

**MINISTRY OF HEALTH OF UKRAINE**  
**Kharkiv National Medical University**

**"ORGANIC AND SYMPTOMATIC MENTAL DISORDERS"**

**MANUAL RECOMMENDATIONS**  
**for medical students on discipline**  
**"Psychiatry and Narcology"**

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This group of pathology includes mental disorders caused by constant or transitory cerebral disturbances which can be either primary, i.e. cerebral proper, or secondary, i.e. called forth by the causes producing their effect on various organs and systems of the body, including the brain. Psychopathological manifestations reflect either organic changes in the brain cells or a metabolic disturbance in the cerebral structures.

The most typical psychopathological manifestations of an organic pathology of the brain are *intellectual-mnemonic disturbances* and *different variants of the asthenic syndrome*, on whose background some patients develop psychoses (in an acute pathology, mostly disturbances of consciousness, in a chronic one – affective or delirious syndromes).

The psychoses caused by an organic pathology are symptomatic, i.e. they represent one of the signs of this kind of a pathology. This circumstance should be taken into consideration while making a prognosis and devising therapeutic tactics for such patients.

### **Classification of organic and symptomatic mental disorders (by the nosological principle)**

- I. Exogenies
  - 1 Infectious
  - 2 Traumatic
  - 3 Caused by ecologically unfavourable factors
- II. Brain tumours
- III. Somatogenies and endocrinopathies
- IV. Vascular diseases
- V. Atrophic diseases of the brain

### **Mental disorders in general and cerebral infections**

Mental disorders develop practically in all acute and chronic infections, but their clinical picture depends upon many factors, including the characteristic of an infectious agent (virulence and neurotropism of the causative agent), the character of an impairment of the brain structure, acuity of the pathological process, localization of the morbid process, premorbid peculiarities of the patient's personality, his age, sex, etc.

Probability of the development of psychoses in infectious diseases depends upon a complex of factors, first of all the patient's individual resistance to the effect of unfavourable exogenous influences and peculiarities of the basic

infectious disease, while the clinical picture of mental disorders reflects a degree of progradency in a lesion of the brain.

*Acute (transitory) and chronic (protracted) infectious diseases* are distinguished, it being also reflected on the clinical picture of mental disorders of the infectious genesis: in acute infections and exacerbations of chronic diseases, psychopathological symptoms are more vivid and pronounced, they are often accompanied by disturbances of consciousness in the form of the delirious and oneiroid syndromes, amentia, torpor, a twilight state of consciousness (epileptiform excitement). At the same time, chronic psychoses are oftener characterized by endoform manifestations (hallucinoses, hallucinatory-paranoid syndrome, apathetic stupor, confabulosis). In some cases there is development of organic, irreversible states in the form of the psychoorganic, Korsakoff's syndromes and dementia.

Depending upon the character of a lesion of the brain, the following disturbances are distinguished: 1) ***symptomatic mental disorders***, which result from an intoxication, an impairment in the cerebral haemodynamics, hyperaemia; 2) ***meningoencephalitic and encephalitic mental disorders*** caused by inflammatory processes in the meninges, vessels and matter of the brain; 3) ***encephalopathic disorders*** which develop as a result of postinfectious degenerative and dystrophic changes in the brain structures.

#### **Classification of mental disorders of the infectious genesis:**

a) syndromes of disengagement of consciousness (a nonpsychotic change): *obnubilation, somnolence, sopor, coma*; b) functional nonpsychotic syndromes: *asthenic, asthenoneurotic, asthenoabulic, apathoabulic, psychopathy-like*; c) psychotic syndromes: *delirious, oneiroid, catatonic, paranoid and hallucinatory-paranoid, asthenic confusion, a twilight state of consciousness, amentia, hallucinoses*; d) psychoorganic syndromes: simple psychoorganic, Korsakoff's amnesic, epileptiform, dementia, parkinsonism.

Clinical manifestations of mental disorders depend upon the stage and severity of an infectious disease. Thus, within the initial period more frequently develop such syndromes as asthenic, asthenoneurotic (neurosis-like), some signs of delirium. The manifestation period of an infectious disease is characterized by presence of the asthenic and asthenoneurotic syndromes, those of disengagement of consciousness, cloudiness of consciousness, hallucinoses, hallucinatory-paranoid, paranoid, depressive- and maniac-paranoid syndromes. At the period of convalescence one may observe the asthenic, asthenoneurotic, psychopathy-like, psychoorganic, epileptiform, Korsakoff's amnesic, other psychotic (paranoid, hallucinatory-paranoid) syndromes, dementia, residual delirium.

In case of a mild course of an infectious disease, mental disorders are limited by nonpsychotic manifestations, while in severe acute infections and exacerbations of chronic infections the asthenic states are combined with the syndromes of disengagement and cloudiness of consciousness.

Recently, owing to the pathomorphism of the mental pathology, mental disorders in infectious diseases most often manifest themselves by disturbances at the nonpsychotic, border-line level, mostly represented by the asthenic syndrome which is accompanied by pronounced autonomic disturbances, cenesthopathic, hypochondriacal, obsessive phenomena, disturbances in the sensory synthesis. Emotional disorders are more frequently characterized by depressive manifestations, often with a dysphoric tint: with low spirits, maliciousness, short temper. In a protracted course of a disease there is formation of the personality shifts, the character changes, and excitability or streaks of diffidence, anxiety and nervousness appear. These symptoms may be rather stable.

The most common psychotic syndrome in infectious diseases, particularly at a young age, is *delirium*. Infectious delirium is characterized by disorientation in the surroundings. Some vivid visual illusions and hallucinations, fear and delusion of persecution appear. The above symptoms intensify by the evening. The patients see scenes of a fire, death of people, destructions. It seems to them that they travel, suffer terrible catastrophes. The behaviour and speech are affected by hallucinatory-delirious feelings. The patient may have painful sensations in different organs, it seems to him that he undergoes quartering, amputation of his leg, shooting through his side, etc. The symptom of his double may appear: it seems to the patient that there is his double near him. It is not in rare cases that occupational delirium develops, when the patient makes actions typical for his profession, usual labour activity.

Another and rather common mental disorder in infectious diseases is *amentia*, which usually develops in the patients who are in a severe somatic state. Amentia is characterized by a deep cloudiness of consciousness, disorientation in the surroundings and one's own personality. It is possible to observe some sharp psychomotor excitement, hallucinatory feelings. The thinking is incoherent, the patients are confused. The excitement is monotonous, within the limits of a bed, the patient would toss from side to side (jactitation), start, stretch, he may try to run somewhere, feels fear. Such patients require strict observation and care.

*The oneiroid syndrome* in infectious diseases is accompanied by stupor or psychomotor excitement; the patients are estranged from the world around, anxious, feel fear. Their feelings are of a dramatic, fantastic character. The affective state is very unstable. The patients may be active participants in the events they see.

***Protracted psychoses*** may develop in case of a prolonged or chronic course of an infection. In these cases mental disorders often pass without any cloudiness of consciousness. The depressive-paranoid or maniac syndrome is observed; it may be followed by delusions of persecution, hypochondriacal ones, hallucinatory feelings. In the initial states, prolonged asthenia appears, while in an unfavourable course the psychoorganic or Korsakoff's syndrome may form.

