S. S. Korsakoff's Psychic Disorder in Conjunction with Peripheral Neuritis

A Translation of Korsakoff's Original Article with Brief Comments on the Author and His Contribution to Clinical Medicine

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For a physician, the reading of an original description of a disease is a rewarding experience. Often he finds these classic accounts of disease surprisingly modern in concept and penetrating in clinical perceptiveness. Many of these descriptions are literary as well as medical classics. Unfortunately, certain of these original writings are inaccessible because they are written in a foreign language. The student must depend on a translation in which the spontaneity and contextual richness of the original are often lost. This is most apt to occur when certain passages of these writings are translated in fragments out of total context. In such fragmentary translations, usually made in order to satisfy the momentary needs of a quotation or reference, all the subtler traits and colors of the original are distorted or obliterated. Only a reading of the careful translation of the entire original text of the classic description of a disease entity enables one to understand the development, one might say the ontogeny, of our own contemporary ideas of the disease, and, as a corollary, to discern where errors and misconceptions may have arisen.

These general remarks are particularly pertinent to Korsakoff's description of a unique yet relatively common affection which is now known by the name of Korsakoff's psychosis. Korsakoff wrote in Russian, a language which remains relatively unfamiliar to physicians in other parts of the world. In the course of over half a century many of his original observations and ideas have been misquoted, distorted, or even completely lost in the secondhand treatment of the subject by subsequent writers. It occurred to us that it would be useful to students of clinical medicine, especially to those interested in neurology and psychiatry, to have an English translation of Korsakoff's article of 1889, which represents, in a sense, a final statement of his own views on the

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characteristic mental disorder occurring in conjunction with peripheral polyneuritis.

A few words on Korsakoff himself are appropriate as an introduction. A more detailed biographic sketch by Katzenelenbogen may be found in Haymaker's *Founders of Neurology.* Sergei Sergeievich Korsakoff* (1853-1900) was one of the outstanding Russian clinicians of the nineteenth century. Despite the fact that he died at the age of 46, his contributions to clinical psychiatry were numerous and significant. Besides his classic work on polyneuritic psychosis, he wrote on paranoia and his textbook of psychiatry not only remained a standard textbook for Russian medical students for nearly a quarter of a century after his death, but compared favorably with the best contemporary works in other languages. His lasting fame, however, was acquired by his recognition and masterly description of the mental disorder which now bears his name.

In the years 1887 to 1889 Korsakoff wrote three articles in which he developed his theme. The first of these articles was entitled "The disturbance of psychic activity in alcoholic paralysis and its relation to the disturbance of the psychic sphere in multiple neuritides of nonalcoholic origin." Here, on the basis of observations in 20 patients, he first drew attention to the psychic symptoms that so frequently accompany alcoholic neuropathy. He brought out the idea that the psychic disturbance and the neuropathy represent "two facets of the same disease" . . . . "The pathogenic cause provoking multiple neuritis may affect several parts of the nervous system, central as well as peripheral, and according to where this cause is localized there will be symptoms either of neuritis or of the brain." Because of this close associationship he proposed the name "psychosis associated with polyneuritis," or "polyneuritic psychosis."

It is of interest that the term Korsakoff's psychosis is used today in a restricted sense – connoting a characteristic defect in memory with confabulation. It is apparent, however, from Korsakoff's earliest writings that his patients suffered a much wider range of mental symptoms, including those of delirium and what he termed "irritable weakness" (anxiety, fear, and depression). Memory disturbances were indeed characteristic, but not in all patients, and in some instances were present only as a phase in a mental illness that included the other symptoms as well.

A second article (1889), entitled "A few cases of peculiar cerebropathy associated with multiple neuritis," was largely concerned with the reporting of additional cases. It was in this article that Korsakoff brought out the capital fact which is still not fully appreciated today – that neuropathy need not accompany the characteristic mental syndrome. In his own words: "At times . . . the symptoms of multiple neuritis may be so slight that the whole disease manifests itself exclusively by psychic symptoms." In this article he stated his views on the etiology of the mental illness: "I call this form toxemic, because I consider the disturbance of brain in this form closely connected with some form of toxemia. It is connected with the presence in the blood of some

*In his publications in German, Korsakoff spelled his name with a double "f", following the usage prevailing then in spelling Russian names phonetically rather than in transliteration from Russian spelling – Korsakov.

poisonous substances, some toxins." He suggested the name "cerebropathia psychica toxaemica."

The third article in this series was published in 1889 and is the one which has been translated and reproduced in its entirety below. Lucid of argument, simple and direct in style, it represents the consummation of Korsakoff's ripened clinical experience, and sums up his thoughts on various subtler aspects of the subject.

Psychic Disorder in Conjunction with Multiple Neuritis*

(Psychosis Polyneuritica s. Cerebropathia Psychica Toxaemica)

By Dr. S. S. Korsakoff

In two articles, one published in the *Vestnik Psichiatrii*** in 1887, the other in *Yejenedelnaja Klinicheskaja Gazeta*† this year, I have described a special *form of psychic disorder* which occurs *in conjunction with multiple neuritis*. I consider it necessary once more to draw attention to this form of disorder because in my opinion it is insufficiently known to physicians, and yet it is encountered not only by psychiatrists but also by practitioners of other specialties. I would say even more; cases of this form of disorder most frequently come under the observation not of the psychiatrists but of internists and gynecologists, because the form of psychic disturbance under consideration here usually develops in the course of other diseases — post partum, during acute infections and some chronic diseases. In almost all cases which I happened to observe, symptoms of this form of mental disturbance baffled the attending physician and so a specialist in nervous diseases was called in consultation. However, I must say that this form of psychic disturbance is as yet little known even to the specialists. In any case, in the foreign literature there exists no description of this disorder as a separate entity.

