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## Deliria, with particular attention to differential diagnosis and the underlying personality factor

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DELIRIA,  
WITH PARTICULAR ATTENTION TO DIFFERENTIAL  
DIAGNOSIS AND THE UNDERLYING  
PERSONALITY FACTOR.

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Robert Callison.

DELIRIA\*

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Deliria, as defined by Bleuler(1), are "Mostly states of incoherent thinking combined with hallucinations and delusions." Ziegler(2) lists, as the outstanding characteristics, "Push of irrational talk, vocal and general motor restlessness, visual hallucinations of moving objects, animals or people, peculiar feelings, unreality feelings, annoying transitory delusions, blind groping, sleepiness, defective perception, and distorted awareness of environment." Hanes(3) mentions clouding of consciousness as the sine qua non.

A study of this condition is apparently of considerable importance, both from the standpoint of immediate practicality and because of the possibility of learning more of the predisposition to this form of mental disease and the factor that the personality of the individual has in leading to psychotic manifestations under a certain strain. It is, without doubt, the most common symptom of psychosis encountered by those whose practice is not confined to psychiatry, since there is hardly a field of medicine where it cannot be found resulting from somatic disease. With a possibility of its origin being toxic, infectious, exhaustive, traumatic, or post-operative, it is evident enough that an understanding of its mechanism and significance is of more than academic in-

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\*Senior Thesis, University of Nebraska College of Medicine, 1932.  
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terest. Hunt(4) says that "Delirium is one of the first and most frequent conditions which the general practitioner is called upon to treat."

Any study of delirium necessarily involves some discussion of toxic and infectious psychoses, since the mental reaction here is typically one of acute delirium. In fact, White(5) defines delirium as a "Confused and clouded state of consciousness associated with and symptomatic of fever." A classification should be of value, particularly in briefly presenting the precipitating factor. The following, proposed by Strecker and Ebaugh(6) is simple, and apparently quite adequate:

(1) Infection-Exhaustion Psychoses

(2) Toxic Psychoses

(A) Alcoholic Psychoses

(B) Psychoses due to Drugs and other  
Exogenous Toxins

(C) Psychoses with Pellagra

(D) Psychoses with other Somatic Disease.

These conditions constitute about ten per cent. of all admissions to mental hospitals, but this does not represent to any extent the frequency with which they are encountered, as the great majority of them are treated in general hospitals or in the home.

Several types of infection-exhaustion psychoses may be recognized. Infection delirium, sometimes called initial delirium, includes those developing early in the course of an infectious disease, before fever has appeared or when it

is so low that it cannot be held responsible for the mental symptoms. It usually manifests itself as an acute confusion. Febrile delirium occurs as a confusion of variable degree, depending somewhat on the variations in temperature. It may consist of nothing more than headache, irritability, restlessness, and disturbing dreams, or may show profound dulling of consciousness, coma, and death. It is noted that mild cases exhibit more marked symptoms as night approaches. Post-febrile deliria either develop in the febrile stage and persist after the fever subsides or begin in the post-febrile period. The latter are not to be differentiated from exhaustion psychoses. The mental state here is usually one of confusion, hallucinations, and delusions which are usually paranoid. The condition is not infrequently fatal, or may go on to a chronic delusional state. However, improvement in the physical condition is usually followed by relief from the mental symptoms.

Considering the exhaustion psychoses in slightly greater detail, we find loss of blood, parturition, prolonged anxiety and worry, severe mental shock, and prolonged convalescence from an acute febrile disease listed among possible etiological agents. Quoting from Thompson(7), "Kraepelin describes two types of exhaustion psychoses, collapse delirium or the acute delirious mania of the older writers, and amentia, or acute confusional insanity. The difference between the two is in the severity of mental symptoms. In the first type the psychic symptoms are profound incoher-

ence, absolute clouding of consciousness, marked emaciation and severe exhaustion. Many of these patients die in a stuporous, comatose condition. In the acute confusional type the psychic faculties are less affected. Here the attack varies from one to several months in duration. In a few cases recovery may take place in a few weeks." It is to be seen that the difference between the two types is chiefly one of degree.

Among the alcoholic psychoses, delirium is most characteristic of delirium tremens and Korsakow's psychosis, although it is not a necessary constituent of the latter. A complete review of the alcoholic psychoses is outside the scope of this paper. The delirium of the former is an acute hallucinatory confusion with marked or complete disorientation. The hallucinations are predominantly visual and characteristically take on the form of animals. Korsakow's psychosis may follow delirium tremens and has sometimes been called chronic alcoholic delirium. Garvin(8) makes some interesting comments on the changes in alcoholic deliria since prohibition, stating that acute hallucinosis is the outstanding type at present, and that Korsakow's psychosis has decreased in frequency since the war. In his opinion the patients are more toxic on admission, show greater physical prostration, more clouded sensorium, more frequent confusion and disorientation, and more delirious admixtures. He attributes this change to the character and quantity of liquor imbibed, and says that it is more sug-

gestive of an acute poisoning than of the result of chronic indulgence, as previously seen.

