Problems in Family Practice

Patients With Delusional and Bizarre Thinking

Richard E. Anstett, MD, PhD, Steven R. Poole, MD, and Lorraine Wood, MD, PhD
Denver and Boulder, Colorado

Patients with delusional or other types of bizarre thinking are often incorrectly labeled as schizophrenic. This error has significant medical and social implications to the patient. Delusional thinking has been linked with a variety of nonschizophrenic problems including the use of licit and illicit drugs, a wide variety of medical diseases, and nonschizophrenic psychiatric disturbances. A series of case studies in which the diagnosis of schizophrenia was incorrectly made elucidates the problem and helps the physician consider the alternatives.

The primary care physician is occasionally confronted by a patient whose thinking is eccentric, strange, or frankly delusional. Although some of these patients have, in fact, a functional psychosis, there is a broad differential diagnosis for the patient with such thinking. It has been widely documented that medical and psychiatric disorders frequently mimic each other, and delusional thinking and suspected schizophrenia are no exceptions.[1-6] In fact, delusional thinking has been associated with the use of licit[7-18] and illicit drugs,[19-22] diseases of the central nervous system,[23,24] and metabolic,[25-32] endocrinologic,[33-38] rheumatologic,[39] infectious,[40-44] and hematologic[45] causes as well as a variety of other psychiatric disturbances (Table 1).[46-48] Because the diagnosis of schizophrenia has such a significant medical, legal, and social impact on an individual, it is essential that this diagnosis not be made hastily in any patient who manifests delusional or other strange thought patterns. Therefore, the family physician needs an under-

From the Department of Family Medicine, University of Colorado Health Sciences Center, University of Colorado, Denver, Colorado. Requests for reprints should be addressed to Dr. Richard E. Anstett, Department of Family Medicine, University of Colorado Health Sciences Center, 1180 Clermont Street, Denver, CO 80220.

Table 1. Psychiatric Disturbances Associated With Disorders of Thought

Severe personality disorders
Hysterical
Borderline
Paranoid
Manic-depressive illness
Psychotic depression
Factitious illness (psychosis)
Organic brain syndrome
Dissociative reactions
Severe grief reactions
Adolescent adjustment reactions

standing of the differential diagnosis and a systematic approach to recognizing the specific cause of delusional or otherwise apparently bizarre thinking. This paper discusses differential diagnosis by presenting a variety of cases and offers an approach to diagnosis.

Nonschizophrenic Psychiatric Disorders Associated With Bizarre Thinking

Case 1

Peculiar Thinking Associated With Prolonged Grief. A 32-year-old woman was seen in consultation because she described to her family physician lengthy conversations with her dead father. She had been placed on thioridazine (Mellaril) without significant improvement. During her evaluation, she demonstrated pressure of speech, stuttering, and tremor. Her mental status examination was unremarkable, and she denied any vegetative signs of depression. She stated that her biggest problem was dealing with a social situation that included her eldest daughter having run away from home and her two other children being taken by the court for possible child neglect on her part. Her husband was being sought by the police for a possible incestuous relationship with one of her daughters. For the past month she stated that her father, who had died one year earlier, was alive and living in her home, and that she was having lengthy conversations with him every evening. She admitted it was hard to believe she could actually be having conversations with her father because she "knew he was dead," yet "he is here with me." When asked what their conversations involved, she stated that he would simply say, "Don't worry, you're doing the best you can." She said she felt she could go to bed and get a good night's sleep if she were able to have this conversation with her father. She denied any other delusional thoughts or visual or auditory hallucinations.

Prolonged grief is likely to occur in individuals who have had strong emotional relationships with the deceased, have relatively weak ego structures, and are undergoing prolonged situational stresses. As in this case, the desire to have the lost loved one return can take on the qualities of a delusional system. Appropriate treatment in such a case includes providing the individual with an opportunity to share the unresolved aspects of her grief as well as helping her deal with the social situation that is prolonging the lack of resolution of the grief process.