Yet the disease is in itself highly characteristic. To begin with, the conjunction of psychic disorder with manifestations of multiple degenerative neuritis is characteristic. In almost all cases of this disease it is possible to note signs of multiple neuritis. It is true that in some cases the signs of multiple neuritis are mild. But in other cases the manifestations of neuritis — paralyses, contractures, muscular atrophies, pains—are so prominent that they even overshadow the psychic disorder. Then, in addition to being associated with manifestation of neuritis, the symptom complex of psychic disorder is in itself characteristic; especially characteristic is a derangement of memory and of the association of ideas. All this makes the disease so peculiar that one may wonder why it had not been hitherto described. I explain this by the fact that, as I have said, this disease usually occurs in the course of other diseases to which all the attention of the physician is directed and thus the complications occurring in the nervous system are not properly appraised.

In fact, it is often difficult to notice the beginning of the disease. Because usually it complicates other grave diseases, such as for example, postpartum affections, typhoid, and the like, the initial symptoms of this disease are easily mistaken for natural weakness, exhaustion of the nervous system, or cerebral anemia. The story usually begins with vomiting which may sometimes be very persistent and then extreme weakness develops. If previously the patient was able to walk, he begins to stagger, the gait becomes insecure, and finally he cannot get up at all and is obliged to remain in bed. Then paralyses of the lower extremities become noticeable, affecting particularly frequently the extensors of the thighs and movements of the toes and ankle. Quite

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†S. S. Korsakoff: A few cases of peculiar cerebropathy in the course of multiple neuritis. No. 5, 6, 7–1889.

frequently, following paralysis of the legs, the paralysis occurs also in the arms in which movements of wrists and fingers are first affected. Frequently along with these symptoms pains in the legs and arms occur, marked wasting of muscles develops, electric excitability of muscles becomes lost, contractures develop, and sometimes edema occurs. Usually the patellar reflexes disappear early. In severe cases complete paralysis of the extremities and even of the trunk, bladder, and diaphragm may develop and, as a result of disturbance of the activity of the vagus nerve, paralysis of the heart may occur.

Simultaneously with these symptoms representing the manifestations of multiple degenerative neuritis, symptoms of psychic disorder also develop. At first these are not striking and are considered to be signs of simple irritability or depression of the activity of the nervous system in relation to general weakness. In fact, the patients at first appear either extremely capricious and demanding or, on the contrary, very apathetic and listless as is generally true of very tired people. Later, however, some symptoms usually appear which compel one to admit that he is not dealing here with an ordinary form of nervous weakness. These symptoms appear either in the form of an intolerable irritability and an extreme restlessness, or in the form of attacks of violence with confusion, or in the form of an extreme depression of psychic activity with a profound impairment of memory. As one scrutinizes attentively the psychic symptoms one may then note many interesting details which are highly characteristic for the diagnosis of the disease. Properly speaking, the psychic symptoms do not manifest themselves in the same manner in all cases of the disease which I am describing. In some they are more prominent, in others less; in some a certain set of features predominates, in others, another. Summing up the observations of many cases of this disease, one may conclude that in some of them the predominant features are increased irritability and agitation, with relatively good preservation of consciousness; in other cases, on the contrary, confusion predominates, either apathetic or associated with excitement; and finally, in a third group, a characteristic disturbance of memory – a peculiar form of amnesia – stands in the foreground.

When the psychic disorder consists of a heightened impressionability and irritability, then it manifests itself mostly as an extraordinary agitation, anxiety, and indefinable fear. The patient cannot rid himself of obsessive anxious thoughts; he expects something terrible to happen – either death, or some kind of seizure, or he himself does not know what; he is afraid to be alone, constantly calls for people to stand by him, groans, and laments his fate. At times there are wild shouts, hysterical-like episodes during which the patient is capricious, upbraids the people around him, throws things at members of his household, beats his chest, and so on. The agitation is particularly severe at night; patients are usually almost sleepless and disturb the sleep of others; they constantly call for help, demand that someone stay with them, help them to change position, entertain them, and so on.

With all that, consciousness not infrequently remains fairly clear for a long time. However, in many instances, after the first days of agitation a considerable confusion appears: the patient begins to mix words, he cannot speak coherently, and confuses facts. Day after day the confusion increases. The patient begins to tell implausible stories about himself, tells of his unusual voyages, confuses old recollections with recent events, is unaware of where he is and who are the people around him. Sometimes in addition, there occur illusions of sight and hearing which confuse the patient still further. At times in this state of confusion the patient is perfectly calm, while at other times he is restless. The restlessness occurs most commonly toward evening: the patient begins to be agitated, becomes demanding, makes preparations to go away somewhere, and grows angry at not being given the effects which he requests. Sometimes the agitation reaches an extreme degree and may amount to an almost complete loss of consciousness.