Mental disorders in *encephalitis* are represented by acute psychoses with cloudiness of consciousness, affective, hallucinatory, delirious and catatonic-like disorders, development of the psychoorganic or Korsakoff's syndrome.

***Lethargic encephalitis (von Economo's disease)*** is a disease with a viral etiology. The acute stage of the disease lasting from 3-5 weeks to several months is characterized by a sleep disturbance, more frequently in the form of drowsiness which often appears after some delirious or hyperkinetic disorders. Sometimes the patients may develop stable insomnia. These disturbances are caused by a vascular-inflammatory and infiltrative process in the grey matter of the brain. Psychotic disorders in the acute stage of the disease manifest themselves by the maniac syndrome, delirium and amentia. In delirium, a disturbance of consciousness may precede appearance of neurological signs in the form of pareses of the oculomotor and particularly abducent nerves, diplopia, ptosis. Delirium is characterized by appearance of polymorphous hallucinations of some dream-like or frightening character, or elementary visual (a lightning, light), auditory (music, ringing) and tactile (burning) hallucinations. The plot of hallucinations in lethargic encephalitis reflects events of the past. It is not in rare cases that occupational delirium develops. Delusions may develop too. Often delirium appears against a background of general intoxication (an elevated body temperature, sharp hyperkineses, autonomic disturbances); in a severe course of the disease, muttering delirium may develop. In case of the amentia-delirium form, after several days the delirium is replaced by amentia. This form lasts 3-4 weeks and is followed by disappearance of the psychopathological signs with subsequent asthenia. An outcome of the acute stage may be different. Within the periods of epidemics approximately every third patient dies at this stage of the disease. Complete recovery is also possible, but more frequently it may be seeming, because a few months or years later signs of the chronic stage are revealed.

The chronic stage is accompanied by degenerative changes in the nerve cells and the secondary vegetation of the glia. The leading signs in its clinical picture are those of parkinsonism: rigidity of the muscles, a peculiar posture of the patient whose arms are adducted to the trunk and knees are somewhat bent, as well as a constant tremor of his hands, decelerated movements, particularly when making spontaneous acts, the patient may fall back, ahead or aside at an attempt to

move (retro-, antero- and lateropulsion). It is also characterized by changes of the personality in the form of bradyphrenia (a significant weakness of drives, reduced initiative and spontaneity, indifference and apathy). Parkinsonian akinesia may be suddenly interrupted by short-term and very rapid movements. One may also observe paroxysmal disorders (convulsions of the vision, forced attacks of scream – clasmomania, episodes of a drowsy cloudiness of consciousness with oneiroid feelings). Relatively rare cases of hallucinatory-paranoid psychoses, sometimes even with Kandinsky-Clérambault syndrome, as well as protracted catatonic forms have been described too.

The acute stage of *tick-borne (spring-summer) and mosquito-borne (summer-autumn) encephalitis* is characterized by signs of cloudiness of consciousness. The most frequent disorders at the chronic stage are the syndrome of focal epilepsy and other paroxysms (psychosensory disorders, twilight states).

**Rabies** is the most severe encephalitis always passing with mental disorders. During the first (prodromal) stage of the disease the patient feels worse, he develops depression, hyperaesthesia, particularly to any movement of the air (aerophobia). The second stage is characterized by increasing motor anxiety and agitation against a background of an elevating body temperature and headaches. The patients develop depression, fear of death, frequent delirium and amentia, convulsions, speech disturbances, hypersalivation, tremor. This state is characterized by fear of water (hydrophobia), which consists in appearance of convulsive spasms in the larynx, asphyxia, rather often with some motor excitement, even when water is only imagined. At the third (paralytic) stage, pareses and paralyzes of the extremities occur. Disturbances of speech become intensified, the patients develop torpor passing into sopor. The death occurs under the phenomena of paralysis of the heart and respiration. The course of the disease in children is more rapid and catastrophic, the prodromal stage is shorter.

Mental disorders in *meningitides* may differ and depend upon the character of an inflammatory process in the brain. The prodromal period of meningococcal purulent meningitis is characterized by presence of asthenic signs. At the height of the disease, one may mostly observe torpor, episodes of delirious and amental cloudiness of consciousness, the most severe cases may develop sopor and coma.

**The course** of mental disorders in infectious diseases has its age-specific peculiarities. Thus, in children with acute infections manifesting themselves by an elevation of their body temperature, mental disorders are vivid and accompanied by general disinhibition, stubbornness, anxiety, attacks of fear, nightmares, delirious episodes with frightening hallucinations. At the initial period of an infectious disease children may complain of general weakness, headache,

disturbances of sleep (difficult falling asleep, night fears), capriciousness, tearfulness, some visual hallucinations, particularly at night. The manifestative period may be characterized by episodes of asthenic confused consciousness, fear and febrile delirium. The peculiarity of the initial (residual) period of an infectious disease consists in its effect upon the further mental development of the child. Under unfavourable conditions (in cases of a lesion of the brain of an infectious etiology, insufficient treatment, some mental overstrain at school, a bad family situation, etc.) it is possible to observe formation of psychophysical infantilism, oligophrenia and a psychopathic development of the personality, the epileptiform syndrome.

Children at the acute stage of an infection often develop torpor, sopor and coma, pre-delirious states: short temper, capriciousness, anxiety, nervousness, hypersensitivity, weakness, as well as superficial perception, attention and memorization, hypnagogic illusions and hallucinations. Children before 5 years of age often have convulsive states and hyperkineses, while productive signs in them are very rare and manifest themselves in motor excitement, disinhibition, rudimentary delirious states, illusions.

At the period of convalescence, against a background of the asthenic syndrome, children may develop fears, psychopathy-like disorders, puerile forms of behaviour, defective memory for current events, a delay in their psychophysical development. In epidemic encephalitis, children and juveniles develop psychopathy-like disorders, an impulsive motor anxiety, disturbances of drives, foolishness, asocial behaviour, an inability to carry out systematic psychic activity with absence of dementia. Meningitides in younger children are accompanied by listlessness, adynamics, drowsiness, torpor with periods of motor anxiety. Convulsive paroxysms are possible.

The course of infectious psychoses in elderly people may be often abortive, with predominance of asthenic and asthenoabulic manifestations. Gender differences are characterized by a higher rate of infectious psychoses in females than in males.

**The diagnosis** of infectious psychosis can be made only if there is an infectious disease. Acute psychoses with syndromes of disturbed consciousness most frequently develop against a background of acute infectious diseases, protracted psychoses are typical for a subacute course of an infectious disease.

**The treatment** of infectious psychoses is provided at mental hospitals or infectious in-patient departments under the observation by a psychiatrist and supervision by the personnel; it includes active treatment of the basic disease in the form of immune therapy, administration of antibiotics, disintoxication,

dehydration, general health improving therapy. Psychoactive drugs are administered with regard for a leading psychopathological syndrome.

In acute infectious psychoses with cloudiness of consciousness or acute hallucinosis, neuroleptics are indicated. Protracted psychoses are treated with neuroleptics taking into consideration psychopathological signs: aminazine and other neuroleptics with a sedative effect. In depressive states, antidepressants are administered which can be accompanied by neuroleptics if the patients agitate. In the psychoorganic and Korsakoff's syndromes, nootropic drugs are widely used. In patients with prolonged protracted psychoses, as well as irreversible psychoorganic disorders, it is important to carry out rehabilitative measures, including an adequate solution of their social-occupational problems.

