, numbness, tingling of extremities, vertigo, shortness of breath, headache, blurred vision, tinnitus, diarrhea, tremor, fainting

B. **Differential Diagnosis of Anxiety**
1. *Primary anxiety disorders*
o Panic disorder with or without agoraphobia
o Social phobia and other simple phobias
o Obsessive-compulsive disorder
o Post-traumatic stress disorder
o Generalized anxiety disorder
o Adjustment disorder with anxious mood
o Depression may be a secondary feature

2. *Other mental illness that can present as anxiety*
o Psychosis
o Agitated Depression
o Manic-depressive disorder (depressed phase)

3. *Hyperventilation syndrome*

C. **Medical illness presenting with anxiety**
Strongly suspect medical cause for anxiety in patients younger than 18 or older than 35 who suddenly develop anxiety which disrupts their normal activity and who have an otherwise negative psychiatric history (Hall 1980).

1. *Anxiety secondary to organic brain syndromes*
o Apt to have a labile mood
o Confusion which may be confused with psychosis
o Mental status exam should demonstrate cognitive deficits, especially memory deficits
-delirium
-dementia

2. *Other neurological illnesses* (25% of medical causes of anxiety symptoms)
a. Cerebral vascular insufficiency: transient ischemi attacks lasting from 10-15 seconds up to an hour (brief blocks in the arteries to the brain causing temporary loss of brain blood supply)
b. Anxiety states and personality change following head injury
c. Infections of the central nervous system
o Meningitis: fever, stiff neck, and delirium
o Neurosyphilis: may present as almost anything
d. Degenerative disorders
o Alzheimer's dementia
o Multiple sclerosis: may be marked early on by vague and changing medical complaints
o Huntington's chorea: may present early as anxiety or other functional disorder before the movement disorder is evident-always has a positive family history
e. Toxic Disorders
o Lead Intoxication: loss of appetite, constipation and colicky abdominal pain followed by irritability

and restlessness
o Mercury intoxication: from contaminated fish
o Manganese intoxication: from industrial exposure
o Organophosphate insecticides (similar to nerve gas): from chemical or insecticide exposure
f. Partial complex seizures

3. *Endocrine disorders* (25% of medical causes of anxiety symptoms)
a. Hyperthyroidism (increased thyroid hormone) commonly presents as anxiety, but may present as depression and is one of the most common endocrine abnormalities. Most common in 20- to 40-year-old women. The anxiety of hyperthyroidism may present with manic-like euphoria or agitation, along with weight loss, heat intolerance, rapid pulse, fine intention tremor and often exophthalmoses (bulging of the eyes caused by abnormal deposition of fat behind the eyeball).
b. Adrenal hyperfunction or Cushing's syndrome: has a variety of causes, including tumors of the pituitary or adrenal glands or from steroids given to treat other illnesses. There is often a change in fat distribution with dorsal (back) hump, round face and thin arms and legs, hirsute (abnormal hairiness), acne, decreased menstruation in women and impotency in men.
c. Hypoglycemia (decreased blood glucose): usually associated with a history of diabetes and insulin or other hypoglycemic medications. Rarely from an insulin secreting tumor. Hypoglycemia as a response to dietary carbohydrate challenge is probably over diagnosed, and associated symptoms may not always be due to changes in blood glucose.
d. Hypoparathyroidism (decreased parathyroid hormone): almost always associated with a history of thyroid surgery. It often presents with overwhelming anxiety, either with or without personality change.
e. Menopausal and premenstrual syndromes.

4. *Cardiopulmonary disorders*: Often presents with shortness of breath, rapid breathing, complaints of chest pain, chest pain that are worse with exertion.
a. Angina
b. Pulmonary embolus
c. Arrhythmias (irregularities of heart beat)
d. Chronic obstructive pulmonary disease (COPD)
e. Mitral valve prolapse (generally harmless)

5. *Pheochromocytoma* (epinephrine secreting tumors)

D. **Medications as a cause of anxiety**
TAKE A CAREFUL AND DETAILED HISTORY.
o ask about all drugs that a patient is taking, licit and illicit, prescribed and over the counter
o ask about all illnesses that a patient has had
o asthmatics take combinations of sympathomimetics and xanthines (aminophylline, theophylline)
o patients with allergies may take ephedrine
o patients with diabetes may be hypoglycemic from their insulin
o thyroid preparations may be prescribed for thyroid illness, following thyroid surgery (from years ago), or even for weight loss

1. *Non-psychotropic medications*
a. Sympathomimetics (often found in non-prescription cold and allergy medications): epinephrine, norephinephrine, isoproteronol, levodopa, dopamine hydrochloride, dobutamine, terbutaline sulfate, ephedrine, pseudo-ephedrine
b. Xanthene derivatives (asthma medications, coffee, colas, over-the-counter pain remedies): aminophylline, theophylline, caffeine
c. Anti-inflammatory agents: indomethacin
d. Thyroid preparations
e. Insulin (via hypoglycemic reaction)
f. Corticosteroids
g. Others: nicotine, ginseng root, monosodium glutamate
h. Drug withdrawal: caffeine, nicotine