Case 2

Delusional Thinking Occurring During a Dissociative Reaction. A 27-year-old woman was found by her husband sitting on the front lawn naked during a rainstorm stating that she was "waiting for God to come and give me the answer." She was seen by her family physician, who made a diagnosis of schizophrenia. Later that day the following history was obtained. The patient and her husband had been having marital problems for the past year. For the past two months she had been in counseling with her pastor. She had recently developed a romantic interest in this man, despite moral and cultural prohibitions. She stated that over the past week she could think about nothing but the decision to choose between her husband and an illicit relationship with her pastor. That morning she awoke stating that she had solved her problem by deciding that only God could resolve her dilemma.

During the interview, she would go from being

quite lucid to stating that she was still hoping that God would come and give her the answer. She was strikingly agitated and would weep uncontrollably and abruptly stop. She denied any other delusional thoughts, and there were no obvious hallucinations. There was no previous psychiatric history or family psychiatric history. She was admitted to a psychiatric hospital and improved rapidly without medication. Upon discharge, marital therapy was initiated, and over the past six months she has shown no signs of acute agitation or schizophrenic-like thinking.

Acute dissociative states are considered episodes of massive denial associated with painful unacceptable feelings or experiences. Appropriate diagnosis rests in the recognition of the painful precipitant, the absence of previous psychiatric history, partial or complete amnesia for the episode, and a rapid resolution of symptoms.

Case 3

Magical Beliefs Associated With Adolescent Depression. A 16-year-old girl was seen in consultation with a presumptive diagnosis of schizophrenia. She had reported to her family physician that she had supernatural powers and could read other people's minds. She had recently moved from California because of the divorce of her parents. When asked what it was like away from California, she stated, "People here don't understand you the way they do in California." She appeared quite comfortable during the interview, although when asked about her supernatural powers, she stated that she could not describe them because "it would only confuse you." She mentioned that there was only one person who could understand her powers, and he was a friend living in California. She mentioned that her special powers did not help her in school, and, in fact, she had received all F's on her last report card despite being a B student previously. She mentioned that her powers did not help make friends because no one else seemed to understand her. The rest of her mental status examination was within normal limits. There was no other delusional thinking, and she did appear moderately depressed. Following the interview her mother mentioned that she had been extremely lonely since the divorce and often spoke of going back to California to be with her father.

Magical thinking is common in childhood as well as adolescence. This young woman found it easier to explain her loneliness and depression in terms of being special, different, or apart than to admit her isolation and rejection by her peers. Her "magical powers" gave her an excellent explanation for why she felt so alone. Although crises such as loss and disappointment can be the precipitant for schizophrenia in adolescence, this patient's symptoms had not reached schizophrenia proportions and her behavior is best understood as a depressive equivalent of adolescence. Because of the risk of suicide in such patients, regular supportive counseling with a qualified therapist was indicated. Tricyclic medication is usually effective only in the presence of significant vegetative signs.

Case 4

Delusional Thinking During an Acute Manic Episode. A 32-year-old woman was brought to her family physician by her husband because of strange thinking. For the past week she had insisted that she was a professional dancer and was making plans to travel to New York for an audition on a television show. In fact, she had called various dancing and theatrical agents asking questions about employment as a dancer. Since she had had no previous dancing history, her husband became extremely concerned and brought her to her family physician. A diagnosis of schizophrenia was made and a referral arranged. The patient was dressed in leotards and ballet shoes. Her hair was tied back with a flower and a thick layer of make-up covered her face. She was extremely active, walking about the room stating that she didn't have time to be here because she needed to leave for New York. She spoke rapidly about a variety of aspects of her "dancing career" and became irritated when interrupted. She could not understand why her husband had brought her to the doctor because she felt as if things had never been going so well for her. A diagnosis of acute mania was made and the patient was hospitalized and treated with chlorpromazine (Thorazine) and lithium. She responded well on maintenance lithium therapy.