Acute infectious psychoses usually pass without leaving any traces, but often infectious diseases are followed by development of pronounced asthenia with emotional lability and hyperaesthesia. It is considered to be prognostically unfavourable if muttering delirium develops with deep cloudiness of consciousness and a sharply pronounced excitement in the form of disorderly tossing, particularly if this state is preserved when the body temperature falls. Protracted psychoses may result in personality changes by the organic type.

## **MENTAL DISORDERS IN AIDS**

*Acquired immunodeficiency syndrome (AIDS)* is one of the most dramatic and mysterious problems of modern medicine. Mental disorders in AIDS are so various that actually they include all the varieties of psychopathology, beginning with neurotic reactions and ending with severe organic lesions of the brain. Just because of this variety of mental disorders AIDS is sometimes called psychiatric encyclopaedia or psychiatric odyssey. In epidemiological studies, the people who have a seropositive reaction to AIDS but no signs of this disease make up a so-called grey area which is the first risk group. The people without any signs of the disease and no seropositive reaction to AIDS, but with a specific life style (homosexuals, bisexuals, narcomaniacs, prostitutes) belong to a so-called group of risk. This is the second risk group. People of these two risk groups also reveal a whole number of mental disorders requiring opportune diagnosis.

The spread of mental disorders in AIDS on the whole corresponds to the spread of the disease itself, because, as most authors report, in one or another way they occur actually in all the patients.

### ***Classification of clinical manifestations in people of risk groups***

*The first group (a “grey area”)* consists of persons affected by AIDS virus. Though seropositivity by AIDS virus is a risk factor, it does not always show presence of this disease in a human being. The incubation period between the viral infection and development of the disease lasts from 1 month to 5 years.

*The second risk group* includes the people who are the most vulnerable to a danger of AIDS infection, i.e. those engaged in narcomaniae, homosexuality and prostitution. A smaller part is composed of bisexuals, heterosexuals with numerous occasional intercoursés, and those who suffer from haemophilia or another disease requiring frequent blood transfusions.

Mental disorders in each of the risk groups are similar, though in the so-called grey area their rate is much higher. These are, first of all, psychogenic disorders with neurotic and neurosis-like symptoms, though sometimes they acquire the form of psychotic ones with resultant anxiety, nervousness, shortness of temper, sleeplessness, loss of appetite, sometimes with a very expressed loss of body weight. Such patients are characterized by a reduced capacity for work with a disturbance of active attention, sometimes with absolute concentration on thoughts about a possibility to fall ill with AIDS. Also common for these people are constant rereading of literature about this disease, endless searches of some or others of its symptoms in themselves, a hypochondriacal fixing on their own state of health. Initiative is significantly reduced, a feeling of hopelessness develops, libido decreases, though many patients break off all their sexual relations not because of this fact, but out of some fear “to fall ill with another bad disease”. Significantly less people break off all sexual intercoursés out of altruistic motives. Some people of the risk group (especially seropositive ones), on the contrary, display evident antisocial tendencies, seeking either to broaden their sexual relations as much as possible or to communicate AIDS in another way. Typical for this group are the states in the form of apathetic, anxious or melancholic depression with frequent ideas of self-condemnation (which usually do not reach to the degree of delusions) and suicidal thoughts, though suicidal attempts in the risk group occur rarely. Sometimes depression in these people acquires a psychotic character with agitation up to the appearance of the state of raptus melancholicus type. Patients from this risk group may also develop psychotic states in the form of sensitive delusions of reference, reactive delusions of persecution, hypochondriacal delusions accompanied by a described “feeling of untouchability”. Hysterical psychoses are also possible.

People from the risk group often develop psychosomatic diseases, first of all various pathologies of the alimentary tract.

The AIDS virus has both lymphotropic and neurotropic properties, i.e. it directly affects cells of the cerebral cortex; this fact explains development of

mental disorders long before the appearance of signs of reduced immunity in the patient. A few months, sometimes even years before the manifestation of the illness many AIDS patients suffer from apathy, sleep disturbances, a reduced capacity for work, depression, narrowing of their sphere of personal contacts. But at this stage mental disorders are most frequently revealed at a so-called subclinical level.

With the appearance of expressed clinical manifestations of the illness in the form of fever, profuse perspiration at night, diarrhoea, pneumonia, etc., all these mental disorders become clinically expressed and evident.

The fact of presence of AIDS is regarded as a manifestation of expressed psychological stress with prevalence of mostly psychogenic disorders of both the neurotic and psychotic register at early stages of the illness (“the stage of realization of the disease”). Most frequently, this is depression accompanied by anguish with ideas of self-condemnation, guilt to one’s relatives, suicidal thoughts and tendencies. But, as most authors report, committed suicides occur relatively seldom. Most frequently they are observed in those people who were witnesses to their relatives or friends’ death, caused by AIDS, or are psychopathic persons. Suicidal actions are also made by those patients whom the society treats as some strangers, rejects them, does not allow to attend public places, sometimes even live in their city. This period is also characterized by appearance of obsessive-compulsive disturbances developing with or without depression. The patients complain of some annoying fear of death, annoying representations about the very process of “dying”, recollections about their sexual partners who could infect them. Some patients are very troubled by the thought (often annoying) about a possibility to infect their relatives or friends in everyday life, though they understand its absurdity.

Already at this stage, organic symptoms “sound” clearly: the patients develop dysphoriae, psychopathy-like forms of behaviour with explosiveness, irateness, aggressiveness, epileptiform seizures. A so-called psychological disorganization takes place. Often the anxiety which appears in the people after making a diagnosis of AIDS is accompanied by agitation, panic, anorexia, insomnia, as well as a feeling of irreparability and anger, often aimed at doctors. Here, anosognosia may be observed, when the patients deny presence of the illness in them, do not trust their doctors, accuse them of incompetence. Later, as the illness progresses, signs of an organic lesion of the brain become more and more evident. At the stage of formation of expressed signs of an organic defect, various psychotic disorders develop. Most frequently, these are states of cloudiness of consciousness, mostly in the form of delirium, acute paranoid, hypomaniac and

maniac states. Therefore, psychopathological manifestations of AIDS are similar to the feelings of cancer patients at its terminal stage.

*The main manifestation of AIDS* consists in a brain lesion with a rapid growth of dementia described in 60-90 % of all the cases. In this connection, even such terms as “AIDS-dementia syndrome” or “AIDS-dementia complex” appeared. In 25 % of the observations, the AIDS-dementia complex may be revealed as early as in the manifestative period of the illness. Dementia develops in connection with diffuse subacute encephalitis, meningitis, meningeal and cerebral lymphoma (pseudotumour manifestations of the disease), cerebral haemorrhages, cerebral arteritides. The patients gradually feel it more difficult to concentrate their attention, they lose memory for current events, have spotty memory defects for the past, symptoms of lethargy. Very rapidly (within a few weeks or months) the patients develop intensifying signs of dementia with a psychomotor retardation, periods of cloudiness of consciousness (at first, by the type of a twilight state), epileptiform seizures, often turning into epileptiform status, mutism. Later these signs are accompanied by incontinence of urine and faeces, the depth of the disturbance of consciousness increases from torpor to coma. In each 10 of 13 cases computed tomography reveals total cerebral atrophy, speech disturbances usually being its first sign.

