

Lay Supplement No. 4

FACTS ON
DELIRIUM TREMENS

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FACTS ON DELIRIUM TREMENS

THE medical term, delirium tremens, is so commonly known that it has now become part and parcel of everyday language—even to the extent of being referred to familiarly as the D.T. s. In spite of familiarity with the word, the ideas which most people have concerning the condition usually do not agree with the facts.

Some people believe that delirium tremens is a form of heavy drunkenness; that it is a kind of frenzy which befalls a man who, on some occasions, drinks a huge quantity of alcohol. Others believe that all heavy drinkers go from bad to worse until finally they “see snakes”; they think of delirium tremens as the last and fatal stage of chronic alcoholism.*

Neither of these ideas is correct. Delirium tremens does not occur as the result of any one debauch, even the most excessive one. It does not occur inevitably in every alcohol addict* and, furthermore, by itself it is not fatal. As a matter of fact, delirium tremens is neither the commonest nor the severest consequence of abnormal drinking.*

Delirium tremens is a mental disorder of brief duration which occurs only in some 4 per cent of very heavy drinkers. It affects largely persons of robust health and with no marked abnormality of personality, after at least 8 to 10 years of habitual excessive indulgence in alcoholic beverages,† mainly distilled spirits. The disease is particularly apt to occur after an injury or during an illness such as pneumonia; the injury or disease plays an important part in bringing on the attack of delirium tremens.

The name “delirium tremens” has been in use ever since the English physician, Dr. Thomas Sutton, proposed it in 1813. Delirium means violent excitement, mad rapture, frenzy, light-

*For definition of these terms see Lay Supplement No. 1.

†No exact figure can be given for amounts but those who develop delirium tremens usually consume daily an amount of alcohol in excess—often far in excess—of that in a pint of whisky (see Lay Supplement No. 1).

headedness. It comes from the Latin *deliro*, to draw the furrow awry in ploughing (*de*, from, and *lira*, a furrow); *tremens* means trembling and thus one might translate delirium tremens as the trembling frenzy. Frequently proposals have been made to use some other term instead of delirium tremens. One physician has pointed out that it is a poor expression, because a delirium cannot tremble, and that it should be called instead *delirium tremefaciens* which means the delirium which makes one tremble. Despite all objections, the name delirium tremens has come to stay.

Dr. Sutton, although not the first to describe delirium tremens, was perhaps the first observer to point out definitely that this condition occurred only in persons who had been given to excessive drinking for a great number of years. This observation has never been refuted although there have been many theories about the origin of this disorder. Before discussing the origin we shall give a description of the symptoms of the disease.

THE FIRST SIGNS

DELIRIUM tremens is classed as a mental disorder although it is of brief duration. By all appearances the disease does not develop gradually but comes on quite suddenly. Nevertheless, careful observers have noted that certain signs appear 3 or 4 days, and sometimes even 1 or 2 weeks, before the actual delirium develops. For days in advance the person developing delirium tremens may have an increasingly poorer appetite and even difficulty in keeping his food down; he may be restless and have a feeling of anxiety which he cannot explain; and he may sleep poorly and have nightmares. Not infrequently the senses of sight and hearing are abnormally sensitive; slight noises and slight changes in light may cause unusual irritation. There is also frequently a tendency to heavy perspiration and to headache and dizziness. These signs appear mostly at night. And also the delirium itself usually breaks out during the hours of the night.

THE STRANGE PICTURE OF DELIRIUM TREMENS

THE most striking change in the man suffering from delirium tremens is the unceasing, often violent, activity which may lead

to exhaustion. His tongue, face, fingers, legs, and even his whole body, may tremble. It is this feature for which the disease was named by Dr. Sutton.

That those who suffer from delirium tremens see strange things is widely known and, colloquially, delirium tremens is referred to as "seeing white mice" or "snakes." Actually, all kinds of animals are seen, and in places where the only animal actually present may be an occasional fly. Physicians call this seeing of things which are not present, which may also occur in many other mental disorders, visual hallucinations (from the Latin *hallucinor*, to wander in mind, to talk idly). Commonly, fast moving animals appear in the hallucinations of delirium tremens. An observer at the Boston Psychopathic Hospital counted the kinds of animals that were seen by his patients in their delirium. Fifteen had hallucinations of dogs and insects; 14 of snakes, but, surprisingly enough, only 1 rat or mouse was seen. Ten patients saw horses; 9 saw animals they could not identify; 10 saw cats or birds; 4 saw elephants; 2 saw lions and tigers; 1 saw a whale and 1 a hippopotamus. The famous "pink" elephant was seen by 1 patient only. The hallucinations may be suggested by the surroundings, for it has been observed by physicians in Europe, as well as here, that since continuous warm water baths have been used in the treatment of delirium tremens, many of the animals once popular in the hallucinations have been replaced by fishes and lobsters. The fact that most of the animals seen are swift moving may have something to do with the restless bodily activity of the patients themselves.