Other exogenous materials which have been known to be responsible for delirious reactions embrace a wide variety. Among them are the various products of opium, cocaine, cannabis indica, lead, bromides, ether, chloroform, quinine, acetyl salicylic acid and other coal tar products, and many others. The delirium may result from an acute or chronic poisoning.

Delirium is also a not infrequent result of toxins produced in the course of a disease or endocrine imbalance where there is neither fever nor exhaustion to be considered as an etiological factor. Among these conditions are uremia, some acute gastro-intestinal conditions, acute hyperthyroidism, pellagra, and epilepsy.

A senile delirium has been described which is said to be frequently occupational in type. The condition is characterized by varied and fleeting delusions, multiform hallucinations, clouding of consciousness, great incoherence, and marked motor restlessness. It may appear in an apparently normal individual or in the course of a senile psychosis. There is a probability that it is usually attributable to some bodily cause such as pneumonia or nephritis, and in fatal cases may well be the result of a terminal infection of some sort.

Traumatic and post-traumatic deliria are well recognized entities, and Meyer(9) cites several cases. He be-

believes that delirium following head injuries is most apt to result from general concussion of basilar fracture.

Delirium may, as well, be a symptom of hysteria, and Janet(10) reviews a case of psychasthenia in which this reaction appeared at irregular intervals. This does not appear to be the same reaction, however, as the one with which we are concerned. Janet considered it to be dependent on a lowering of the psychological level of the will and belief, the actions being those of assent, permitted by the patient's failure to reflect or exercise judgement of the impulses that entered the mind.

Ziegler(11) mentions a case of active delirium due to hypoglycemia and relieved by glucose or epinephrine, and calls attention to the possibility of similar cases on a metabolic basis.

Turning to the question of differential diagnosis, Haynes(3) believes that in some instances the type of delirium points to the underlying condition. He states that no hard and fast rules can be formulated, but that certain reactions are most frequent in certain conditions. The infective-exhaustive psychoses show clouded mentality and delirium that may be wild, masking the underlying condition, or merely anxious intervals with fear of impending danger. The post-febrile type is usually subacute, apparently due more to physical and mental exhaustion than to the toxic influence of the infectious process. Here are seen hazy sensorium, vague anxiety, apprehensiveness, hallucinations,



tendency to misconstrue, emotional worry, and depression of a peevish character. In delirium tremens there is psychomotor activity due to hallucinations, disorientation for time and place but orientation for personal identity, with a duration of one to three weeks. There are also lesser or subacute alcoholic deliria which may take the form of a dream state preceeding Korsakow's syndrome. These are marked by clouding of the sensorium, marked memory defect, and confabulation to fill in memory gaps. These are of longer duration than the more acute attack, and may be followed by other psychoses not of the nature of delirium. Cocaine causes threatening visions and voices, and the patient may become dangerous defending himself from imaginary danger. There is the further sensation of insects crawling under the skin. Hysteria may be ushered in by an active delirium but is accompanied by other symptoms which help in the diagnosis. Epileptics show a variety of grades of delirium, usually post-convulsive. The sensorium and consciousness are partially clouded, and the victim may undress himself, assault those near him, or otherwise misconduct himself. These attacks are usually transient, but may persist for some time. The wildest and most frenzied delirium may take the place of an epileptic seizure, in which the patient may injure himself severely. Paresis may develop acute symptoms in the nature of a delirium in which the individual is wildly excited, laboring under great psychomotor pressure. Visual and auditory hallucinations commonly occur here and may

lead to exhausting activity. The delirium of a senile type is characteristically occupational, with clouding of intellect and abolition of grasp and power of attention. The patient projects himself back to earlier life and gives himself up to imaginary occupations.

Several years ago Kraepelin advanced the theory of specificity of mental disease and projected the belief, even in the face of considerable opposition, that each infectious disease would come to be diagnosed from its mental symptoms alone. Bonhoeffer was among those who opposed him, stating that the toxin, whatever its nature, manifested itself by its effect on the brain, and as this organ necessarily showed a limited range of symptoms all toxic psychoses would be relatively similar, regardless of the cause. Further study has not supported Kraepelin's belief, and it is doubtful if the features listed above are diagnostic enough to be of practical value in differentiating one type from another, even in the general manner in which the author has intended.