Together with the confusion, nearly always a profound disorder of memory is observed, although at times the disorder of memory occurs in pure form. In such instances the disorder of memory manifests

itself in an extraordinarily peculiar amnesia, in which the memory of recent events, those which just happened, is chiefly disturbed, whereas the remote past is remembered fairly well. Mostly the amnesia of this particular type develops after prodromal agitation with confusion. This excitement may last several days and then the patient again becomes calm and his consciousness clears; he appears to be in better possession of his faculties, he receives information correctly, and yet his memory remains deeply affected. This reveals itself primarily in that the patient constantly asks the same questions and repeats the same stories. At first, during conversation with such a patient, it is difficult to note the presence of psychic disorder; the patient gives the impression of a person in complete possession of his faculties; he reasons about everything perfectly well, draws correct deductions from given premises, makes witty remarks, plays chess or a game of cards, in a word, comports himself as a mentally sound person. Only after a long conversation with the patient, one may note that at times he utterly confuses events and that he remembers absolutely nothing of what goes on around him: he does not remember whether he had his dinner, whether he was out of bed. On occasion the patient forgets what happened to him just an instant ago: you came in, conversed with him, and stepped out for one minute; then you come in again and the patient has absolutely no recollection that you had already been with him. Patients of this type may read the same page over and again sometimes for hours, because they are absolutely unable to remember what they have read. In conversation they may repeat the same thing 20 times, remaining wholly unaware that they are repeating the same thing in absolutely stereotyped expressions. It often happens that the patient is unable to remember those persons whom he met only during the illness, for example, his attending physician or nurse, so that each time he sees them, even though seeing them constantly, he swears that he sees them for the first time.

With all this, the remarkable fact is that, forgetting all events which have just occurred, the patients usually remember quite accurately the past events which occurred long before the illness. What is forgotten usually proves to be everything that happened during the illness and a short time before the beginning of the illness. Such is the case in the more typical instances of the disease; in others, even the memory of remote events may also be disturbed.

It must be noted that in general, depending on the degree of the illness, that is, the depth of the affection, the amnestic manifestations vary. In milder degrees for example, there may be no complete abrogation of the memory of recent events, only the facts are remembered vaguely, unclearly. In some cases the facts themselves are remembered, but not the time when they occurred. In other cases the forgetfulness affects chiefly the patients' own thought processes, and as a result they do not remember what they have said, and so they constantly repeat the same question. At times, all facts are remembered, yet to recover traces of these facts in their memory, to recall the forgotten, the patients need specially favorable conditions. Inversely, in very severe cases the amnesia is much more profound; here, not only memory of recent events is lost, but also that of the long past. In such cases it most frequently happens that present events disappear from the patients' memory instantly, and instead, some events of decades ago are recollected – as a result the patients confuse old recollections with the present impressions. Thus, they may believe themselves to be in the setting (or circumstances) in which they were some 30 years ago, and mistake persons who are around them now for people who were around them at that time but who are now perhaps even dead. In still more severe forms of amnesia, the memory of facts is completely lost, even the memory of words; the patient forgets his own name and instead of words utters broken sounds. In severe forms of amnesia the confusion of consciousness is greater, and in the extremely severe cases a state of complete unconsciousness may occur.

In this disease the amnesia is not stationary; it may wax and wane. These fluctuations in its degree depend sometimes on incidental circumstances such as the effort of attention, the degree of distress, and so forth. The memory often improves, yet

with fatigue it again becomes worse. But of course, most frequently the intensity of the amnesia depends on the general course of the disease and on the depth of the affection, so that if the disease progresses toward improvement the amnesia diminishes and may entirely disappear; if the disease grows worse, however, the amnesia becomes deeper and deeper and the signs of profound confusion are added to the symptoms of amnesia.

In regard to the confusion, it must be noted that in this form of amnesia a slight degree of confusion is frequently present. This confusion does not involve that which the patient perceives at the present moment but affects only the recollection of the past events. Thus, when asked to tell how he has been spending his time, the patient would very frequently relate a story altogether different from that which actually occurred, for example, he would tell that yesterday he took a ride in town, whereas in fact he has been in bed for two months, or he would tell of conversations which have never occurred, and so forth. On occasion, such patients invent some fiction and constantly repeat it, so that a peculiar delirium develops, rooted in false recollections (pseudo-reminiscences).

Such are the more characteristic traits of the psychic disorder observed in patients suffering this disease. As I have said, along with psychic symptoms, there exist symptoms of multiple degenerative neuritis in the form of paralyses of the lower and sometimes of the upper extremities. Yet it must be particularly noted that symptoms of multiple neuritis are far from being obvious in all cases. There occur instances in which there exist only a hint of these symptoms in the form of slight pains in the legs and unsteadiness of gait. Even the patellar reflexes do not always disappear; sometimes they may even be increased or remain unchanged. Yet, on careful examination some signs of neuritis will always be found, and this will help to establish the diagnosis of the psychic affection.

In this form of the disease, beside manifestations of neuritis there usually exist signs of a disturbance of the entire organism. Thus, almost always there is severe emaciation, frequently there is persistent vomiting and reduced elimination of urine which is as red as the strongest tea. Not infrequently there are manifestations of myositis, sometimes there is a disturbance of cardiac activity (irregular pulse), sometimes edema develops, in women menstruations cease, sometimes a slight rise of temperature occurs, and not infrequently, there is a tendency to pleuritis, and so on.