Delusional thinking is seen routinely as part of an acute manic episode. These delusions differ from those of schizophrenia in that they tend to have a grandiose quality. Other clues to the diagnosis include a later onset of symptoms, usually occurring in the late twenties and thirties, the presence of alternating depressive episodes, and poor judgment including foolish spending, decreased need for sleep, and the patient's sense of euphoria.

Case 5

Thought Disorder Associated With Dementia. A 66-year-old man was brought to his family physician by his wife, who was complaining that his personality was changing. She stated that over the past two years he had become progressively more suspicious to the point that he was accusing his wife and children of taking money out of his bank account, stealing his tools, and hiding his clothes. She mentioned that he had lost interest in a variety of activities over the past few years and, in particular, had no interest in maintaining the financial records for the household, as he had always done in the past. On mental status examination he behaved appropriately, was oriented in three spheres, and gave no evidence of delusional thinking or hallucinations. His mood was not depressed, although he appeared somewhat irritated at the questioning. When asked to perform simple calculations and abstractions, he became quite irritated and said that he did not want to be bothered by such trivia. Following the evaluation, a diagnosis of early dementia was made, and the patient was evaluated for reversible causes of this problem.

One of the early signs of dementia is an exaggeration of previous personality traits. The individual with depressive tendencies may become markedly depressed and the guarded, suspicious person may become strikingly paranoid to the point of appearing much like a paranoid schizophrenic. The clue to the diagnosis of dementia here is the late onset of symptoms, the gradual onset of symptoms over years rather than weeks, and the associated mental status changes consistent with organic brain syndrome.

Bizarre Thinking Associated With Medical Disorders

Case 6

Bizarre Thinking Associated With a Seizure Disorder. A 21-year-old man and his wife were seen by their family physician because of a violent episode that had occurred between them that morning. While they were in bed early that morning, the patient had suddenly felt a strange feeling in his stomach that persisted as a warmth radiating to his chest and neck. He described a sense of becoming cloudy but was unable to recall beginning to call his wife a "bitch" and then striking her on the face and chest. The episode lasted about three minutes during which he became more disorganized and finally fell to the bed in an unresponsive state for approximately 15 minutes. During the referral interview, the patient was well oriented, alert, and pleasant and did not appear angry or irritable. He stated that on two previous occasions he had felt like striking out at his wife but did not actually do so. There was no frankly delusional thinking or hallucinations, and the rest of his mental status examination was within normal limits, with the exception of his tendency to talk in long, tangential monologues about such topics as the existence of God, the meaning of the universe, infinity, and perfection. He stated that he had been told in the past that he "thought too much." He denied the use of any licit or illicit drugs, although he had smoked marijuana while in military service. Neither he nor his family members had any significant past medical history. He mentioned that as a child he would often daydream to the point where his teachers would have to "call me back to reality." His physical examination was unremarkable and routine blood and urinalysis and toxic screen were not productive. However, an electroencephalogram showed a right temporal lobe focus. The diagnosis of temporal lobe seizure disorder was made, and the patient was started on phenytoin (Dilantin), 300 mg daily. He has had no violent episodes over the past 2.5 years, although he is still described by his wife as having many strange and unusual ways of thinking.

It has long been known that patients with temporal lobe epilepsy have personal characteristics similar to those of schizophrenics. Although the thought pattern is not typically delusional, it is schizophrenic-like in that thoughts become highly

personalized interpretations or explanations of common phenomena. These patients often dwell on such issues as the meaning of the universe, the existence of God, and so on. For this reason, individuals with strange or eccentric thought patterns and violent or other seizure-like behaviors should be considered to have temporal lobe seizure disorder until proven otherwise.