Of AIDS patients, 80 % die within two years; 90 % die at the age of 20-49 years, 93 % of them being males. Many researchers hold an opinion that just an organic lesion of the brain is one of the main causes of death in AIDS. Besides, the death may be caused by a sarcoma in 35 % of the cases or other malignant tumours, as well as various somatic diseases with a severe course. More than half of the patients (60 % of cases) die from double pneumonia.

Rather often the doctors have to differentiate mental disorders, caused by AIDS, from AIDS-phobia or delusions of AIDS infection. The number of such patients steadily increases because of a wide spread of materials about AIDS in mass media. In this connection, such terms as “pseudo-AIDS”, “pseudo-AIDS syndrome” and “AIDS panic” have recently become even widespread. A diagnosis to such patients is made on the basis of clinical-psychopathological methods of examination (naturally, if seropositivity is excluded). Making a differential diagnosis of mental disorders in AIDS which are similar to schizophrenic, involuntional and other symptoms, it is very important to have the most detailed family and case histories, as it is not excluded that this AIDS patient before suffered, for example, from schizophrenia. In such a case, early stages of AIDS, prior to a sharp domination of organic dementia, may reveal various psychotic symptoms typical for endogenous psychoses. Symptoms of an organic lesion of the brain in AIDS require differentiation from quite a number of organic cerebral

diseases having another etiology: multiple sclerosis, brain tumour, neurosyphilis, toxoplasmosis, Schilder's disease, meningitides and encephalitides of various etiology, etc. In such cases, the problem is solved by special tests for AIDS, which must be also carried out in cases of mental disorders in seropositive people from the risk group (a "grey area").

It is more difficult to diagnose mental disorders in people from the risk group without seropositivity. Such cases require the most careful objective and subjective anamnesis, the study of the "life style" of the people from the sphere of personal contacts of this person. Also it is very important to reveal a temporary relation between the appearance of some or other mental symptoms and a psychic trauma, somehow related to AIDS (a disease or even death of some of one's close friends or relatives), reading of literature, watching of films on this subject, etc. The etiopathogenesis of mental disorders in AIDS is mostly caused by two factors: 1) *a mental (psychological) stress* after receiving information about an incurable disease and related intrafamilial, interpersonal and social problems; 2) *general intoxication and increasing severe lesions of the cerebral tissues*, first of all nerve cells.

The AIDS virus possesses expressed neurotropic properties and can be isolated directly from the brain tissue. By the data of pathomorphological studies, some or other changes in the cerebral tissues are found in 60-90 % of observations; they are: diffuse demyelination, disseminated perivascular changes, reactive gliosis, microfocal brain infarcts. These disorders are revealed actually in all the cerebral structures, it making the clinical picture of neuro-AIDS similar to other nosological forms based on pathomorphologically close lesions of the brain tissue. Pathomorphological cerebral changes in AIDS may resemble viral encephalitides of different origin, neurosyphilis, toxoplasmosis, disseminated metastatic lesions, multiple sclerosis, etc.

**Treating** mental disorders in AIDS patients, it is possible to use psychoactive medicines, tranquillizers, antidepressants of the tricyclic line, but in small doses owing to a high sensitivity of AIDS patients to any drugs, as well as to alcohol. Taking into consideration a possible development of frequent side effects, the treatment must be given with great care. There are some data that thioridazine is the least toxic. Though AIDS is incurable, but its course may be chronic with states of some remissions, therefore relevant psychotherapeutic and psychocorrective work must be done not only with the patients, but also with their associates.

An augmentation of dementia should not be a contraindication for employing psychotherapy (especially supportive one) which will help the patients to cope, as far as possible, with a number of problems caused by intellectual

defects. The programme of rehabilitation should also involve all the patients irrespective of the stage of the illness and its possible outcome.

## **MENTAL DISORDERS IN BRAIN INJURIES**

Brain injuries are some of the most frequent causes of mortality and steady loss of capacity for work; annually the number of patients with a traumatic injury of the brain increases by 2 %. In the structure of peace-time injuries, the life, transport, industrial and sports ones prevail. Such complications of brain injuries as development of the epileptiform syndrome, traumatic cerebraesthesia, encephalopathy, dementia, pathocharacterological disorders and their influence on the social adaptation of patients are of a great medical importance. In more than 20 % of cases, brain injuries cause disability owing to neuromental diseases. Brain injuries are divided into open (involving skin integuments and skull bones) and closed ones. In its turn, open injuries are subdivided into penetrating (with impairment of the dura) and nonpenetrating ones. They always give rise to complications in the form of meningoencephalitis, abscess, osteomyelitis. Among closed injuries, there are concussions (commotions) which occur most frequently, as well as contusions and compressions. It is not in rare cases that a concomitant injury of the brain is observed.

Mental disorders caused by a brain injury depend upon the period of the traumatic disease. Thus, **at the most acute initial period**, torpor, sopor, coma, disturbances in the cardiovascular activity and respiration are observed. **The acute period** is more frequently characterized by nonpsychotic syndromes (asthenic, apathoabulic syndromes, epileptiform seizures, anterograde and retrograde amnesia, surdomutism) and rarer by psychotic ones (a twilight state of consciousness, posttraumatic delirium, dysphoriae, Korsakoff's syndrome).

At **the late period**, nonpsychotic disorders are observed: the asthenic, asthenoneurotic, epileptiform, psychopathy-like (affective instability) syndromes, while late posttraumatic psychoses (hallucinatory-paranoid, manic-paranoid, depressive-paranoid) occur significantly rarer. Remote consequences of a brain injury include cerebraesthesia, encephalopathy, dementia, posttraumatic epilepsy, a posttraumatic development of the personality.

Mental disorders of the most acute period are mostly represented by states of *disengagement of consciousness with different degrees: coma, sopor, torpor*. The depth of a disturbance of consciousness depends upon the mechanism, localization and severity of an injury.

In most of the patients, mild or moderately severe brain injuries are followed by torpor characterized by retardation of their thinking and incomplete orientation. The patients are drowsy and respond only to strong stimuli. After a return from torpor, fragmentary recollections about this period are possible.

Mental disorders of the acute period are represented by nonpsychotic disorders in the form of *the asthenic syndrome* and *psychoses, occurring in the form of states of a changed consciousness: delirium, epileptiform excitement, twilight state*, which develop immediately after a return from the unconscious state. The asthenic syndrome within the acute period of a brain injury is characterized by a reduced mental productivity, an augmented exhaustion, the feeling of tiredness, hyperaesthesia, autonomic disturbances, a reduced motor activity. It is not in rare cases that patients complain of headaches and dizziness.

Most frequently, delirium develops in patients overusing alcoholic drinks or in cases of toxicoinfectious complications. The patients are excited, would jump up, try to run somewhere, feel frightening visual hallucinations. Traumatic delirium is characterized by presence of vestibular disorders. A transfer from the delirium to amentia is prognostically unfavourable. A twilight state of consciousness most frequently develops in the evening, it manifests itself by a complete disorientation, desultory delusions, separate hallucinations, fear, motor excitement. A return from the twilight state is through sleep followed by amnesia of morbid feelings. The twilight state of consciousness may occur with attacks of motor excitement, stupor, motor automatisms, puerile-pseudodementia behaviour.