Saunders(12) in a study of seventy-five cases of psychoses occurring during the puerperium concludes that the puerperal state does not produce any particular type, although it might be expected that an exhaustion delirium would be most frequently seen. Only four of the seventy-five were victims of puerperal fever, as shown by temperature reaction and leucocytosis. It was found that psychoses practically always occurred in women who had experienced religious or matrimonial difficulties. Childbirth

in certain women may be accompanied by great emotional conflicts quite apart from infection and strain, and the problem of adjustment may result in a psychosis. The author calls attention to the possibility of diagnosing any mental disease occurring during the puerperium as toxic, infectious or exhaustion delirium, when in reality it is the beginning of some other condition. It is possible that infection may prove an added strain which provides the starting point for a mental condition which persists after the infection has subsided, and differentiation from a transient delirium is very important from a prognostic standpoint. White(13) says "Great care should be exercised in offering a prognosis in these cases. Many of the so-called cases of puerperal insanity are really cases of praecox which have been precipitated by the circumstances of the puerperal period, loss of blood, prolonged labor, infection, or the mental stress of an illegitimate pregnancy particularly."

Speaking of the alcoholic psychoses, Garvin(8) makes mention of the fact that differentiation from schizophrenia is often impossible, necessitating a good life history, accurate knowledge of the type of personality of the patient, and exact information respecting the amount of alcohol drunk and the frequency of the periods of indulgence. A history of previous attacks with recovery is significant. As a rule the dementia praecox is not a chronic drinker, but may drink and develop a condition which appears to be an acute hallucinosis but which is in reality the onset of schizophrenia.

These characteristically do not show adequate emotional response to delusions and hallucinations, that is, not enough of restlessness and fear, but accept the situation to a greater or less extent. Further, before the onset the schizophrenic is usually shy, seclusive, and queer, while the alcoholic has been a good fellow, liking company. Alcoholic psychoses occur principally in the middle aged following years of intemperate use, and are most prevalent in the Irish and Slavs.

Hoch(14) in a review of cases of delirium produced by drugs sees a symptomatic relationship to those of alcoholic origin, but believes that they can be differentiated by the facts that drug patients are duller than alcoholics and that alcoholics are more cyanotic and have weaker pulses, due to cardio-vascular changes, and have more tremor.

Menninger(15)(16) in a series of eighty cases of psychoses complicating influenza found sixteen diagnosed as delirium, twenty-five as dementia praecox, twenty-three as other psychoses, and sixteen of doubtful diagnosis. This is probably somewhat misleading as to the actual frequency of delirium in proportion to other psychoses, as many cases are never sent to a hospital for mental diseases. Age distribution showed that below eighteen no serious mental complications were common, but in the next decade there was a strong tendency toward dementia praecox. It is to be noted that there was a surprising preponderance of schizophrenic reactions in the series. As an average, delirium began four days before the fever abated. All other psychoses, as a

rule, appeared after the fever had subsided, and of the heterogeneous group, all appeared post-febrile. Amnesia was present in all cases of delirium. Of these, one was prefebrile, twelve febrile, and three postfebrile. Neurological signs were not infrequently present in these. One third of the cases diagnosed delirium showed, at some time, frankly schizophrenic symptoms. Of the twenty-five cases of schizophrenia, nine had preexisting indications in the form of attack or personality trend, four had a morbid family history, and thirteen had neither of these. The author states that the striking feature of the undiagnosed cases was the difficulty in distinguishing between postfebrile delirium and dementia praecox. He believed that of the eighty cases, thirty-two were latent processes activated by the infection and forty-eight were instigated.

Jones(17), in discussing the difficulty of differentiating psychoses associated with infectious diseases from others such as dementia praecox, hysteria, or alcoholic or manic depressive psychosis which may occur in the course of the disease, says the difficulty is most marked when the psychosis seen is mild in form, but in the acute stage. He also stresses the danger of overlooking the toxic or infectious element, and consequently failing to consider the possibility of delirium on this basis.

Jackson and Abramovitz(18), on the same subject, say "Toxic states showing motor excitement, flight of ideas, and confusion, without any definite history, may be misleading.

The presence of psychosensory disorders may be overlooked, and such states occurring in young adults between the ages of seventeen and thirty-five years are prone to be regarded as dementia praecox or mania. This leads to serious error in prognosis.

"In delirium tremens as well as in the deliria occurring in the infective-exhaustive group of cases, the excitement may lead one to suspect acute manic depressive or possibly acute exhaustion superimposed on a manic depressive. The toxic nature of the condition may possibly be overlooked if we do not have a definite history of a continued illness, as a satisfactory physical examination may be impossible owing to restlessness.