Beside neuritis and signs of cerebral disturbances, not infrequently there also occur signs of involvement of the spinal cord and of the medulla oblongata (disturbances of speech, disturbance of swallowing); sometimes there are ophthalmoplegia externa, nystagmus, and like manifestations.

The course of the disease and its outcome depend on the intensity of the disease and on the conditions under which it develops. As I have already said, the disease often develops in the course of other acute and chronic illnesses. Not infrequently it occurs in chronic alcoholism and in various other intoxications in general.

Depending on the conditions under which the disease develops, the onset and the course vary. Thus, in alcoholism, the disease frequently begins with symptoms resembling delirium tremens and then follow paralyses and characteristic disturbances of memory. Not infrequently, an onset similar to this occurs also in the postpartum affections: suddenly there occurs an attack of panphobia and intense excitement followed by confusion with disturbance of memory and other symptoms. In other cases, especially in extremely exhausted patients, the disease steals on unnoticeably. Without a sharply demarcated onset there appears a gradually increasing forgetfulness and then follows confusion, which may reach profound degrees.

The outcome also depends on the intensity of the disease and the conditions under which it develops. If the cause of the disease is removable, then not infrequently the outcome is favorable and recovery occurs, even though, it is true, only after a fairly long period of several months, or, even more frequently, after several years. If, however, the cause of the disease is not removable, as, for example, when the disease has developed on the background of tuberculous or cancerous cachexia, then the out-

come in most instances is lamentable. The outcome may likewise be fatal if the intensity of the disease is great and the resistance of the organism weak.

And so, the course and outcome of the disease depend to a significant degree on its etiology, and the etiology of this form of disease is identical with that of multiple neuritis. Thus, almost anything which can cause multiple neuritis may also cause this form of psychic disorder. Inasmuch as multiple neuritis is particularly frequent in drinkers, this form of disorder occurs very frequently in alcoholic neuritis or in alcohol paralysis. In this disease, the psychic disorder which interests us here had already been noted a long time ago by M. Huss, yet all the authors have seen in the psychic disorder nothing closely connected with the neuritis, but have considered the psychosis as a mere complication of the disease due to alcoholism.* Nevertheless, I have shown in my first article on this subject that the very same psychic disorder also occurs in those forms of multiple neuritis in the etiology of which alcohol plays no role. It is precisely this fact which compelled me to connect this form of psychic disorder with multiple neuritis in general, and to look for conditions which provoke it under the same circumstances which also provoke multiple neuritis. Up to the present, however, if one discounts those eight or nine cases of multiple neuritis in which a disturbance of intellect has only briefly been mentioned, there appears in the literature no description of mental disturbances associated with neuritis. I confess it surprises me that to this time there exist no descriptions of cases of nonalcoholic multiple neuritis with sharply manifested psychic disturbances, because I see such cases not infrequently, and now can add several other observations to those which have already been published.

In my articles quoted above, the following cases of multiple neuritis of nonalcoholic origin have been described:

1. A 28 year old woman. *After the birth of a macerated fetus*, there developed a picture of multiple neuritis (paralysis of lower and upper extremities, extremely severe pains, atrophy of muscles, contractures, and so on) and along with this a psychic disturbance set in, beginning with panphobia, extreme anxiety, irritability, attacks of violent delirium, and disturbance of memory. The anxiety subsided after some nine months, while disturbance of memory, gradually diminishing, remained for several years. The paralyses also diminished, but a complete recovery never occurred. The patient died suddenly eight years after the beginning of the illness.

2. A 22 year old woman. Post partum there developed *a parametritis with high fever*. Later there appeared symptoms of severe multiple neuritis (paralyses of upper and lower extremities, pain, atrophy of muscles, contracture) and along with this psychic disturbance set in with confusion and a characteristic disorder of memory. The psychic disturbance subsided in the course of a few months while paralyses diminished very slowly in the course of several years. A complete recovery has not yet taken place.

3. A 28 year old married woman. In October 1884 she became ill with an infection of the pelvic organs which remained without an exact diagnosis and which provoked a high fever (*purulent parametritis was presumed*). In December symptoms of multiple neuritis appeared (paralysis of legs, paresis of arms, atrophy of muscles, contractures, pains). Along with this the psychic disturbance developed: capriciousness, obstinacy, later profound disturbance of memory, and at times attacks of violence with hallucinations and delirious ideas. The psychic disturbance subsided in five months, while paralyses disappeared only in the second year after the beginning of the illness.

4. A 19 year old girl. In August 1885, after a cold, there developed pain in the abdomen, fever, and persistent vomiting and then followed manifestations of multiple neuritis with *multiple myositis* (extreme emaciation, contractures, paralyses). Together with this there was a severe psychic disturbance manifested by profound confusion, incoherence of ideas, excitement, and profound loss of memory. The psychic disorder subsided a year later, whereas movements were completely recovered within three years.

5. A 40 year old man. Following typhus there developed neuritis (pains in various nerve trunks) and profound disturbance of memory of recent past with preservation of lucid consciousness. The multiple neuritis soon disappeared. The disturbance of memory persisted for a long time, although it gradually diminished.