The visions do not always relate to animals. Sometimes the man in his delirium sees a large number of the same kind of objects and these may be of a rather ordinary nature. Thus, it has been reported that patients saw huge rooms filled to the ceiling with pants buttons, or with slippers. The pictures alter rapidly and give the impression of the swift changes on a movie screen.

Men suffering from delirium tremens may not only see imaginary animals, but they may also hear imaginary voices and noises; these auditory hallucinations are not half so frequent as the visual ones. They may hear murmurs, the noise of running water,

shooting, ringing bells or music. When they hear voices, these are usually connected with a vision and appear in conversations. The visions and voices are generally of a threatening nature and are an expression of the fear suffered by the man with delirium tremens.

As mentioned before, there is some feeling of anxiety in the days preceding the delirium. In the delirium itself this anxiety becomes extreme and often shows itself in hallucinations in which the patient believes he is forced to complete a task which can never come to an end. Since these tasks are always connected with the actual occupation of the patient, they have been given the name of occupational hallucinations. Thus, a waiter with delirium tremens may have the hallucination of carrying millions of plates to the kitchen. A housewife may be scrubbing a floor which stretches out again as soon as she thinks she is at the end of it. A locksmith may have the task of making a new key for every house in the town. These occupational hallucinations result in continual activity to carry out the task; the exertion results in fatigue and finally severe exhaustion. There may be, however, some pleasant visions in delirium tremens; occasionally the patients see tiny little men an inch or two in height crawling all over the bed, chairs and window sills and playing all sorts of pranks. The patients are usually amused by these tiny figures and smile and even make jokes about them. This is known as Lilliputian hallucinations.

Besides seeing nonexistent things, patients often mistake objects and persons for something or someone else. They believe the hospital to be a tavern, a palace, a schoolhouse, or a church. They believe that they are in an entirely different country, at some time past, and they recognize the doctors or the nurses as old friends, or take them to be government officials, priests, soldiers or some well-known politicians. This feature of the delirium is referred to as disorientation for space, time and persons.

A man suffering from delirium tremens is very suggestible; he can often be made to read from blank sheets of paper and to see any picture there that is suggested to him. There is, however, a limit to this suggestibility. While he can be made to believe

that a person is someone entirely different, he cannot be made to believe that he himself is someone else. He knows his own identity and sticks to it. This is an indication that, contrary to common belief, there is no real loss of consciousness in delirium tremens. Indeed, the man, in spite of his hallucinations and disorientation, may have a surprisingly sound idea of what is going on around him. To some degree he may even understand that the objects of his hallucinations are not real and sometimes he refers to them with a touch of whimsical humor.

How hallucinations come about is not known, though various surmises have been made. Some physicians have suggested that the visual hallucinations are due to changes in the nerves of the eyes frequently found in men with delirium tremens. But these same changes are common in chronic alcoholics who do not have hallucinations. The hallucinations have also been attributed to other changes which have been found in the nervous system, but as yet there is no definite evidence on this point. Fortunately the understanding and treatment of delirium tremens are not dependent upon the understanding of what causes the hallucinations.

BODILY CHANGES IN DELIRIUM TREMENS

WE have already mentioned the strong trembling of those who are suffering from delirium tremens. In addition they are usually nauseated and constipated. They perspire profusely. This heavy perspiration is an important feature of the disease; the loss of water leads to rapid loss of weight and drying of the body—dehydration; the loss of salt in the sweat disturbs the normal functions of the body. Both may cause serious harm unless controlled by medical care.

In delirium tremens there is usually fever, but since in most cases there is, at the same time, pneumonia or some other infectious disease, or a severe head injury, it is difficult to say whether the fever has anything to do with delirium tremens itself. Some physicians have observed, however, that a slight elevation of temperature occurs even in those occasional patients who appear to have no complications with the delirium tremens. There are

also changes in blood pressure and in the pulse rate; both rise as the delirium becomes more severe and reach a peak about the third or fourth day.

The chemical changes in the body that take place in delirium tremens have also been investigated; as yet they are not fully known. Aside from the great loss of salt, there seems to be some difficulty in the utilization of the fats in the food; it appears also that the liver is not performing its tasks efficiently.