In cases of severe brain injuries, the patient's return from coma may be followed by development of *Korsakoff's syndrome* with fixation, retro- or anterograde amnesia, confabulations and pseudoreminiscences. Sometimes the patients lose an ability to critically assess the severity of their state. Korsakoff's syndrome may be transitory and disappear after several days, or have a long course and result in formation of organic dementia.

The duration of the acute period of a brain injury ranges from 2-3 weeks to several months. Within this period, it is also possible to observe affective and affective-delirious psychoses, an important part in whose development is played by exogenous factors: physical load, tiredness, intoxication, infectious diseases, etc. The clinical picture of the above disorders is characterized by maniac, depressive and affective-delirious disorders in combination with confabulations. Depressive states are accompanied by the hypochondriacal delusion. More frequently, maniac states appear together with euphoria, delusion of grandeur, anosognosia, a moderately expressed motor activity and a rapid development of exhaustion, headache, flaccidity, drowsiness; the latter symptoms disappear after some rest. Rather often, an irate mania is observed.

Within the late period of traumatic disorders, *subacute and protracted posttraumatic psychoses* are observed; they may occur periodically.

Mental disorders of the remote period are characterized by various kinds of the *psychoorganic syndrome*. Expressiveness of the formed defect depends upon the severity of the brain injury, the volume of the cerebral lesions, the age at which it occurred, the quality of the treatment given, hereditary and personality peculiarities, additional exogenous hazards, the somatic state, etc.

*Traumatic cerebrasthenia*, developing in 60-75 % of cases, is the most frequent consequence of a brain injury. The clinical picture of the disease is characterized by prevalence of some gradually increasing weakness, a reduction of the mental and physical productivity, accompanied by shortness of temper and exhaustion. There are transitory fits of short temper, after which the patients usually regret their lack of restraint. Autonomic disturbances manifest themselves by fluctuations in blood pressure, tachycardia, dizziness, headache, sweating, vestibular disorders, a disturbance in the sleep-awaking rhythm. The patients badly endure going by transport, swinging, watching TV. It is not in rare cases that they complain of feeling unwell after changes of the weather and when staying at some stuffy premises. Typically, torpidity and rigidity of nervous processes are observed. An ability for a rapid switch-over from some activity to another is reduced, but a forced necessity to do this work results in decompensation of the state and an augmentation in the expressed cerebrasthenic symptoms. Traumatic cerebrasthenia is often combined with different neurosis-like symptoms, phobiae, hysterical reactions, autonomic and somatic disorders, anxiety and subdepressive symptoms, autonomic paroxysms.

*Traumatic encephalopathy* develops against a background of residual phenomena of an organic brain lesion, whose localization and severity cause peculiarities in the clinical picture. The most frequently observed are affective disorders with underlying psychopathy-like disorders of the excitable and hysteric types. Patients with the apathetic variant of encephalopathy are characterized by expressed asthenic disturbances with prevalence of exhaustion and fatigability, they are listless, inactive, with a reduced sphere of interests, memory disturbances and difficult psychic activity. Emotional excitability in these patients prevails over exhaustion, they are rough, hot-tempered and inclined to aggressive actions. Fluctuations in their mood are observed, inadequate fits of anger easily develop. The productive activity may be hampered owing to affective disorders, it causing still more dissatisfaction with themselves and responses of irritation. The patients' thinking is characterized by inertness and a disposition to stick to unpleasant emotional feelings. Dysphoriae may develop in the form of fits of depressed-malicious or anxious mood lasting several days; at this time the patients may make

aggressive and autoaggressive acts, demonstrate a disposition to vagrancy (dromomania).

***Epileptiform paroxysmal disorders (posttraumatic epilepsy)*** may form at various terms following a brain injury suffered, most frequently after several years. They may be various, such as generalized, jacksonian seizures, paroxysms without contractions: absences, fits of catalepsy, so-called epileptic sleeps, psychosensory disorders (metamorphopsiae and disorders in the body scheme). Appearance of autonomic paroxysms with expressed anxiety, fear, hyperpathy and general hyperaesthesia is possible. Fits of contractions may be frequently followed by twilight states of consciousness, thereby demonstrating an unfavourable course of the disease. They are often caused by additional exogenous factors, first of all alcoholic intoxication, as well as by psychic traumatization. The duration of twilight states is not long, but sometimes it may last up to several hours.

Within the remote period of a brain injury, so-called ***endoform (affective and affective-delirious) psychoses*** may develop. Affective psychoses pass in the form of monopolar maniac or, rarer, depressive states. They are characterized by an acute onset, an alternation of euphoria with anger, moria-like foolish behaviour. It is not seldom that a maniac state appears against a background of exogenous factors (intoxications, repeated injuries, surgical interventions, somatic diseases). Affective-delirious psychoses are characterized by hallucinatory-delirious and paranoid syndromes. As a rule, hallucinatory-delirious psychoses develop acutely against a background of symptoms of traumatic encephalopathy with prevalence of apathetic disturbances. The risk of falling ill with the disease increases in patients with somatic disorders, as well as after surgical interventions. Their delusion is concrete and not systematized, the hallucinations are true, there is an alternation of psychomotor excitement and inhibition, the affective feelings are caused by delusions and hallucinations. Depressive states may be triggered by psychic traumas. Along with melancholia, the patients develop anxiety, hypochondriacal feelings with a dysphoric assessment of their own state and surroundings. Paranoid psychoses develop more frequently in males 10 and more years after a brain injury. The clinical picture is characterized by presence of overvalued ideas and delusions of jealousy with litigious and querulous tendencies. The paranoid delusions of jealousy may be combined with the delusions of damage, poisoning, persecution. The psychosis has a chronic course and is accompanied by formation of the psychoorganic syndrome.

***Posttraumatic dementia*** develops in 3-5 % of cases of a brain injury. It may either be a consequence of posttraumatic psychoses or the progressive course of the traumatic disease with repeated injuries, as well as result from a developing cerebral atherosclerosis. Patients with posttraumatic dementia are characterized by

prevalence of memory disturbances, a reduced sphere of interests, listlessness, faint-heartedness, sometimes importunity, euphoria, disinhibited drives, overestimation of their abilities, absence of criticism.

*Age-specific peculiarities of the traumatic disease.* Brain injuries in children occur rather frequently, especially at the age from 6 to 14 years. Mental disorders in children at the acute period appear against a background of an increased intracranial pressure: they reveal general cerebral and meningeal disturbances, expressed autonomic and vestibular symptoms and signs of a local brain lesion. The most severe symptoms develop a few days after a brain injury. Paroxysmal disorders, which occur both at the acute period and during convalescence, are a frequent symptom. As a rule, the course of the traumatic disease in children is benign, even severe local disorders are subject to regression. Asthenia within the remote period is slightly expressed, while motor disinhibition, emotional lability and excitability prevail. Sometimes after severe brain injuries, which patients suffered in early childhood, they reveal a mental defect resembling oligophrenia.

In young children (up to 3 years of age), no complete disengagement of consciousness is usually observed, their general cerebral disorders may be obliterated. Multiple vomiting and autonomic symptoms (an elevated body temperature, hyperhidrosis, tachycardia, dizziness, etc.) are clear signs of a brain injury. Typically, an arrhythmia of sleep and waking is observed. The child would not sleep at night and is sleepy at daytime.