6. A 65 year old man. In July 1886 there

*As a mere manifestation of a chronic alcoholic intoxication (Transl.).

developed symptoms of *intestinal obstruction* (fecal vomiting, persistent constipation, abdominal distention). Within a week after the onset of the illness there developed a gradually increasing impairment of memory followed by profound confusion. There was weakness of the legs, pain on pressure of the nerves, and loss of tendon reflexes. Death occurred one and one-half months after the onset of the illness.

7. A woman, about 30 years old. For a long time she suffered of Basedow's disease and lately of *pulmonary tuberculosis;* furthermore, she had tapeworm. After taking extr. filic. maris there developed persistent vomiting followed by psychic disturbance with intense agitation, acute impairment of memory, and confusion. Along with this there was unsteadiness of gait and depression of patellar reflexes. The patient died about one and a half months after the onset of the illness.

8. A 60 year old man. *Diabetes mellitus.* Since July 1880 there was vomiting, unsteadiness of gait, and gradually increasing weakness of legs with loss of tendon reflexes. Together with this there developed a profound disturbance of memory and reasoning. Improvement began six months after the onset of the illness, and after a year a complete recovery from nervous disorder occurred.

9. A 46 year old maiden. Following an attack of jaundice vomiting developed and two months later a comatose state following which there appeared a profound memory disturbance and confusion. Along with this there were symptoms of multiple neuritis (contractures in toes, pain in nerves and muscles, and other manifestations). The illness almost subsided within two years.

10. A 37 year old married woman. After typhus(?) tuberculous pneumonia developed. In the course of this illness a picture of multiple neuritis appeared (paralysis of upper and lower extremities with atrophy and contracture). Together with this there was a profound confusion and a severe impairment of memory. The patient died a year after the onset of paralyses.

11. A 45 year old woman. She was ill for four weeks with *typhoid fever.* After its termination there developed a profound loss of strength and vomiting followed by an acute disturbance of memory, confusion, and nocturnal agitation. The symptoms of neuritis were slight: unsteadiness of gait and tenderness of nerve trunks on pressure. Symptoms of neuritis disappeared rapidly whereas weakness of memory, while gradually diminishing, persists for the second year.

12. A 40 year old man who had lues. At present there is lymphadenoma with elevation of temperature at times (possibly malaria). At the end of August 1888 there developed a disturbance of memory. Later attacks of violence occurred and these were followed by severe disturbance of association of ideas with a profound impairment of memory. Together with this there was a gradually increasing weakness of the lower and upper extremities and a loss of the patellar reflexes. The patient died one and a half months after the beginning of nervous symptoms.

13. A 46 year old woman. *Fibroma uteri.* Signs of disintegration of the neoplasm had been noted. Together with this there appeared vomiting, profound disturbance of memory, and confusion. Simultaneously there was a gradually increasing weakness, an absence of patellar reflexes, and persistent vomiting. The patient died two weeks after the onset of nervous symptoms.

14. A 62 year old woman with some type of abdominal tumor developed, without evident cause, a persistent vomiting which was followed by apathy, confusion, and a profound disturbance of memory. Together with this there was weakness of the legs, wasting of muscles, tenderness on pressure of the muscles and nerves, and a profound depression of cardiac activity. Two weeks after the onset of this illness there was improvement and eventually a complete recovery.

Such are 14 cases in which I observed this particular psychic disorder combined with multiple neuritis of nonalcoholic origin. (I do not speak of cases of this psychic disturbance associated with alcoholic neuritis – of such I have not less than 30). In all these cases the psychic disorder was sharply in evidence. As to the symptoms of multiple neuritis, these were variable. Thus in some, the picture of multiple neuritis was complete; in others, on the contrary, the manifestations of neuritis were insignificant in comparison to the psychic symptoms. Apparently there also occur such cases in which in the presence of the sharply manifested psychic disorder of the type described above the symptoms of neuritis are almost unnoticeable and consist only of slight pains in the extremities. In my opinion this depends on the circumstance that in some cases the pathogenic agents provoking the psychic disorder and the multiple neuritis cause both, acting equally upon the brain and peripheral nerves; in others these agents act more on the brain,

and in others again almost exclusively on peripheral nerves. Along with this, in all probability, involvement of various parts of the spinal cord and of the medulla oblongata occurs not infrequently.

What may be the pathogenic agents provoking the disease which I am describing? If one examines closely the etiology of the cases described above, then one may note that the causes of the disease are many: here we find the delivery of a macerated fetus, a postpartum septic process, a fecal impaction, typhus, tuberculosis, diabetes, jaundice, lymphadenoma, necrosis of a neoplasm, and finally, altogether unknown causes. If one adds to all the above the fact that the same form of the disease is observed in alcoholism, and also apparently after poisoning with arsenic, lead, hydrogen disulphide, carbon monoxide, ergot, spoiled corn, and so on, then one sees that the causes which can evoke this disease are very diverse. However, if one weighs carefully the significance of these causes, then their action may be reduced to an incorrect constitution of the blood, developing under their influence and leading to an accumulation in the blood of toxic substances which poison the central nervous system — in some cases peripheral, in others central, and most frequently both.

What these toxic substances may be is difficult to say, yet in all probability they are some ptomaines or leukomaines either entering from without or developing under appropriate conditions within the organism itself (typhoid, tuberculosis, fecal impaction, macerated fetus, and so on). And this is why I call this disease *toxemic cerebropathy* (cerebropathia psychica toxemica). One might also call it *psychosis polyneuritica,* but using this designation one must remember that an identical psychic disturbance may occur also in cases in which the symptoms of multiple degenerative neuritis may be very slight or even entirely wanting.