2. *Psychotropic medications*
a. Antidepressants (including MAO-inhibitors), drugs for treatment of attention deficit disorders (on rare occasions cause anxiety-type syndromes)
b. Tranquilizing drugs: benzodiazepines (paradoxical response most common in children and in

elderly), antipsychotics (akathisia may present as anxiety)
c. Anticholinergic medications can cause a delirium which, in early stages, may easily be confused with anxiety: scopolamine and sedating antihistamines (found in over-the-counter sleep preparations) antiparkinsonian agents, tricyclic antidepressants, antipsychotics

3. *Drugs--licit and illicit*
a. Caffeine-intoxication or withdrawal
b. Nicotine-withdrawal even more than acute intoxication
c. Stimulants-cocaine, amphetamines, etc.
d. Alcohol or alcohol withdrawal

E. *Drug withdrawal is a common cause of anxiety type syndromes*
A large number of drugs can cause withdrawal states with symptoms of anxiety or even agitation. All sedative hypnotics, tricyclic anti-depressants and anti-cholinergics can cause withdrawal.

Section IV
Depression

A. *Differential Diagnosis: Psychiatric Illness*

1. Primary Affective Disorders
a. Major depression, either single episode or recurrent bipolar disorder
b. Dysthymia
c. Adjustment disorder with depressed mood
d. Bereavement

2. Depression Secondary to other Functional Disorders

B. *Medical Illnesses that can present as Depression*

1. *Post viral depressive syndromes:* especially influenza, infectious mononucleosis, viral hepatitis, viral pneumonia, and viral encephalitis

2. *Cancer*
a. Cancer of the pancreas commonly presents as depression
b. Lung Cancer, especially oat cell carcinoma
c. Brain tumors, either primary tumors or metastastic, may present with depression

3. *Cardiopulmonary disease* with hypoxia (decreased oxygen in the blood): acute hypoxia often leads to symptoms resembling anxiety or panic. Chronic hypoxia may present with lassitude, apathy, psychomotor retardation and other symptoms confused with depression.

4. *Sleep apnea*: should be suspected in a patient with sleep disturbance and daytime somnolence

5. *Endocrine Disease*
a. Hypothyroidism (under active thyroid): causes a general slowing of all body functions. Patient complains of fatigue, weight gain, constipation, and, when asked, will describe cold intolerance, dry skin and hair, and hoarseness or deepening of the voice. Often very insidious but easily diagnosed and treated ONCE SUSPECTED.
b. Hyperthyroidism or thyrotoxicosis (overactive thyroid): usually associated with anxiety but may present as depression, especially in the elderly who may have few classical signs of thyroid disease.
c. Adrenal hypofunction (Addison's Disease): often presents with weakness and fatigue, along with low blood pressure and hyponatremia (low serum sodium) and hyperkalemia(increased serum potassium).
d. Adrenal hyperfunction (Cushing's Disease): either from steroid medication, pituitary, adrenal or other ACTH secreting tumors. Various affective disturbances, either depression or mania, are common. Syndrome is marked by truncal obesity, hypertension, puffy face, and hirsutism.
e. Hyperparathyroidism: usually from small tumors of the parathyroid glands. Early symptoms develop insidiously and can include lassitude, anorexia, weakness, constipation and depressed

mood. The classic symptoms of bone pain and renal colic often develop only years later.
f. Post-partum, post menopausal, and premenstrual syndromes.

6. *Collagen-Vascular Diseases*
This is a strange set of different diseases where the person essentially becomes allergic to parts of their own body. It can affect all parts of the body and can, at times, cause death.

Systemic lupus erythematosus (SLE) is most often seen in women 13-40 years old. It often presents initially with nonspecific symptoms such as fatigue, malaise, anorexia and weight loss, all of which can lead to the diagnosis of functional depression.

7. *Central Nervous System Disease*
a. Multiple Sclerosis
b. Brain tumors and other intracranial masses (masses inside of the skull) such as subdural hematomas (bleeding under the dural sack that surrounds the brain): masses, especially in the frontal and temporal areas, can grow for years and cause psychiatric symptoms before any focal neurological abnormality is apparent.
c. Complex partial seizures: ictal-repetitive behaviors during the seizure, interictal-personality changes between seizures, increased lability of emotions, quick to anger, increased preoccupation with religion, hypergraphia (increased writing).
d. Strokes, especially effecting left side of brain (right side of body)

C. *Medications that can cause Depression*
Ex.-Katerndahl found that 43% of patients diagnosed as depressed in a family practice clinic were taking medications that can cause depression.

1. Interferon (for treatment of hepatitis C infections)
2. Antihypertensive medications (drugs used to control high blood pressure): reserpine and alpha-methyldopa are probably the worst, but propranolol has been implicated and all antihypertensives are suspect
3. Digitalis preparations, along with a variety of other cardiac medications
4. Cimetidine: used for gastric ulcer disease
5. Indomethacin and other non-steroidal anti-inflammatory medications
6. Disulfuram (Antabuse): usually described by patients as more a sense of fatigue than true depression
7. Antipsychotic medications: can cause an akinesia or inhibition of spontaneity that can both feel and look like a true depression. This is much less common with the newer "atypical" antipsychotic medications
8. Anxiolytics: all sedative hypnotics from the barbiturates to the benzodiazepines have been implicated both in causing depression and making it worse in susceptible individuals
9. Steroids, including prednisone and cortisone

D. *Drugs of abuse that can cause depression*
1. Alcohol: very commonly a cause of depression, as well as a reaction to depression
2. Stimulant withdrawal

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