Traumatic cerebraesthesia in children manifests itself by headaches, which appear suddenly or under certain conditions (at stuffy premises, because of running or some noise); dizziness and vestibular disorders are less frequent. The expression of asthenia proper may be very poor, while motor disinhibition, lability of emotions, excitability, autonomic vascular disturbances (intensified vasomotor reactions, a bright dermatographism, tachycardia, hyperhidrosis) prevail. The apathoadynamic syndrome in children is characterized by listlessness, apathy, sluggishness, a reduction of activity and striving for it, limited contacts with their associates owing to rapid exhaustion, and a lack of interest. Such children are not able to cope with their school syllabus, but they do not disturb their associates and do not rouse any censure from their teachers.

Children with the hyperdynamic syndrome have prevalence of motor disinhibition, fussiness, sometimes with high spirits and a tint of euphoria. Such children are excited, restless, they would run, make a noise, often jump up, grasp some things but there and then throw them. Their mood is characterized by instability and carelessness. Outwardly, the patients are good-natured, suggestible, sometimes foolish. A reduced criticism and difficult mastering of new knowledge

are observed. It is not in rare cases that a further development of these disorders result in some more differentiated psychopathy-like behaviour. The children cannot get on with their classmates, do not master new knowledge, violate discipline, disturb their associates, terrorize their teachers. Owing to the fact that such patients do not produce any complaints about their health, for a long period of time their inadequate behaviour is not regarded as morbid and only disciplinary demands are made to them.

Mental disorders after brain injuries in elderly people are usually accompanied by a loss of consciousness. The acute period is characterized by prevalence of autonomic and vascular disturbances, dizziness and fluctuations in blood pressure, while nausea and vomiting occur rather rarely. Owing to a defective vascular system, intracranial haemorrhages are often observed; they may develop some time later and manifest themselves by a clinical picture resembling that of a tumour, or epileptiform seizures. Stable asthenic disturbances, listlessness, adynamia and various psychopathological symptoms are more constant in the remote period.

*Pathogenesis of mental disorders in the brain injury.* Appearance of mental disorders within the acute period of the brain injury is caused by a mechanical damage and oedema of the cerebral tissue, development of haemodynamic disturbances and cerebral hypoxia. In this case, transmission of impulses in synapses is affected, and disturbances develop in the mediator metabolism and functions of the reticular formation of the brain stem and hypothalamus. Brain injuries of the mild degree are accompanied by an insignificant destruction of nerve cells with a subsequent restoration of their functions, while in severe injuries there is a death of neurons with development of gliotic cicatrices or cystic formations. A disturbance of synaptic relations between nerve cells, traumatic asynapsis, may be observed.

Pathogenesis of mental disorders in the remote period of the brain injury is various, the character and expressiveness of disturbances depend upon the severity of the injury, the patient's age and additional hazards. Very important are repeated injuries, addition of alcoholism and a pathological vascular process.

A favourable prognosis in brain injuries is observed in the following cases: an absolute attenuation of the main active traumatic process and its complications, and absence of general cerebral disorders; locality of the injury and a partial character of the mental defect (isolated phenomena of dysfunction, a single syndrome or feebly expressed mental changes); a comparative preservation of the intellect and social-occupational directions of the personality; a young age of the patient; absence of any severe concomitant nervous and somatic diseases and expressed signs of a psychopathy in the patient before the injury; an opportune

enlistment to work in compliance with the patient's interests and his professional abilities.

At the same time, an unfavourable prognosis is observed in such cases as: a continuing reduction of the intellect with development of organic dementia in some patients; expressed, stable or increasing changes in the personality by the organic type; protracted psychoses with hallucinatory-paranoid, hypochondriacal and depressive syndromes that develop for the first time many months and years after the injury; epileptiform manifestations which become more frequent or appear for the first time after several years; an increasing asthenization of the patient with a reduction in his capacity for work. The prognosis in consequences of the brain injury is worsened by presence of comorbid alcoholism.

*The treatment* of mental disorders in brain injuries depends upon the stage of the disease, its severity and expressiveness of clinical manifestations. All the persons who received even a slight injury of the head, must be hospitalized and follow bed regimen during 7-10 days, children and elderly people require a more prolonged stay at in-patient department. In case of the symptoms demonstrating an increased intracranial pressure, dehydration is recommended. Autonomic disturbances are controlled with tranquillizers, and oxybarotherapy is recommended for reducing cerebral hypoxia. Neuroleptics, large doses of Diazepam (up to 30 mg intramuscularly) and sodium oxyburate are administered for productive psychopathological symptoms and excitement. At the period of convalescence it is recommended to use general health improving therapy, nootropic drugs, vitamins; neuroleptics are used in case of excitement.

The remote period of the brain injury requires a complex of therapeutic and rehabilitative measures consisting of psychotherapy, an adequate job and social rehabilitation of the patient. Drug therapy is administered depending upon prevalence of some or other symptoms in the clinical picture. Thus, anticonvulsive therapy is recommended in treating epileptiform disorders, antidepressants for affective depressive disorders, etc.

Long therapy and an adequate job are particularly important in the progressive course of the traumatic disease, it contributing to stabilization of the pathological process and reverse development of some morbid symptoms. The prognosis of mental disorders significantly depends upon the fact how correctly the patient follows recommendations and regimen.

In slight concussions of the brain, the patients may be disabled up to 1 month, in moderate ones up to 2 months, and in severe ones for 4 months and longer. *An invalidity examination* must be carried on with regard of the part played by rehabilitative measures. The patient's job should correspond to his state and abilities. Job recommendations must take into consideration presence of inertia

of nervous processes that results from the brain injury and remains for a long period of time. For such patients, any job requiring a rapid switching over from some activity to another is not recommended, large physical and mental loads are contraindicated. The most complete restoration of the capacity for work takes place in patients with the asthenic syndrome.

### **Mental disorders in burn disease**

A burn/scald is a damage of tissues resulting from a local thermal, electrical, chemical or radiation effect. Thermal burns and scalds, caused by the effect of a flame, radiant heat, incandescent metals and gases, combustible liquids, are the most frequent ones in clinical practice and constitute 2 % of all surgical diseases. According to the WHO's data, burns and scalds take the third place by their rate among other injuries, while in some countries they are even in the second place. Annually, dozens of thousands of people die from burns and scalds. The severity of the damage depends upon the height of the temperature, the duration of the effect, the area of the damage and the localization of the burn/scald. In cases of a long effect, thermal burns and scalds with a lower temperature pathogenically have the same result as a short-term effect of thermal agents with a high temperature. For instance, heating of the human body up to 42°C during 6 hours results in necrosis of the skin, what is possible when an unconscious patient is covered with hot-water bottles (heaters). The temperature of 45-50°C is considered to be a threshold one for the body. Most often, patients receive burns/scalds of their arms, legs and eyes.

A risk of development of mental disorders in the burn disease depends upon the depth and area of the damage. The burn disease, as a complex of clinical signs resulting from a thermal damage of the skin integuments and underlying tissues, develops with involvement of more than 15 % of the skin surface in superficial burns/scalds and over 10 % in deep ones, mental disorders occurring in 85-90 % of the patients. With an augmentation in the severity of the burn disease the number of patients having mental disorders rises, such cases being characterized by a more frequent observation of the psychotic symptoms. In the remote period, mental disorders are registered in every sixth casualty.