Insofar as the pathologic anatomy of this disease is concerned, this is not yet sufficiently clarified. However, the presence of the multiple neuritis in this form of the disease can be considered as proved beyond doubt. This year, a female patient in whom the described disorder was very sharply expressed died in the Moscow Psychiatric Clinic. She was found to have had a very severe form of multiple degenerative neuritis. The study of the brain and spinal cord is not yet completed, and therefore I am postponing the description of this case for another occasion. At present I will cite two more cases of this affection which I had occasion to observe lately.

The patient, a 24 year old married woman, had several children; the deliveries did not always go well: once there was postpartum fever although without particular disturbance of the nervous system. The patient was always an impressionable, anemic, nervous woman. She hardly ever drank. The present illness began about mid-October of 1888. On October 11 she gave birth to a full term baby, but the next day an elevation of temperature appeared and a postpartum suppurative parametritis set in. The illness has continued to the present. In the genital sphere there were at first only the manifestations of parametritis, but later abscesses appeared in various parts of the body (in the breasts and legs). In November she had penumonia. All this reduced the patient to a state of profound exhaustion and maintained the temperature at a level of about 39° C. until very recently. Only at the end of December the temperature became nearly normal and with this most of the manifestations of parametritis and pneumonia disappeared. There remains only the abscess of the hip which is being constantly treated with an antiseptic dressing.

By the end of October, in addition to the signs of parametritis and pyemia, symptoms of involvement of the nervous system appeared. The patient began to have delirium, she spoke incoherently, and at times was agitated. The character of her psychosis was peculiar. According to the statement of the attending physician, at times she spoke entirely rationally, gave a correct account of everything, and did not confuse anything, so that it was difficult to notice any psychic abnormality; but then, suddenly confusion would begin, delirium would develop, the patient would become restless and beset with fear, she would hallucinate, see dogs and monsters, and attempt to jump out of bed and to tear off her dressings. These attacks usually occurred toward evening when the patient generally became more agitated and alarmed; she constantly summoned people, became tormented by fear, and then an attack of intense anxiety with illusions and hallucinations developed. At first the patient had difficulty in falling asleep and frequently awoke. Awakening, she became restless, again summoned people, shouted, and then again fell asleep for

a short while only to wake up in the same state of anguish. So it continued throughout the whole of November. In December some improvement began: the attacks of violence diminished, she became quieter and much more rational. But, with this improvement the enfeeblement of memory became all the more noticeable. The patient would forget who had visited her; she would forget what she herself had said and so she would constantly repeat one and the same thing, tell the same stories time and again, and ask the same questions. Her sleep continued to be irregular. At times there was vomiting; at times the patient complained of pain in the sacral region; for a time she could hear almost nothing and lost her sense of smell. I saw the patient on December 30, 1888 in consultation with her attending physician, Dr. M. D. Lebedev, and found her in the following state:

Status praesens, December 30: At present there is no great physical weakness which was present formerly. During my visit the patient is able to sit in an arm chair and to hold herself in the sitting position; she converses willingly and speaks fairly loudly. According to Dr. Lebedev, the pelvic process has already terminated. There remains an abscess of the hip which discharges freely. The temperature has been normal for several days. Lately there was no vomiting; appetite is satisfactory, stomach likewise. On examination of the nervous system it is found that although the legs are somewhat weak, there is, however, no paralysis either of the arms or of the legs; the mechanical contractility of muscles is preserved; the muscles are quite wasted. At present the patient hears everything well, recognizes taste and odor, and also sees well; sensations are preserved everywhere. Pressure on nerves (cruralis, ischiaticus, radialis) is associated with considerable tenderness. At times there are spontaneous pains in the legs. However, pains do not disturb the patient as much as the intense pruritus over the lower legs. Patellar reflexes are present but very weak. There is a barely noticeable edema of the ankles. During my visit, at first no clear-cut psychic abnormalities could be noticed. The fact of the matter is, however, that in the presence of a new person the patient generally performs better than she does with familiar people. Because of this her answers to my questions were for the most part fairly correct. However, on continuing the conversation with the patient for a longer time, it becomes evident that her memory is severely affected: she is completely unable to remember what she had been doing today, for example, whether or not she ate anything; she is unable to recollect whether anyone visited her or not. Nevertheless one cannot say that the loss of memory is complete; thus, at times the patient remembers events that occurred today and yesterday, but is unable to specify the time of these events. The patient forgets particularly easily that which she herself had said, and as a result of this she frequently repeats the same thing time and again and asks the same questions.

That which happened before her illness the patient remembers well. She remembers her illness vaguely, although she does remember that she was as though she were out of her mind. She remembers the most recent events most poorly. Nevertheless the loss of memory does not go so far as to cause her to attribute to herself what has never happened. For example, she does not say, as other patients of this type do, that she went out yesterday or today; on the contrary, she realizes that she has been sick for a long time, even though she has forgotten whether she had a baby in October or in November.

From the accounts of those around her, one may judge that toward evening the patient even at present becomes more agitated, more restless, more anguished; she sleeps fretfully, frequently awakens, and summons people. However, lately she has had no hallucinations.