"The picture of manic depressive mania may be so modified by the excessive use of alcohol as to be productive of psychosensory disorders; the active hallucinations of hearing and other senses in such cases may lead one to think that he is dealing with dementia praecox."

He also makes mention of the fact that in situations such as this, where the diagnosis is not clear at the onset, time is the greatest aid in differentiation, and may assist in forming a prognosis which if quickly arrived at might prove embarrassing.

A further complication arises in the diagnosis of alcoholic delirium because of the variety of ways in which it can enter into the production of mental disease. Alcohol is recognized as a factor in the etiology of psychoses quite

apart from those under consideration here, such as manic depressive, schizophrenia, and paresis, and, modified perhaps by alcoholic indulgence, differentiation may be a difficult problem. Further, alcoholism may be only a symptom of some underlying condition. It must be remembered that the healthy person succumbs but slowly to alcohol, while the dementia praecox deteriorates much earlier and to a greater degree. Still another difficulty lies in the fact that an acute condition due to alcohol may not terminate in recovery, but go on to a mild schizophrenic process.

Rosanoff(19) mentions the great rarity with which acute infectious diseases cause psychoses other than infectious and febrile deliria, but this is not in accord with common opinion.

The psychosis resulting from uremia, too, is easily confused, frequently resembling schizophrenia to such a degree that differentiation on the clinical findings is difficult or impossible.

It must always be born in mind that trauma may be a precipitating factor in paresis, manic depressive psychosis, and schizophrenia, as well as delirium.

Turning now to the question of diagnosis from a laboratory standpoint, McIntyre(19)(20), investigating a series of cases of mental disease for fever, leucocytosis, albuminuria, urinary casts, retention of waste products in the blood, and increased protein in the spinal fluid, found that toxic-infectious psychoses yield the richest findings, and

that blood urea nitrogen and carbon dioxide combining power were the most valuable tests. He found that nearly all the toxic psychoses showed a marked depletion of the carbon dioxide combining power, usually accompanied by urea retention and explained these findings as due to excitement with fatigue, impairment of the kidney function by the toxins causing the psychosis, with resulting failure of the kidney to excrete the acids of normal metabolism, and the probability of an acid toxin, the presence of which in the blood would lower the alkali reserve. However, he also found acid intoxication a frequent occurrence in patients admitted with schizoid and manic depressive reactions, and considered it due to excitement and muscular exertion with fatigue, and starvation. He further states that the symptoms frequently disappeared with treatment directed toward removal of the toxins from the body, so there is apparently a question as to whether these findings were due to a toxic delirium simulating a less transient condition, or whether the toxic condition was precipitating a schizophrenia or manic depressive psychosis which was averted by removal of the condition. He maintained the persisting mental symptoms to be due to irreparable damage to cerebral cells, and quoted Fischer's theory to support his opinion. This theory, briefly, is that the cells of the brain consist of an emulsion of fats in hydrated protein, and that alcohol can dehydrate the protein, allowing the fat emulsion to collect into larger particles, or acid intoxication causes some proteins to swell, dehydrating and precipitating globulin



and breaking the emulsion. This is represented by the pathological picture of cloudy swelling, and if allowed to persist goes on to fatty degeneration, which is irreversible. There is but little proof for this, and most authors are content to consider the somatic condition as sufficient additional strain to precipitate the psychosis, without attempting to ascribe the mental symptoms to a definite action of a demonstrable toxin on the cerebral cells. If it is true that beginning schizophrenia and manic depressive psychosis show fever, leucocytosis, acidosis, and nitrogen retention, this would make laboratory findings even less valuable in the diagnosis of toxic or infectious deliria, but show the necessity for caution in calling any delirious reaction with fever and leucocytosis toxic or infectious.

Appel, Farr, and Jones(21) made a determination of total base, blood chloride, and carbon dioxide combining power in fifteen normal and one hundred twenty psychotic patients, and found them normal except in two uncooperative cases of the toxic group, and in those with somatic conditions such as decompensated heart disease, consequently concluding that this was not a promising field for investigation.

We shall now turn our attention to the underlying personality factor behind the delirium. Ziegler(22) writes that "Disease seems to be a product of two forces, viz., constitutional resistance on one hand, and stresses and strains (personal worries, intolerable situations, infect-

ions, etc.) on the other. If the stresses and strains are great enough, the sturdiest person will ultimately succumb to disease." It is our purpose here to determine, if possible, the condition which permits one person to manifest a delirious reaction under circumstances in which another would not, and the significance of the appearance of this reaction. Why does one individual show the symptoms of delirium in a situation where the average person remains mentally clear?