Disturbances in regulatory mechanisms and functions of life support, presence of blood and plasma loss, toxic effects of both the endogenous and exogenous character (immunological, infectious) play their part in the development of pathological changes in the burn disease. Neuromental disorders in the burn disease are polymorphous: they may be both transitory and long-term. It depends upon the localization, depth and area of the burn/scald, premorbid peculiarities of the casualty's personality, his attitude to the fact of being ill.

There are several periods (stages) of the burn disease: *shock, acute burn toxemia, septicotoxaemia, convalescence and the stage of remote consequences*. Shock is a frequent manifestation of the burn disease; it develops after involvement of more than 30 % of the body surface in burns/scalds of the 1<sup>st</sup> degree and over 10 % in those of the 2<sup>nd</sup>-4<sup>th</sup> degree. Most often, the signs of shock appear 1-2 hours after receiving a burn/scald. It is caused by neurovascular reflexes (pain, fear) with a release of catecholamines, formation of toxic substances, protein and water-electrolyte disturbances with resultant hypoxia, metabolic disturbances, intoxication and infection.

The effects of the burn/scald on the central nervous system are massive and polymorphous. An important part in the pathogenesis is played by overexcitement (afferent impulses) in the CNS, cerebral hypoxia connected with disturbances in circulation and water-salt exchange, as well as secondary hypoxia owing to a disrupted function of external respiration. Circulatory disturbances, at first, are characterized by a spasm of vessels with resultant primary ischaemia of the brain, while haemoconcentration and disturbances in water exchange lead to a brain oedema and secondary ischaemia of the brain.

The development of intoxication is caused by presence of protein breakdown products, which may be later accompanied by the secondary, infectious intoxication. The above disturbances are pathogenetic factors of the development of hypoxia, cerebral ischaemia and vascular impairments accompanied by formation of the asthenic syndrome, delirium and other mental disorders, and later result in irreversible mental disorders in the form of burn encephalopathy. Peculiarities of neuromental disorders within the period of shock depend, first of all, on the expressiveness and the period of shock, rather than on the casualty's personality. Most severely shock develops in children, old and somatically weakened people.

*The initial period of shock (the erectile phase)* is characterized by appearance of obnubilation and psychomotor excitement, which may be accompanied by euphoria and multiple neurological symptoms in the form of paresis of convergence, mydriasis or miosis, nystagmus. At this phase of shock there is an augmentation of tendon reflexes and presence of slight meningeal symptoms, mostly white dermatographism and tachycardia. In aggravation of the physical state, the torpid phase of shock becomes more intensified. Inhibition and adynamia augment, obnubilations give place to torpor, and later sopor and coma; delirium and clonic convulsions may develop. Reduction of diuresis up to anuria and collapse are frequently observed. Vomiting and diarrhoea are regarded as unfavourable prognostic signs, more than 70 % of patients at this stage of shock die from acute cardiovascular insufficiency.

Shock phenomena are usually controlled by the 3<sup>rd</sup> day of the illness. Within the period of acute burn toxæmia and septicotoxæmia, neurological disturbances manifest themselves by intensifying meningeal symptoms, headaches, dizziness, nausea and frequent vomiting. Multiple neurological symptoms and muscular hypotonia, augmented tendon and peristaltic reflexes, their asymmetry are observed. Manifestations of convulsions, more frequently local and rarer generalized, are noticed.

Among psychopathological disturbances, the asthenic syndrome is early and the most persistent one; its severity depends upon the expressiveness of intoxication, particularly on such signs as hyperthermia, increased tachycardia, tachypnoea, fluctuations of blood pressure, more often towards lowering. It is possible to observe development of asthenic mental confusion, hypnagogic hallucinations, torpor, as well as appearance of states of cloudiness of consciousness with development of the delirious, oneiroid syndromes or amentia; the course of these syndromes may be obliterated and atypical.

Against a background of an improved somatic state and a decreased intoxication there is some reduction of psychopathological symptoms; the patient begins to adequately assess what has happened: the loss of his capacity for work, outward attractiveness, a possible ruin of plans for his life; it may give rise to psychogenic disorders. Within this period, the patients are characterized by prevalence of anxious-depressive disorders, the severity of the psychogenic disorders being reversibly dependent on the expressiveness of asthenia.

Later, a reverse development of general cerebral disorders (by the end of the second and the beginning of the third week) reveals domination of local symptoms of an involvement of the central and peripheral nervous systems: disturbances from the part of the cerebral motor nerves, anisoreflexia by hemitype, pathological reflexes, pareses and palsies, prevalence of the sympathetic or parasympathetic tone. The psychopathological picture is characterized by formation of the psychoorganic syndrome (burn encephalopathy) which includes intellectual-mnemonic and affective disorders whose degree depends upon the individual peculiarities of the patient, the depth and area of his burns/scalds.

*The period of convalescence* is characterized by a total rejection of necrotic tissues, filling of defects with granulations, development of metabolic-trophic disturbances and a reduced responsiveness of the organism. Additionally, a psychogenic traumatization of the patient, caused by his realization of the reality of amputations, appearance defects and disfiguring scars, is possible.

Within this period, against a background of burn encephalopathy, there is development of asthenic-depressive disturbances, psychopathy-like manifestations by the excitement, inhibition and apathy type, sometimes overvalued ideas of

reference which are inclined to generalization, but usually are unstable and pass to suspiciousness and mistrustfulness. Some cases reveal asthenic states with neurotic and neurosis-like symptoms, encephalopathic and psychopathy-like disorders, signs of the psychoorganic syndrome, paroxysmal disturbances, organic dementia. Local neurological symptoms are usually preserved.

In some cases, the people who suffered from burns develop morbid fear of fire with expressed autonomic reactions when it is necessary to make some actions connected with a fire. Such patients are characterized by a critical attitude, absence of the feeling of estrangement, lack of a ritual defence and generalization, and by a regressive course.

The asthenic (cerebrasthenic) disturbances developing against a background of a mild form of the burn disease are characterized by a regressive course. In the clinical picture, there is prevalence of fatigability, reduced mental productivity, somatoautonomic manifestations in the form of headaches with various localization and intensity, dizziness, autonomic lability, with possible autonomic paroxysms and frequent hypersensitivity to weather changes. Such disorders are rather persistent, with frequent development of the secondary decompensation of the mental state. Disfiguring scars resulting from burns/scalds of the face and open areas of the body cause formation of overvalued ideas and depressive disturbances.

*The remote period of the burn disease* is characterized by development of burn encephalopathy, where the apathetic, explosive, inhibited and mixed variants are distinguished. Foci of paroxysmal activity, areas of desolation (mostly in the anterior parts of the brain), dilation of the cerebral ventricles and sulci serve as the pathomorphological ground for burn encephalopathy. Within this period, paroxysmal disorders appear: generalized seizures, autonomic paroxysms, absences, as well as changes of the personality by the epileptoid type.