Case 7

Bizarre Thinking Due to Central Nervous System Disease. The parents of a 16-year-old boy awoke in the early morning to find their son sitting in bed, rocking back and forth, wringing his hands, and repeating, "I know you're right. I'm going to die." He was extremely agitated but oriented to time, place, and person. He apparently heard voices inside his head and had an inconsolable sense of foreboding. He had had a mild influenza syndrome the previous day and had gone to bed early the night before because he "felt tired." He had a history of being somewhat of a loner, maintaining a distance with friends and family, and being prone to prolonged "moodiness." When seen by his physician, he was very anxious, vigilant, and oriented, but highly distractible. Vital signs included heart rate of 120 beats/min, respiratory rate 28/min, and blood pressure 120/70 mmHg. Because of his extreme agitation, his temperature was not taken and the examination was abbreviated. A presumed diagnosis of drug ingestion vs early schizophrenia was entertained. A toxicology screen was drawn and the patient was sedated and admitted to the hospital. The admission temperature was 101° F. After mild sedation, the more easily obtained physical examination revealed mild nuchal rigidity. When questioned, he acknowledged he had had the worst headache he had ever experienced. A cautious lumbar puncture was consistent with viral encephalitis. Toxicology screen was negative. Treated symptomatically, he recovered and has had no further symptoms of strange thinking during a one-year follow-up.

Encephalitis is reported to affect thought processes and produce hallucinations. Although this patient's age is consistent with a functional psychosis, the key to the correct diagnosis is the presence of prodromal symptoms consistent with an infection to the central nervous system.

Case 8

Delirium in a Woman With Chest Pain and Shortness of Breath. A 69-year-old woman was brought to her physician by her husband, who reported that she had been talking strangely and appearing ill for the past two days. She had apparently been talking to her husband as if she were living 30 years in the past. He claimed that she was acting as if she were hearing her mother's voice and talking back to her. Mental status examination revealed a patient disoriented to time, place, and person. She was tachypneic and cyanotic and was complaining of right-sided pleuritic chest pain of two days' duration. Her physical examination revealed rales over the right side of her chest and poor air entry and excursion on the right side. She was admitted to the hospital, where testing of arterial blood gases revealed a PO_2 of 44 mmHg. An electrocardiogram revealed sinus tachycardia, and a subsequent lung scan demonstrated a perfusion defect on the right consistent with pulmonary embolus.

The occurrence of delusional thinking in elderly patients with sudden insults such as hypoxia is common. Clinical conditions, including pneumonia, chest trauma, and pulmonary embolus, may produce significant hypoxia in the elderly patient with a subsequent change in mental status to include strange and frankly delusional thinking. As with other medical conditions the key to the diagnosis is the advanced age of the patient and the presence of physical findings consistent with an acute pulmonary insult.

Case 9

Bizarre Thinking in a 13-Year-Old Boy With Hay Fever. A 13-year-old boy, previously in good health except for seasonal hay fever and minor acute illnesses, was noted by his parents to have been "edgy" and restless for the past few days.

On the evening of admission to the hospital he was found pacing in his room, talking to himself in a very animated manner regarding an upcoming final examination. Occasionally he would stop and listen as though someone were talking to him and then resume pacing and chattering. When questioned by his parents, he stated that he was "feeling great" and was "just excited about all my great ideas for the essay questions." His "ideas" were difficult for his parents to follow. He denied the use of drugs, any recent trauma, illnesses, or any other recent problems. When seen by his family physician, he was agitated, distractible, and vigilant. He was oriented and could answer simple questions. He exhibited flight of ideas and appeared to be having auditory hallucinations, although he denied them. His heart rate was 120 beats/min, blood pressure 140/90 mmHg (normally 110/70 mmHg), respiratory rate 28/min, and he was afebrile. His pupils were widely dilated. He had a fine tremor and poor coordination. The rest of his examination results were normal.