Many of those who suffer from delirium tremens show signs of poor nutrition; but this is common among all chronic alcoholics. There is usually deficiency in some of the vitamins, but while these vitamin deficiencies are the causes of some other alcoholic diseases, they do not appear to be the cause of delirium tremens. They do, however, make the disease more severe, and part of the medical treatment of delirium tremens is in correcting this deficiency.

It is well known that diseases of the liver are frequent in chronic alcoholics and, as might be expected, some damage to the liver is usually found in those with delirium tremens. The change in the liver is not the hardening, cirrhosis, which is often attributed to long-continued excessive use of alcohol, but is instead a fatty change in this organ.

The brains of patients who have died during delirium tremens have been examined, but little has been found that would not have occurred in many other diseases. One change, however, has been noted in practically every case; it is a watery swelling, or edema, of the brain. The occurrence of this condition is so common that among physicians delirium tremens is sometimes referred to as "wet brain." In the past it has been assumed that the brain edema could cause greatly increased pressure on the brain and that the mental disturbances of delirium tremens might result from this pressure. Accordingly, treatment was at one time directed toward relieving the presumed pressure. Recently it has been found that in spite of the edema the pressure on the brain is usually not increased.

Delirium tremens rarely occurs without other diseases or injury and it is therefore difficult to be certain which bodily

changes are due to the delirium tremens and which to the complications. The most common of these accompanying conditions and diseases are severe head injuries, pneumonia, erysipelas and certain diseases of the nervous system.

THE COURSE OF THE DISEASE

DELIRIUM tremens does not, as a rule, last longer than 4 or 5 days and it may be taken as a sign of beginning recovery when the excitement gives way to deep sleep. This sleep is called the terminal sleep; from it the man awakens rested, with few, and only minor, signs of the delirium tremens remaining. Except for the complications, entire recovery occurs in about 7 days. With each step in the progress in treating delirium tremens the duration of the disorder has become shorter.

Many of those who go through an attack of delirium tremens do not resume their heavy drinking for 2 or 3 months after their recovery, but then most of them, unfortunately, return to their former habits. And, as there is no immunity to delirium tremens, sooner or later they return to the hospital with a new attack. Occasionally the attacks of delirium tremens are the beginning of a mental disorder of long duration.

The outcome of delirium tremens depends, to a large extent, upon whether or not a severe complicating disease or injury is present, upon its severity, and whether or not it is recognized and treated. Delirium tremens is itself rarely fatal; when death occurs it is usually due to the diseases and injuries so often associated with it. Death may occur in those who are greatly undernourished or whose weakened hearts cannot stand the violent bodily exertion of the delirium. Since the attention of physicians has been directed more and more toward the treatment of accompanying conditions, the mortality in delirium tremens has decreased to an extraordinary degree. From examination of the records of the Boston City Hospital, Dr. Merrill Moore has found that in 1915, 52 per cent of patients with delirium tremens died. From then to 1930 the mortality from delirium tremens patients was between 25 and 35 per cent. From 1930 on there was a steady decline in the mortality and, in 1935, only 33 patients

with delirium tremens died out of a total of 243, that is, 14 per cent. Hospital reports during the past 3 or 4 years show no greater average fatality in delirium tremens than 1 to 2 per cent.

Among the causes of death during delirium tremens Dr. Moore found pneumonia most frequently. More than one-quarter of the 560 delirium tremens patients who died at the Boston City Hospital between 1915 and 1935 died from this disease. The next most frequent cause was dilatation of the heart.

HOW FREQUENT IS DELIRIUM TREMENS?

THERE is a record of every person who enters a mental hospital in the United States and since delirium tremens is a mental disorder one would expect to have an exact count of the occurrence of this disease. However, since delirium tremens is of brief duration, and since it usually occurs in connection with another disease or serious injury, those who suffer from this condition are usually taken to a general hospital; only a small proportion of them reach the mental hospitals. Since the statistics of general hospitals are not compiled, the only information we have on the frequency of delirium tremens is an occasional report from one of the larger general hospitals.

The Bellevue Hospital of New York City probably admits more patients with alcoholic disorders than any other hospital in the country. In 1939 there were 12,114 such admissions at this hospital and, of these, 311 had delirium tremens. In other words, 2.6 per cent, or let us say, roughly 5 in every 200 of these alcoholic patients, suffered from delirium tremens. Not all of these 311 patients were different persons. Some patients may have come in 2 or 3 times during that year. How many of them were repeaters we do not know. So it is better to talk of the number of cases of delirium tremens than of the number of patients with this disease. The large hospitals in New York City admit, at present, approximately 20,000 men and women suffering from some disturbance directly or indirectly due to alcohol; thus in the hospitals of New York City alone there would be at least 520 cases of delirium tremens each year. However, inasmuch as some patients with

delirium tremens are admitted directly to mental hospitals, they would not appear in these statistics. We may assume, therefore, that the number of delirium tremens cases in New York City is somewhat larger, perhaps 550 to 560 each year.