I have not seen the patient since then, but I have heard from Dr. Lebedev that she gradually improved, and toward the spring of 1889 she was completely well: she was able to walk, gained weight, and her memory was restored.

In this case the manifestations of neuritis were comparatively mild. They consisted of pains in the extremities, pruritus, and slight weakness in the legs. The psychic disorder however was very characteristic. This case proves among other things that in many cases the psychic disturbance is incomparably more pronounced than the manifestations of neuritis, which, considered by themselves, can be easily overlooked. It seems to me that such cases fully justify the isolation of this form of psychosis into a separate entity.

In the following case, which I had occasion to see through the kindness of my esteemed colleague, S. N. Zarembo, the neuritis was extraordinarily severe.

The patient was a married woman about 40 years old. She hardly ever drank. She was a lively, active woman who for a fairly long time suffered of rheumatoid arthritis. In 1887 she went to Saki,* later took sea baths, and had a good winter 1887-88.

*A watering resort in the Caucasus (Transl.).

Early in August 1888 she was entirely well. About mid-August, following a cold, she was taken ill with parametritis (pains in the lower abdomen, fever, and other objective symptoms of parametritis). In mid-September, in addition to these manifestations, there appeared symptoms of peritonitis. There were extremely severe pains in the abdomen, vomiting, the temperature rose to 40° C. and remained so for a fairly long time. Dr. S. N. Zarembo was not in Moscow at the time, and for this reason he was unable to tell me what precisely was the matter with this patient. In addition to peritonitis there were manifestations of left-sided pleuritis, and finally there was a left-sided suppurative parotitis which had to be opened. Dr. S. N. Zarembo saw the patient about October 22, 1888, soon after the opening of the parotitis. At that time there was parametrial exudate, a high fever of about 39° C. and very pronounced weakness; at times there was vomiting. On the psychic side he was surprised by the listlessness and apathy of the patient, entirely out of keeping with her usual self. In November the paralytic manifestations began to develop; at first the ankles became weak, the patellar reflexes disappeared, and then the paralysis of the lower extremities became complete. The arm and trunk muscles also became paralyzed. The muscles became extremely wasted and contractures of the flexors developed. At times the patient had attacks of suffocation. At times the heart action became so feeble, that in December, January, and February there was a daily apprehension that the patient might die. In November red spots began to appear on the buttocks and sacrum, which in such cases not infrequently precede the appearance of paralyses. However, bed sores did not develop, possibly because the patient was placed on a rubber mattress filled with cold water.

Simultaneously with the physical symptoms the psychic symptoms also developed. Since the end of October the patient showed noticeable listlessness, apathy, and indifference and in the middle of November there suddenly appeared violent delirium and confusion. The patient shouted, swore, and demanded that she be permitted to dress so she could go to Strelna.* She did not recognize her surroundings and thought that those about her were poisoners. At times she sang and had bouts of laughter. Early in December the incoherent and extremely agitated delirium began to subside, but the confusion and the disturbance of memory persisted for a long time. She did not remember where she was to almost the end of April, she did not remember the names of her nurses, and rapidly forgot everything that happened to her. At night she was extremely agitated, almost sleepless, constantly groaned, called for people, and so forth. However, her memory gradually improved and in May 1889 the patient began to remember her surroundings fairly well.

The manifestations of parametritis also gradually improved and toward May 1889 had almost disappeared. The temperature, which for a long time had remained around 39° C., began to decline in the spring of 1889 and finally became normal, although from time to time, every week or two, there were elevations to 38° C. In May the temperature did not rise above 37.7° C.

I saw the patient June 1, 1889. At that time the psychic symptoms were already slight; the patient knew clearly where she was, who were about her, remembered fairly well what was going on, and related correctly details of her illness. However, in a long conversation one could note anomalies in the psychic sphere. These anomalies chiefly concerned the memory. Thus, in telling of something about the past, the patient would suddenly confuse events and would introduce the events related to one period into the story about another period. For example, telling of a trip she had made to Finland before her illness and describing her voyage in fair detail, the patient mixed into the story her recollections of Crimea, and so it turned out that in Finland people always eat lamb and the inhabitants are Tatars. When I objected, however, she promptly agreed that she had confused the facts. Such muddling of facts not infrequently occurs in this patient, but in most instances she herself notices them. Furthermore, she frequently gives false information in regard to her past illness. Thus, she assures me that she well remembers a physician who came to see her in consultation and describes him as having black hair, whereas he is completely gray. In general the patient does not remember clearly that which occurred during the time of the illness, although gradually the events of her illness become restored in her memory. After a conversation lasting an hour, the patient becomes very listless; one can see that she becomes extremely fatigued mentally. Fatigue in general has a marked effect on the patient, increasing the disorder of memory. At present the patient sleeps satisfactorily, whereas a few weeks ago she slept fitfully and constantly summoned people.

In regard to the peripheral nervous system, the disease is still sharply manifest. In the legs there is paralysis and contracture in flexion at the hip and knee joints. Extension of the knees

*A popular amusement park in the Moscow suburb of that name (Transl.).

to more than 90° is impossible. There are barely noticeable movements in the ankles and toes and barely noticeable extension of the knees. Flexion of the knees is somewhat stronger. Flexion, extension, adduction, and abduction at the hip are possible but extremely limited. The muscles are extremely wasted; generally the legs appear almost deprived of their soft parts, as if only skin and bone and a small amount of flabby flesh in the calves and posterior aspect of the thighs remained.