Spaulding(23) as well as many other authors stresses the importance of infant and preadolescent habit formation as factors in personality development which may avert or lead to mental disease later in life. Amsden(24) defines personality as "The aggregate of those tendencies predisposing to reactions which the individual has come habitually to display in the adjustments his life has required of him. A statement or summary of a personality would, therefore, attempt to indicate the reactional assets and liabilities of the individual in such wise that an insight is gained into the probable general course of action he would, under given circumstances, follow." It would be difficult, from the study of the personality of an individual, to predict that he would show symptoms of delirium under the influence of a mild infection or toxemia, but not illogical to interpret these symptoms, once they appear, as evidence of a personality inadequate to meet the vicissitudes of life, and as the possible forerunner of graver psychotic symptoms.

Diethelm(25), speaking of bromine intoxication, men-

tions that each individual reacts differently, and that a dosage toxic for one is not for another. According to him, it is difficult to give the characteristic symptoms of brominism as the patient's reaction is determined largely by his individual features, but a study of the person's previous personality can frequently explain the form they take.

Other poisons, as alcohol and the products of infection, may increase the drug effect, and a certain constitutional make-up seems to react particularly easily with delirium and organic damage.

Hohman(26), in a study of twenty-three cases of psychoses complicating epidemic encephalitis, divided the patients into four groups or reaction types, calling them depressive, psychoneurotic-like, delirious, and organic. In the delirious group he included the psychoses which showed a dreamy state with clouding of consciousness, disorientation, and association in which drifting and groping are present. This was noted in fourteen of the twenty-three cases. It is interesting to note that he says "Why should one patient react with manic excitement, another with depression, and a third with a classical parietic picture?" He states that neuropathology offers no explanation, but that with diffuse organic change the personality or constitution of the patient is apt to rupture at its point of greatest vulnerability, and that "A personality or constitution able to maintain an adequate adjustment with the proper repression or sublimation of unsocial trends or of strong instinctive

drives breaks along these lines when the automaticity of adjustment is interfered with."

Meyer(9), discussing traumatic psychoses, raises the following questions, "Would the patient have developed a mental disorder without the injury? Does the mental disorder show any typical traits speaking for trauma? To what extent do the forms depend on the differences of makeup, and to what extent on differences of the form of damage?" He finds in a series of thirty-one cases which developed post-traumatic psychoses only a very few in which other factors, such as alcoholism, infection and particularly hereditary taint and constitutional underdevelopment could not be ruled out. He did not draw definite conclusions, but suggested a more detailed study of cases to determine the part played by the makeup of the patient.

Ziegler(2) has apparently made a considerable study of the problem. He writes "The protean manifestations of delirium have made it a difficult syndrome to describe or formulate, and have argued for an individual factor in the disease rather than a very specific exciting cause. However, delirium usually occurs under the condition of fever, infection, or toxemia.

"It has long been recognized that certain persons become delirious easily, and with only a slight infection, while others, under the distress of severe illness and high fever, remain clear. This raises the question as to the type of person that is more likely to become delirious. Are persons

who suffer from other forms of mental or nervous disease more likely to have these deliria? Are persons who are socially or economically less adaptable more likely to have delirium?"

He concluded that, although delirium was somewhat more frequent among psychopathic patients than among normal individuals, the difference was slight, and probably suggested that it was a distinct entity, different from the usual diseases seen in psychopathic hospitals, that there was no proof of relationship between economic and social dependency and delirium, and that, whatever the cause, the character is determined largely by the character of the individual. Thus, no definite evidence is advanced to support our contention that there is a personality factor predisposing to delirium, nor is any certain type of individual shown to be more susceptible.

Barrett(27) has considered the matter of constitution and disposition in considerable detail, and writes, "Experience has shown that only exceptionally is any psychiatric disorder determined by sharply defined and narrowly circumscribed causative influences or situations, and that one must consider a wide variety of interacting factors that are important in the production of the disease and its symptoms. It is not a question of this or that factor alone, but rather how much of this, and how much of that.

"Etiological relationships of the psychoses are fundamentally centered in two aspects, one in the quality of the

individual, and the other in his experiences.

"In any interaction of either endogenous or exogenous factors the quality of the individual must be a determining factor in the production of any result. The qualities of an individual have their expression in the constitutional and dispositional relations that are his personal possessions.

"Clinical observations have long taken into account the fact that in the etiology of disease individuals differ in their susceptibility and ways of reacting to various agencies and experiences, and that the symptoms and course of a disorder are determined by factors inherent in the individual as well as in the environment in which he lives.