The young man was admitted to the hospital for evaluation and observation. Routine laboratory studies produced normal results. Toxicology screen revealed a sympathomimetic in significant quantities later identified as pseudoephedrine. On later questioning, he admitted to borrowing a friend's decongestant to treat his hay fever. When he found the effectiveness waning, he increased the dose three- to fourfold. He was observed in the hospital for two more days with a rapid lessening of his mental symptoms. He has been followed for the past two years without any new neurological or psychiatric symptoms.

Case 10

An Elderly Woman With Confusion and History of Peptic Ulcer Disease. A 64-year-old woman was seen by her family physician because of progressive restlessness and irritability. She was brought in by her husband, who stated that over the past two weeks she had become increasingly agitated to the point of having trouble sleeping at night. The previous day she was found by her husband in the basement near the washer and dryer acting as though she were in the kitchen preparing a meal. During her initial evaluation, she was oriented in all three spheres, was unable to perform serial 3's, incapable of simple calculation, and highly distractible. There were no clearly formed delusions, and she did not appear to be hallucinating. She was placed in the hospital and treated only with haloperidol (Haldol), 1 mg at bedtime, for agitation. Her initial laboratory examination was unremarkable, as was her physical examination. On further questioning, her husband mentioned that she had been treated for a peptic ulcer for the past four months and was taking an antacid (Mylanta), 30 cc 1 hour postprandially and 60 cc at bedtime, and cimetidine (Tagamet), 300 mg four times a day. There was no previous history of any psychiatric illness in the patient or in a close family member. Presumptive diagnosis of mental changes associated with the use of cimetidine was made, and the patient was continued on her antacid therapy, but the cimetidine was discontinued. Over the course of two days, her mentation cleared remarkably and she no longer demonstrated significant irritability or confused thinking. She was discharged and has had no recurrence of these symptoms over the past year.

Mental status changes, including restlessness, confusion, disorientation, agitation, hallucinations, and actual seizures, have been documented with the use of cimetidine. Complications tend to be seen more frequently in the elderly and patients with impaired renal orthostatic function. Cimetidine should be discontinued in patients experiencing the mental status changes listed.

Case 11

Mental Changes Associated With Illicit Drugs. The parents of a 16-year-old girl returned home late in the evening to find their daughter sitting in her room staring at a picture of her ex-boyfriend. She did not respond to her parents but stared with a blank expression, talking to the picture and apparently hearing a voice in return. The voice was apparently telling her to cut her hair, which she was attempting to do. She had been despondent for the past week since her breakup with her boyfriend. She was described as a loner given to periods of lengthy depression. Her family physician

found the girl to be disoriented, expressionless, immobile, vaguely responsive to questions, and apparently having auditory hallucinations. She was admitted to the hospital and consultation was requested. The next morning the girl was somewhat listless, mildly depressed, but otherwise well oriented, responsive to questions with appropriate affect, denying hallucinations, and according to her parents, "back to herself." She later admitted to smoking three marijuana cigarettes the evening of her "catatonic episodes" in an effort to get rid of her depression.

Marijuana in large doses with the properly predisposed personality can produce symptoms compatible with psychosis. Other psychogenic illicit drugs include LSD, mescaline, cocaine, phencyclidine, and amphetamines. The clinician may recognize illicit drugs as a cause of confused thinking by observing mydriasis, tachycardia, and elevated systolic blood pressure. Whenever psychotic symptoms appear relatively acutely, illicit drugs should be considered. As most of them cannot be identified with routine toxicological screens, the clinician will need to ask carefully about illicit drug ingestion, maintain high suspicion, and ensure that premises are searched and siblings and friends carefully questioned.