There is no anesthesia. Pressure on the calves and anterior and posterior aspects of the thighs is extremely painful. Pressure on the nn. cruralis, ischiadicus, and peroneus are also extremely painful. The patellar reflexes are absent. The movements in the arms are grossly disturbed. Contracture is also noticeable in the joints of the shoulder, elbow, wrist, and fingers. The fingers in the left hand had been flexed so that extension was impossible; now however it is possible to extend them. Active movements are very weak and limited. Movements of the right hand are somewhat better. Muscles are extremely thin. Mechanical contractility is noticeable in the right hand.

Trunk muscles are also weak; the patient is unable to turn over, but lately she began to sit. Pressure on the muscles and nerves throughout the body is painful. In the face there is nothing particular. Vision is fair, although the patient complains that at times there is clouding and blurring of her eyes. The pulse is regular but weak. Vomiting has been absent for a long time. Respiration is now free; there is no paralysis of the diaphragm. Urine is voided freely; now it is clear, whereas formerly it was as dark as strong tea; it never contained albumin or sugar. At times the patient has pains in the legs – crushing and aching. At these times she feels worse; she sleeps more poorly and is more agitated. Appetite is generally good, at times even excessive. Generally, the patient is apparently improving.

In this case there were characteristic psychic manifestations as well as characteristic signs of multiple neuritis. It is possible that simultaneously there were present also manifestations of multiple myositis. Generally, this form of the disease can be associated not only with multiple neuritis but also with multiple myositis. This is entirely understandable; lately more and more cases are being described in which together with primary multiple neuritis, there also exists primary multiple myositis. This depends, of course, on the fact that both affections are due to the influence on the tissues of the same pathogenic agents, that is, toxic substances. In one group of cases these toxic substances will affect with predilection the peripheral nervous system and then a picture of multiple neuritis will develop; in other cases the muscular system will be affected and then multiple myositis will appear; if, however, the same toxic substances will act on the cerebrum, then the cerebropathy which I am describing will obtain.

I shall end the description of these two cases with a remark that in both the disease developed in women in the course of affections of the pelvic organs which had apparently provoked a general purulent infection. Among my observations there are not a few such cases with an analogous etiology. This compels me to assume that the gynecologists probably must have many occasions to observe such cases and that the cerebropathy described by me is particularly frequently associated with the neuritides which develop following affections of the pelvic organs. Apparently not all the pathogenic causes which provoke the neuritides have the tendency to provoke also the psychic disorder described here. Thus, I have never seen it in neuritides following diphtheria. Contrariwise, in neuritides of alcoholic origin this disorder is nearly always present. Similarly, it occurs not infrequently in the neuritides following pelvic affections and especially such as are accompanied by symptoms of putrid or purulent infection.

CONCLUDING REMARKS

Sixty-five years have elapsed since this article was written. Over these years many of the fine clinical points made by Korsakoff have been forgotten. Despite this passage of time, only a few points of significance concerning the pathology and etiology of the disease are lacking in the original description. Korsakoff's writings do not include a description of the pathologic changes in the brain.

Actually, however, the neuropathologic substratum of Korsakoff's psychosis still awaits comprehensive study. The few available pathologic studies indicate that the most consistent changes are found in the walls and floor of the third ventricle. Although Korsakoff casually mentioned that brainstem signs occurred in some of his patients, he was unaware of the important association of the mental and the neuritic symptoms which he so clearly described, with the ophthalmoplegia and ataxia described by Wernicke in 1881. Even had he been aware of the close relationship of his syndrome to that of Wernicke's encephalopathy, the possible nutritional etiology of the mental and neuritic symptoms would not have suggested itself therefrom, since Wernicke's syndrome was then regarded as inflammatory in origin. In fact, the entire concept of deprivation in the etiology of disease – the notion that a disease may arise from a lack of a specific nutritional substance rather than from an excess of some deleterious substance (toxin) – had not yet gained credence in the medical thought of Korsakoff's time. Nevertheless, in speculating on the etiology of the clinical syndrome he described, Korsakoff formulated a remarkably modern concept of this disorder. He recognized that the psychiatric and somatic symptoms and the central and peripheral neurologic signs of the disorder were merely different manifestations of a common pathogenic mechanism, and, therefore, probably of the same etiologic origin. In this perceptive generalization, he presaged the concept of the nutritional etiology of disease of the nervous system of which his syndrome is a major manifestation. "In this disease, one and the same pathogenic cause affects not only the peripheral nerves, but also the spinal cord and the brain, and, therefore, to call it exclusively by the name of that system which is affected most frequently is, though practically convenient, nevertheless incorrect. Of course, until we know the nature of the disease, we must of necessity maintain its name, which is, even though incorrect, yet fairly characteristic. Perhaps further researches will show that this disease is not only a disease of the nervous system but also a general disease, and one most probably depending on the development in the organism of some noxious substance disturbing the nutrition of all tissues, but chiefly the nervous system. If we will learn that and if we will learn the nature of this disease, we will be compelled to change the name of multiple neuritis for a more accurate one, and then of course an appropriate name will also be found for this form of psychosis."