"Problems of constitution and disposition in relation to disease have always had a peculiar importance in psychiatry although their formulation has been less easy than in the somatic field. ----- . In the consideration of constitutional relations one is largely forced to deal with the subject in less clear concepts, and the subject has been discussed in such general terms as predisposition, anlagen, psychopathic constitution, reaction types, endogenous or constitutional disorders, and similar connotations, without always being able to reduce these to more simple and comprehensible elements."

He quotes Kraepelin as saying "Preformed reaction mechanisms exist in normal individuals that are not manifested until influenced by pathological changes in the

organism."

He continues more specifically, "A dispositional quality stands out quite clearly in some of the psychoses due to toxic factors. One is familiar with the tendency to delirious reactions in the somatic disorders due to bacterial infections. Bonhoeffer and Kleist have drawn attention to this in contributions citing cases of individuals who have had a delirium even with slight infections or febrile states. In some instances this is a more or less habitual reaction, occurring with each attack of illness. It has been noted that this tendency sometimes is a family characteristic, thus bringing this question into those of hereditary relationships. Attention has recently been directed by Lermann to the character changes which occur after lethargic encephalitis and that in some of these instances there existed an abnormal psychic disposition in the form of a psychopathic constitution before the encephalitic attack. One is familiar with the tendency of some children to react with convulsions to slight infections or digestive disturbances. In alcoholism, personal disposition in its determining influence upon the symptoms of the mental disorder is especially well marked. In spite of a common etiological factor, there may occur a considerable variety of reactions that are not specific effects of alcohol. The most characteristic of these is the pathological type of intoxication in which the abnormal psychic reactions are out of proportion to the amount of alcohol taken. Some alco-

holics have prominent hallucinations, others not. In some these are predominantly visual, in others, auditory. There are cases with and without delusions. Some take the form of Korsakow's syndrome, while others progress in a chronic mental deterioration. Such differences seem to have an explanation in constitutional or dispositional qualities of the individual."

And further(28), "In considering the individual personality, whether in health or disease, one must recognize the fundamental proposition that persons differ in their reactions to the various forces and experiences they encounter in the environment. These differences are in large part determined by factors inherent in the individual constitution."

Following are cases selected from admissions to the University Hospital. They are designated by the numbers under which the charts are filed:

36070 A white, female, widowed, ~~female~~, American housewife entered the hospital August 27, 1931 because of depression, tiredness, lassitude, hallucinations of hearing, and ideas of reference and persecution. She gave a history of never having felt well since childhood, with gall bladder symptoms appearing after four pregnancies early in her married life, and operation in 1924. She also underwent an appendectomy in 1922 and tonsillectomy in 1925. Besides the usual childhood diseases she had had influenza in 1918 and frequent tonsillitis. Her husband had drunk much and abused her and had shot himself while drunk two years previously. She did not grieve over his death. She said she first felt despondent about a year before admission, and in the spring had felt weaker than ever, and had had difficulty in remembering things. Three weeks previous to entrance she was taken to another hospital in the city because of delusions of persecution and auditory and visual



hallucinations. She did not remember this on entrance, when she was apparently somewhat improved, although auditory hallucinations persisted.

Physical examination showed tremor of the tongue and fingers, tender muscles, fast pulse, dehydration, tenderness over the gall bladder scar, and varicosities of the veins of the legs. Blood pressure was 120-75. There was no fever.

At that time she was partially oriented for time and place, and recalled six digits; but showed active hallucinosis and marked fearfulness.

Urine was negative; R. B. C. 3,800,000, Hb. 80%, W.B.C. 5,400.

She was diagnosed psychotic reaction type with a typical toxic delirium. She improved satisfactorily under symptomatic treatment, and was dismissed September 30, 1931 with the precipitating factor undiscovered.

This case serves to illustrate the psychotic background that may lie behind the manifestations of actual disease, and provides ground for speculation as to the part that an evident constitutional defect has had in bringing about the psychosis. Although diagnosis was easily accomplished here, it may be seen that features such as absence of fever and leucocytosis, and symptoms that could as well be a part of some other condition might obscure it.

35172 Male, white, American, laborer, age 64, was admitted to the surgery ward on May 23, 1931 with a diagnosis of left inguinal hernia. History was negative, the patient knowing nothing of his family history.

Physical examination was negative except for the hernia and some dimness of vision.

He underwent herniorrhaphy on the third day in the hospital. Subsequently an infection of the scrotum developed, and mental symptoms appeared twenty-six days after operation. These began with drowsiness and lack of response, and progressed to irritability, irrational speech, delusions of persecution (believed nurses were trying to poison him), and auditory hallucinations. His mental condition gradually improved as the infection subsided, and he was discharged on the twenty-sixth of July, 1931.