Case 12

Apparently Bizarre Thinking Due to Belief in Nontraditional Belief Systems. A 28-year-old man was seen by his family physician because of insomnia. He stated that it would take him two to three hours to fall asleep. He denied early morning awakening or feeling depressed. He was using no caffeine, tobacco, or other stimulants, was taking no medication, and had an unremarkable past medical and psychiatric history, although he had recently broken up with his girlfriend. He insisted on a sleeping pill to "correct the electronic imbalance within my brain." When his physician asked him what he thought the problem was, he went into a lengthy discussion involving imbalances of electrical forces within the brain that regulate sleep and wakefulness. He said he had read this information in various texts on Eastern religion and had also heard about these theories from his friends. He felt that he got his best sleep if he slept in an east-west axis. Because of this peculiar interpretation of his problems, his physician considered the possibility of schizophrenia and he was seen for evaluation.

On evaluation he had a normal mental status examination showing no evidence of delusional thinking or hallucinatory activity. He did not appear depressed. He was advised to continue using his directional approach to sleeping as well as various behavioral techniques that would be conducive to relaxation at the end of the day.

Primary care physicians dealing with the public may find it difficult to decide when bizarre thinking represents psychiatric pathology. Interpretations of reality vary culturally, socially, and from person to person. In a pluralistic society, multiple interpretations exist for such phenomena as the workings of the body and mind and man's relationship to other men and to the world. As with other psychiatric phenomena, it is best to view these variations in world interpretation with respect to how they influence the individual. For example, do they interfere with his daily functioning at a personal and social level? Individuals in a pluralistic society hold many different thoughts and beliefs that are problems only to the extent that they are problems to the patient.

Evaluating the Patient With Confused or Bizarre Thinking

Prior to making the diagnosis of a functional psychosis, the family physician should ask the following questions:

1. How old is the patient? The onset of symptoms in schizophrenia is typically in the late teens to early twenties. First onset of symptoms after the age of 40 years is extremely rare.

2. What was the patient like prior to the onset of confused thinking? Patients with true schizophrenia are frequently described as loners or peculiar prior to the onset of these schizophrenic symptoms. Other diagnoses should be considered in the individual who was described as a normal, happy, and appropriately behaved individual prior to the onset of symptoms.

3. How sudden was the onset of symptoms?

Table 2. Medical Conditions Capable of Producing Psychotic Symptoms

Body System	Medical Condition
Central nervous system	Cerebrovascular accidents
	Malignancies
	Multiple sclerosis
	Syphilis
	Temporal lobe seizures
Endocrine	Addison's disease
	Cushing's syndrome
	Hyperthyroidism
	Hypoglycemia
	Hypoparathyroidism
Hematologic	B_{12} deficiency
	Folate deficiency
Infectious	Encephalitis
	Influenza
	Meningitis
	Mononucleosis
Metabolic	Electrolyte imbalances
	Pellagra
	Porphyria
	Uremia
	Wilson's disease
Pulmonary	Pleural effusion
	Pneumonia
	Pulmonary embolus
Rheumatologic	Lupus erythematosus
	Systemic lupus erythematosus

Table 3. Drugs Capable of Producing Delusions

Licit Drugs

Alpha-methyldopa
Amantadine
Anticholinergics
Barbiturate (withdrawal)
Beta blockers
Cimetidine
Codeine
Corticosteroids
Digitalis
Disopyramide
Disulfiram
Gentamicin
Indomethacin
L-dopa
Monamine oxidase inhibitors
Penicillin
Phenelzine
Phenylbutazone
Procainamide
Quinidine
Sympathomimetics
Thyroid extract
Tricyclic antidepressants

Illicit Drugs

Amphetamines
Cocaine
LSD
Marijuana
Phencyclidine

The thought disturbance associated with schizophrenia usually becomes evident over the course of weeks to months. Confused thinking developing over hours to a few days should suggest a medical or drug-related etiology.

4. Does the patient have a previous psychiatric history? A previous history of schizophrenia is an excellent predictor of future schizophrenic episodes. Likewise, severe personality disorders and disorders of mood tend to be chronic or recurring.

5. Does the patient have a significant medical history? Numerous medical conditions are capable of producing disorders of thinking (Table 2).