On the other hand, reports from the Boston City Hospital show a much larger percentage of delirium tremens among all patients admitted for disturbances due to alcohol, namely 11 per cent for the period 1934-1935. There are probably great variations in the occurrence of delirium tremens according to locality; these variations may be due to racial differences in the population and to other social factors. Not only does the rate of delirium tremens vary from locality to locality, but the occurrence of chronic alcoholism itself differs greatly in different areas of this country. Thus in some metropolitan areas and industrial centers, the occurrence of chronic alcoholism is decidedly much higher than in smaller towns, and in these it is higher than in farm districts. For the whole country one may reasonably assume that about 4 per cent of all patients admitted to hospitals because of some disturbance from alcohol suffer from delirium tremens.

The occurrence of chronic alcoholism in New York City is definitely much greater than for the whole country, but on the other hand, the proportion of delirium tremens among all chronic alcoholics is perhaps smaller in New York than for the country as a whole. Therefore, one cannot use the fairly complete New York City statistics directly for estimating the occurrence of delirium tremens in the United States. Taking all differences into consideration, as far as we know them, we may assume that 5,000 to 6,000 cases of delirium tremens occur every year in this country. Again, we must say that this does not mean 5,000 to 6,000 different persons.

It has long been observed that delirium tremens occurs much less frequently among women than among men. This fact does not mean that women are less susceptible to the disease. The reason for the difference is that there are far fewer women who are heavy drinkers than men.

CAUSES OF DELIRIUM TREMENS

It has already been stated that delirium tremens occurs only in heavy drinkers and only after the heavy drinking has been continued for many years. Since, however, it does not occur in every heavy drinker, but, as a matter of fact, only in a relatively small number, heavy drinking alone cannot explain delirium tremens. There must be some reason why the majority of heavy drinkers do not develop the disease.

For one thing, it seems that the development of delirium tremens depends, not only on the amount, but also upon the kind of alcoholic beverage which the drinker consumes. Delirium tremens was rather frequent in North and East Germany where there was a great consumption of high proof spirits, but fairly rare in beer drinking Bavaria. Some American physicians state that they have not found delirium tremens among exclusive beer drinkers in this country. On the other hand, the opinion, based on the somewhat dubious information obtained by questioning chronic alcoholics, has been expressed that about 15 per cent of the patients with delirium tremens who came to New York mental hospitals were beer drinkers. Heavy drinkers, when questioned, like to make it appear that they have no really bad alcoholic habits and they frequently say that they only drink a little beer. Physicians who have had much experience with alcoholics know too well how little one can rely on such statements.* On the whole, the best evidence is that the occurrence of delirium tremens is the highest where mainly high proof spirits are consumed with little dilution; it is less frequent in wine drinking countries; and rather rare in beer drinking countries. Since only the drinking of large quantities of alcohol is likely to lead to delirium tremens and since beer contains only a small percentage of alcohol, the extremely large amount of beer necessary to produce delirium tremens is far too great for most habitual drinkers.

In medicine, as in any other science, knowledge is not gained

*See Lay Supplement No. 1.

at once, but develops gradually; consequently views which are held sometimes for lack of better knowledge are found to be erroneous and must be discarded. When the new knowledge becomes available it often takes quite a while until the old, erroneous views are given up. An example of this fact is shown by the idea, still widely held, that delirium tremens develops in drinkers who are suddenly deprived of alcohol. The theory, once held by physicians, was that a man who, in the course of years, had become habituated to the daily use of large amounts of alcohol, could not withstand the shock of a sudden deprivation and so reacted vehemently to it in the form of delirium tremens. Consequently, there has been much hesitation before withdrawing alcohol suddenly from heavy drinkers and in cases of delirium tremens alcohol has even been given for treatment. As the experience with delirium tremens has become greater, it has been established that there is no danger in withdrawal. It has been found in English prisons that of 63,000 drunkards admitted, only 260, that is, only 1 in every 200, developed delirium tremens, although all of the 63,000 had been deprived immediately of alcohol. At the Bellevue Hospital it has also been observed that only a very small number of alcoholic patients developed delirium tremens after admission. Dr. Piker, an American physician, found that 205 of his 275 delirium tremens patients developed the delirium while they were drinking. Dr. Bowman of the Bellevue Hospital has pointed out that a few days before delirium tremens begins, the patients have nausea, are not even able to keep alcohol down, and their abstinence is rather a sign than the cause of the developing of delirium tremens. There is, therefore, no good reason for not withdrawing alcohol suddenly because of the possible development of delirium tremens.