On admission, urinalysis was negative, Hb. 85%; R.B.C. 4,690,000; W.B.C. 8,500; Blood Wassermann negative.

This, apparently, is one of the ordinary delirious reactions developing in the course of an infection. It is interesting because of the mildness of the infectious process and the age of the patient. It is unfortunate that the record contains no information as to whether or not there were previous attacks. Are these symptoms warning of a senile or arteriosclerotic psychoses that will occur in the course of a few years?

33181. Amabe, white, American child, age 6, was admitted to the hospital October 5, 1930 with an acute upper respiratory infection, of one day's duration. On the evening before admission he had had a convulsion in which he became cyanotic, foamed at the mouth, bit his tongue, and had an involuntary stool. His temperature at that time was 101.5 degrees. His previous history and family history were negative.

Physical examination was negative except for large, infected tonsils and a profuse post-nasal discharge.

Urinalysis was negative; Hb. 90%; W.B.C. 7,800. Spinal fluid was under 14 m. m. pressure, clear, and no cells could be found. Rectal temperature never rose above 100.5 degrees during his course in the hospital.

On admission the patient was very unresponsive and restless, tossing about in bed, screaming at times, trying to hide under the covers, and complaining of animals that he thought were going to get him. His temperature did not rise above normal after the third day, and the patient was dismissed on the fifth, much improved and apparently free from hallucinations.

Here, also, is a case of infectious delirium. It and the convulsion may be taken as evidence of an extremely unstable nervous system, since the infection was mild in character. The chief interest here lies in the possibility of learning enough of reactions such as this to make accurate prognosis as to the individual's future mental stability.

and perhaps institute effective prophylactic measures.

35020. Amale white laborer, of German descent, age 54, entered the hospital May 8, 1931 in an excited state, restless and talking irrationally. A history of long overindulgence in alcohol was obtained. He had been intoxicated at least once a week for the past year, and three or four times weekly for the past several months. He had suffered a fall about five weeks before admission, and had been confined to bed since that time. Mental symptoms appeared two weeks before admission. He had had two attacks of visual hallucinosis in which he saw bugs on the wall, one about six months and one a year before the present illness. Had vomited considerably after drinking sprees for the last few months, had had a gonorrhoeal infection when a young man, and had lost sixty pounds. History otherwise unessential.

Physical examination showed bilateral submaxillary adenopathy, an injected throat, many carious teeth, a pulse of 90, and blood pressure of 140-90. Neurological examination showed nothing except tremor of the hands and tongue and spasticity of the upper extremities which were constantly in motion.

In the hospital he was difficult to arouse, disoriented for time and place, and extremely restless. Only a very inadequate response was made to questioning. On entrance he would describe animals he could see, but as his condition became worse only his actions showed the terrifying character of his hallucinations. Fever persisted throughout his course in the hospital, going up to 102.5 degrees.

Urine showed one plus albumen. Hb. 110%; R.B.C. 4,500,000; W.B.C. 15,400. Spinal fluid was under normal pressure, clear, cell count of one, Wassermann negative, colloidal gold 0000000000, protein 11 mgm. Blood N.P.W. 28.3 mgm. Blood Wassermann negative.

The patient died on the sixth day in the hospital, because of myocardial failure.

This case is included as an example of the acute delirium resulting from overindulgence in alcohol over a period of time. Because of the amount consumed, it would be difficult to draw a conclusion concerning his susceptibility. The description is quite typical of delirium tremens and

diagnosis was not difficult.

54613. A male, white, American painter, age 51, was carried to the receiving room March 18, 1931. He felt fairly well, but told the following story: Five days previously he had caught cold, but continued to work at his trade. Two days later after working all day, he felt feverish and had a chill, and had aches in his shoulders and elbows. He did not work the day before entrance, but took some magnesium sulphate because he had been constipated for four of five days, and had had some abdominal pain. The cathartic resulted in several loose stools and considerable relief from the abdominal distress.

In his past history there was a story of three attacks of lead poisoning, with an acute delirium accompanying each of them. The last had been in 1929.

Physical examination showed bilateral partial obstruction of the nose, profuse post-nasal discharge, carious lower teeth, bilaterally increased breath sounds and fremitus, and a soft flat abdomen, with no tenderness, rigidity, or mass. Pulse was 120, temperature 103 degrees, respiration 28, and blood pressure 110-70 at the time of admission.