6. What medications is the patient taking? Multiple drugs are capable of producing disorders of thinking (Table 3).

7. Is the patient using any illicit drugs? Obviously, patients may be reluctant to answer this question, and information may be better obtained from family members or close friends. It may also be necessary to search the patient's premises for evidence of illicit drugs.

8. Is the patient's diet deficient? At highest risk for B_{12} and folate deficiency are people living alone, in particular the elderly, alcoholics, and individuals with eccentric dietary beliefs and habits.

9. Is there evidence of nonschizophrenic psychiatric disease? For example, are there mental status changes consistent with early dementia or the vegetative signs of depression? Are signs of

mania present, or is there reason to believe that the patient is, in fact, malingering?

10. Is there evidence of concomitant medical illness? Do routine laboratory screening measures suggest medical illness? While the diagnosis of schizophrenia may need to be made presumptively in certain cases and the initiation of antipsychotics and protective measures for the patient begun, the clinician should resist labeling the patient schizophrenic until medical conditions, other psychiatric conditions, or the effects of medication and illicit drug usage have been carefully ruled out.

References

1. Leeman CP: Diagnostic errors in emergency room medicine: Physical illness in patients labeled "psychiatric" and vice versa. Int J Psychiatry Med 6:533, 1975
2. Davies DW: Physical illness in psychiatric outpatients. Br J Psychiatry 111:27, 1965
3. Maguire DP, Granville-Grossman KL: Physical illness in psychiatric patients. Br J Psychiatry 114:1365, 1968
4. Hall RCW, Popkin MK: Psychological symptoms of physical origin. Female Patient 2(10):43, 1977
5. Herridge CF: Physical disorders in psychiatric illness: A study of 209 consecutive admissions. Lancet 2:959, 1960
6. Eastwood MR: Relation Between Physical and Mental Illness. Toronto, University of Toronto Press, 1975
7. Weddington WW, Muelling AE, Moosa HH: Adverse neuro-psychiatric reactions to cimetidine. Psychosomatics 23(1):49, 1982
8. Padfield PL, Smith DA, Fitzsimons EJ, et al: Disopyramide and acute psychosis. Lancet 1:1152, 1977
9. Utley PM, Lucas JB, Billings GE: Acute psychotic reactions to aqueous procaine penicillin. South Med J 59: 1271, 1966
10. Young D, Scoville WB: Paranoid psychosis in narcolepsy and the possible danger of benzedrine treatment. Med Clin North Am 22:637, 1938
11. Fahn S, Craddock G, Kumin G: Acute toxic psychosis from suicidal overdosage of amantadine. Arch Neurol 25:45, 1971
12. Kane FJ Jr, Byrd G: Acute toxic psychosis associated with gentamicin therapy. South Med J 68:1283, 1975
13. McCrum ID, Guidry JR: Procainamide-induced psychosis. JAMA 240:1265, 1978
14. Kane FJ, Florenzano R: Psychosis accompanying use of bronchodilator compounds. JAMA 215:2116, 1971
15. Roxanas MG, Spalding J: Ephedrine abuse psychosis. Med J Aust 2:639, 1977
16. Saker BM, Musk AW, Hayward EF, et al: Reversible toxic psychosis after cephalexin. Med J Aust 1:497, 1973
17. Gardner ER, Hall RCW: Psychiatric symptoms produced by over-the-counter drugs. Psychosomatics 23(2): 186, 1982
18. Gershon ES, Goldstein RE, Moss AJ, Van Kammen DP: Psychosis with ordinary doses of propranolol. Ann Intern Med 90:938, 1979