From the present knowledge of alcoholism in general, and of delirium tremens in particular, one may form a picture of the development of delirium tremens by considering the following points.

1. The consumption of large amounts of alcoholic beverages over a period of many years leads to disorders in the digestion and utilization of food. The desire for food—other than alcohol

—is diminished. The body is partially starved. The changes may even affect the utilization of alcohol in the body. As a consequence of the alterations in body chemistry the activities of the liver are interfered with; and the liver, among its many functions, performs the task of making harmless certain poisons which are normally formed in the body. This process is called detoxication. If detoxication by the liver is diminished, poisonous substances accumulate and affect the functions of the body, especially those of the nervous system. To what extent these poisons accumulate, and to what extent they will make themselves felt, depends, among other things, upon the individual's tolerance to alcohol and on his general health.

2. Delirium tremens seems to develop mainly in persons who invariably have an extraordinarily high tolerance for alcohol and who, therefore, can go on drinking heavily for many years without any marked ill effects and who, consequently, believe that they can continue to drink heavily with impunity. Undoubtedly some alteration in body chemistry must be going on in these individuals as it would in those less tolerant to alcohol but they are generally of such robust health that they resist the poisons to a much greater degree than the average heavy drinker.

Recent investigations have shown that patients with delirium tremens come from healthy stock. While among addicts many have a poor heredity, it appears that in the families of delirium tremens patients there are no more mental and nervous diseases than among the population in general. It has also been found that the delirium tremens patients usually lack those queer personality traits which are so common among alcohol addicts.

3. Delirium tremens is commonly accompanied by injuries or infectious diseases, particularly pneumonia. Statistics gathered by physicians with wide experience show that these accompanying diseases and injuries are present in at least 70 out of every 100 patients with delirium tremens. Among the remaining 30 there may be many who have some obscure diseases which are difficult to recognize. These accompanying injuries and diseases do not appear by chance with delirium tremens. This latter disease usually follows in the wake of these diseases and therefore these

injuries and diseases have been called precipitating factors. These diseases place upon the body an additional strain which renders it incapable of continuing the resistance to the injurious effects of the heavy drinking.

From the consideration of these three points we may say that delirium tremens develops mainly in those who drink very large quantities of alcohol over a period of many years and who are of good health until their resistance to chronic alcoholic poisoning is temporarily lowered by the occurrence of a severe injury or infectious disease. This is a fact which all excessive drinkers should keep in mind, and especially those heavy drinkers whose use of alcohol is not customarily limited by any apparent ill effects.

THE TREATMENT OF DELIRIUM TREMENS

ALTHOUGH the origin and development of delirium tremens are not known to an extent which would furnish a sound basis for the treatment of this disorder, nevertheless, great advances have been made in treatment. The most important of these is the recognition that treatment must first of all be directed toward those severe diseases and injuries which usually accompany delirium tremens and which are so easily obscured by the more striking symptoms of that disorder. We have presented here evidence of the great decrease in the mortality from delirium tremens since this fact has been recognized.

Another great advance is in the general care of those with delirium tremens. Formerly they were forcibly restrained and held quiet. Now, in spite of their violence, they are not subject to physical restraint but only carefully guarded against the consequences of their own violence by good nursing care and quieted with sedatives. And in this connection it may be mentioned that physicians have found that morphine is not a good sedative for those with delirium tremens.

The treatment of delirium tremens has also greatly benefited from the knowledge that it is not due to the sudden withdrawal of alcohol, and that the administration of alcohol in delirium tremens is not only unnecessary, but even dangerous.

The latest advance in treatment has come from the knowledge

that, in spite of the so-called "wet brain," the patient with delirium tremens is actually starved for water and for salt and that this condition can be corrected by administering large quantities of salt and fluids.

The poor nutrition of chronic alcoholics makes it advisable to administer vitamins in the treatment of all alcoholic diseases.

While in the general hospital delirium tremens is treated very efficiently, it is, unfortunately, only the disease itself and not the cause which is treated. In the general hospital there is no opportunity to cure the patient of his habit of excessive drinking. It is only the cure of the habit which can protect him against the recurrence of delirium tremens.

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