Urinalysis showed a trace of albumen and granular casts. Hb. 110%; R.B.C. 5,079,000; W.B.C. 10,200. Blood Wassermann negative. No stipple cells in blood smear. Spinal puncture five days after admission showed a clear fluid under a pressure of 8 m. m., Wassermann negative, colloidal gold 0000000000, protein 8 mgm.

The patient had a low febrile temperature during his course in the hospital. On his second hospital day he became restless and uncooperative and tried to jump from the window. Following this he became very active, requiring restraint, and told of auditory hallucinations. A paranoid trend was evidenced by the belief that someone was going to kill him. Psychiatric consultation was requested on the third day, at which time there was evidence of disorientation, defective memory and retention, and poor insight. A diagnosis of toxic-infectious psychosis secondary to gastro-intestinal condition was made.

- The patient was removed from the hospital on the seventh day, in spite of the advice of the physicians in charge, and died two days later. Autopsy showed generalized peritonitis secondary to a gangrenous appendix.

The question of diagnosis here was not one of whether

or not the reaction was a toxic-infectious delirium, but was concerned rather with the discovery of the precipitating element. Lead poisoning was considered because of the history of previous attacks, and his recent contact with the material. His wife said that his mental condition had been apparently the same in these illnesses. This leads to the question of whether there was something in the makeup of the individual that permitted the delirious reaction to occur under varying etiological conditions, and substantiates the belief that such a situation does exist in certain individuals.

37765. A female, married, Polish housewife, age 28, entered the obstetrical ward January 1, 1932 after having been in labor five hours, delivering about four hours later. The patient was uncooperative, and the sterility of the field was questionable. About 300 c. c. of blood was lost. This was her second pregnancy, the first having been uneventful. On the second day after delivery the patient complained of feeling queer, was uncooperative, and did not respond readily. The following day she received a smallpox vaccination, her mental condition remaining the same. The following day, the fourth after her delivery, she experienced hallucinations, and said she thought she was about to die. On the sixth day her temperature, which had previously been normal, rose to 100.5 degrees and her mental symptoms became more pronounced. She had the delusions that her baby had no eyes, and that she and the baby were dead. She spoke frequently of "miscarriage", "sassafras," and "guilty conscience." Hallucinations and bizarre somatic ideas persisted. On the ninth day she became so excited and active that restraint was necessary. She was disoriented for time and place. At times she held herself rigid and resisted feeding.

A complete history was not obtained, but it is of interest that the patient had married her husband after knowing him only three days, and had learned later that he had been in jail two or three times. He was in the penitentiary at the time of

her confinement. This had forced her to avoid her parents, as she did not wish for them to learn of this. She had attempted to abort herself by drinking sassafras tea, and a solution of material dissolved from match heads, according to her statement.

Physical examination was negative except for the usual puerperal findings.

Urinalysis was negative. Blood count during the febrile period showed Hb. 78%, R.B.C. 3,900,000 W.B.C. 9,800. Blood Wassermann was negative.

Temperature dropped to normal on the twelfth day post-partum, and the patient improved rapidly, the remainder of her stay being characterized by mild negativism, verbigeration and delusions. She was dismissed on March 3, 1932.

There is some question here as to whether the delirium is prefebrile or due to the exhaustion. However, that is not the most important point. Symptoms such as these provide opportunity for careful differentiation, since they are so suggestive of schizophrenia at times. The patient had been under considerable mental strain, with family difficulties and an undesirable pregnancy, and the added burden of her delivery and subsequent infection might have been sufficient to provide the starting point of a less transient condition.

In closing, we shall quote White(29), "Alcohol, like fever, may be said to be a CONTRIBUTION measure of cerebral resistance, the unstable, predisposed individual becoming intoxicated much more readily than the average," and(30) "The onset and development of the delirium is, to an extent, a measure of the mental stability of the patient. Delirium develops more readily in the unstable and those predisposed to the development of psychotic symptoms."

## CONCLUSIONS

The diagnosis of delirium is not always an easy matter. The factors of etiological importance may as well provide a strain sufficient to precipitate some other condition which bears a considerable resemblance.

The most commonly confused conditions are manic depressive psychosis and schizophrenia, particularly the latter. Many toxic, infectious, or exhaustive deliria show symptoms strongly suggestive of dementia praecox.

Time is a great aid in the differentiation of doubtful conditions.

Certain persons show a strong predisposition to delirium, exhibiting the reaction in situations where the normal would remain mentally clear.

This predisposition is evidence of a psychotic tendency in the individual, and may be taken as a measure of his resistance, suggesting the appearance of some other psychosis at a later date.

If there is a specific factor in the personality that leads to delirium, it has not been determined.

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