19. Post RM: Cocaine psychoses: A continuum model. Am J Psychiatry 132:225, 1975
20. Siomopoulos V: Amphetamine psychosis: Overview and a hypothesis. Dis Nerv Syst 36:336, 1975
21. Petersen RC, Stillman RC: Phencyclidine: A review. Hosp Formulary 14:334, 1979
22. Nahas GG: Marijuana: Toxicity, tolerance, and therapeutic efficacy. Drug Ther 4(January):33, 1974
23. Lawall J: Psychiatric presentations of seizure disorders. Am J Psychiatry 133:321, 1976
24. Perovtka SJ, Sohmer BH, Kumar AJ, et al: Hallucinations and delusions following a right temporoparietooccipital infarction. Johns Hopkins Med J 151:181, 1982
25. Williams RH: Metabolism and mentation. J Clin Endocrinol 31:461, 1970
26. Raskind MA, Orenstein H, Christopher TG: Acute psychosis, increased water ingestion, and inappropriate antidiuretic hormone secretion. Am J Psychiatry 132:907, 1975
27. Goldstein NP, Dwert JC, Randall RV, et al: Psychiatric aspects of Wilson's disease (hepatolenticular degeneration): Results of psychometric tests during long-term therapy. Am J Psychiatry 124:1555, 1968
28. Roth N: The psychiatric syndromes of porphyria. Int J Neuropsychiatry 4:32, 1968
29. Allen TE, Agus B: Hyperventilation leading to hallucinations. Am J Psychiatry 124:632, 1968
30. Balser AB, Knutson J: Psychiatric aspects of uremia. Am J Psychiatry 102:683, 1946
31. Freeman JM, Finkelstein JD, Mudd SH: Folate-responsive homocystinuria and "schizophrenia." N Engl J Med 292:491, 1975
32. Sparagana M, Rubnitz ME: Hypoglycemia presenting with neuropsychiatric symptoms. Postgrad Med 51: 192, 1972
33. Eitinger L: Hyperparathyroidism with mental changes. Nord Med 14:1581, 1942
34. Easson WM: Myxedema with psychosis. Arch Gen Psychiatry 14:277, 1966
35. Spillane JD: Nervous and mental disorders in Cushing's syndrome. Brain 74:72, 1951
36. Ford CV, Bray GA, Swerdloff RS: A psychiatric study of patients referred with a diagnosis of hypoglycemia. Am J Psychiatry 133:290, 1976
37. Clower CG, Young AJ, Kepas D: Psychotic states resulting from disorders of thyroid function. Johns Hopkins Med J 125:305, 1969
38. Snowdon JA, MacFie AC, Pearce JB: Hypocalcemic myopathy with paranoid psychosis. J Neurol Neurosurg Psychiatry 39:448, 1976
39. Hall RCW, Sticknew SK, Gardner ER: Psychiatric symptoms in patients with systemic lupus erythematosus. Psychosomatics 22(1):15, 1981
40. Weinstein EA, Linn L, Kahn RL: Encephalitis with a clinical picture of schizophrenia. J Mt Sinai Hosp 21:341, 1955
41. Shearer ML, Finch SM: Periodic organic psychosis associated with recurrent herpes simplex. N Engl J Med 271:494, 1965
42. Still RML: Psychosis following Asian influenza in Barbados. Lancet 2:20, 1958
43. Antel JJ, Rome HP, Geraci JE, et al: Toxic-organic psychosis as a presenting feature in bacterial endocarditis. Mayo Clin Proc 30:45, 1955
44. Rubin RL: Case reports: Adolescent infectious mononucleosis with psychosis. J Clin Psychiatry 39:63, 1978
45. Shulman R: Psychiatric aspects of pernicious anemia: A prospective controlled investigation. Br Med J 3: 266, 1967
46. Pope HG, Jonas JM, Jones B: Factitious psychosis: Phenomenology, family history, and long term outcome of nine patients. Am J Psychiatry 139:1480, 1982
47. Kernberg O: Borderline personality organization. J Am Psychoanal Assoc 15:641, 1967
48. Garvey MJ, Tuason VG: Mania misdiagnosed as schizophrenia. J Clin Psychiatry 41(3):75, 1980