*The prognosis* in the burn disease depends upon the area and depth of the skin involved. Approximately, the severity of a burn/scald may be prognosticated with help of the rule of "a hundred": to sum the age and the total area of the burn/scald in per cent, where a favourable prognosis is shown by an index below 60, a relatively favourable one by 61-80, a doubtful one by 81-100, and an unfavourable one if the index exceeds 101. Frank's index is a more precise method for prognosticating the severity of a burn/scald; it is calculated on the basis of taking into account the depth of a burn/scald, the severity of a deep burn/scald being about 3 times higher than of a superficial one. The prognosis is regarded as favourable, if Frank's index does not exceed 30 units, doubtful with the index of 61-80, and unfavourable when it is over 90.

*The treatment* of mental disorders in the burn disease is carried on against a background of specific anti-burn therapy with consideration of the register of mental disorders and expressiveness of their clinical manifestations. Prior to transporting the patient to a medical institution, it is indicated to inject analgetics, neuroleptics, antihistamine drugs; the transportation must not last more than 1 hour. If disturbances of consciousness in the form of delirium develop, it is necessary to administer large doses of tranquillizers parenterally (Diazepam with a daily dose of up to 30-40 mg). Delusions necessitate administration of neuroleptics, and depressions are treated with antidepressants. An important place in the complex of medical measures is taken by nootropic drugs and medicines which improve microcirculation in the brain (Trental, Cavinton, etc.), whose administration contributes to prevention of burn encephalopathy.

## **MENTAL DISORDERS IN BRAIN TUMOURS**

Literature has various data about the rate of mental disorders in brain tumours. This rate is considered to depend upon the tumour location: 100 % in tumours of the corpus callosum, 79 % in lobar tumours, 52.1-66.6 % in hypophyseal tumours and those of the temporal, parietal and occipital lobes, 35.5 % in cerebellar tumours, and 25 % in brain stem tumours. These differences are caused both by peculiarities of the tumour process and thoroughness of the psychopathological, neurological and neuropsychological examination. On autopsies at mental hospitals, brain tumours are found in 3-4 % of cases, many of them being undiagnosed when the patients were alive.

The rate of mental disorders in brain tumours increases with age: if at the age under 20 mental disorders were observed in 45 %, above 60 they were in 88 % of the cases. In presenile people with brain tumours, acute (transitory and paroxysmal) psychotic states prevail.

The portion of patients with diagnosed brain tumours in the total number of examined people does not exceed 0.25 (about one third of cases with benign tumours), so after an opportune revealing and surgical intervention a favourable prognosis may be expected.

Mental disorders occur in all brain tumours, but rather often they are not assessed as manifestations of a tumour process quite clearly and in due time. Mental disorders in brain tumours are caused by the brain-affecting tumour process itself. The following factors caused by the tumour itself play part in the formation of mental disorders: localization of the tumour, its histobiological nature, peculiarities in the rate of growth, oedema and swelling of the brain, disturbances

in the dynamics of the blood and liquor, a higher intracranial pressure, the pressure and displacement of some regions of the brain, destruction of the cerebral tissue in the place of the tumour development, reactive oedema and swelling of the brain tissue. Each of the above factors can result in neurodynamic disturbances which are either diffuse and involve all complex brain mosaics or more distinct and form the direct substrate of the symptoms. Also important are other factors such as the state of the patient's organism, his age, previous injuries and infections, endocrine shifts, constitutional peculiarities of the personality, somatic diseases, etc.

By their localization, the tumours are divided into supratentorial (in the cerebral hemispheres) and subtentorial (in the posterior cranial fossa), as well as extracerebral and intracerebral; besides, intraventricular tumours are isolated.

Of cerebral hemisphere tumours, about 75 % are intracerebral and 25 % extracerebral (meningovascular).

Mental disorders in brain tumours belong to the group of exogenous-organic abnormalities. Headache is the earliest symptom; it may be caused by a higher intracranial pressure and be of a diffuse and bursting character. The expressiveness of these disorders depends upon the tumour size and liquor dynamics disturbances. The headaches felt at night and in the morning are attributed to a venous congestion in the cranial cavity and a higher intracranial pressure. The latter causes vomiting and bradycardia which develop at night or early in the morning. The vomiting usually appears suddenly and is not connected with dyspeptic phenomena or food taking.

Disturbance of consciousness ranging from clouded mental states (obnubilations) to expressed torpor, sopor and coma is usually related to an increasing intracranial pressure, becomes clear after the latter reaches to a certain degree and is the most common mental disorder in tumours. Torpor is characterized by a reduction of the active attention with subsequent involvement of the passive one, the patient's attention is attracted only by loud stimuli. The patients are listless, apathetic and indifferent to what goes on. All the mental processes are impoverished, difficult and delayed. Against a background of torpor, other (delirious, twilight) states of disturbed consciousness and acute psychotic states of the exogenous type develop. In tumours, so-called specific states of consciousness, appearing paroxysmally with typical organic symptoms, may be observed: distorted spatial perceptions, metamorphopsiae, autometamorphopsiae (body scheme disorders), vestibular and depersonalization disturbances.

There is some relationship between psychotic states and localization of tumours. Thus, for instance, delirious and somnolent states are more common for tumours in the temporal lobe, and twilight states for brain stem tumours.

***Psychoorganic disorders*** are revealed in various localization of tumours. The expressiveness of these abnormalities depends upon the tumour growth rate, duration of the illness and the patient's age. The clinical picture of a slowly developing and progressing Korsakoff's syndrome is observed in 25 % of the cases. Disturbances in the psychic activity manifest themselves by narrowing and impoverishment of associative processes, loss of clearness of notions and ideas, a lower level of judgements. The affective lability, present at the first stages of the tumour development, changes into emotional impoverishment. Some cases develop dementia with joyful excitement (moria).

Tumours may give rise to *fit-like hallucinatory disorders*: rudimentary hallucinations and hallucinoses, which are important for topical diagnosis of tumours. Unpleasant gustatory and olfactory (burning, rot, smoke, etc.) hallucinations and frightening visual ones, which develop independently or as an aura before a seizure, are indicative of temporal tumours.

***Epileptic disorders*** (seizures, absences, twilight states of consciousness) belong to frequent symptoms of brain tumours. Limited (jacksonian) seizures are more common, if tumours are localized in the region of the central gyri. Typical dysphoric states in tumours, a trend to ecstatic feelings, epileptoid changes in the personality, behaviour and thinking were described.

As torpor increases, the patient (left to his own resources) spends more time in semisomnolence and can be taken out from it only by persistent accosting, but after being left alone he subsides into semisomnolence again. Torpor increases and turns into sopor. Side by side with torpor increase, disturbances in memory and orientation develop. The patients do not or hardly remember what food they ate before, are unable to recollect recent events, the names of their relatives, some details, addresses, to tell the story of their illness. They poorly orientate themselves in place and time, would often assure that they have been hospitalized for 2-3 days, or that they are at home rather than at hospital, etc. The affective sphere is involved too: the patients become short-tempered, easily excited, light-headed, foolish or aggressive, but more commonly they are listless, apathetic, indifferent, gradually losing any interest to events and surroundings, they become indifferent to their affairs, home, family. Abilities for judgements, abstract and combined thinking are lost. The answers consist of one syllable, the judgements and acts become unmotivated.

The patients develop a trend to jests and absurd remarks which is not based on either their situation or surroundings. The patients' underestimation of the whole severity of their situation may be very expressed. Thus, one patient with a glioma in the frontotemporal region, a sharp reduction of vision, persistent vomiting, headaches and hemiparesis urgently demanded his discharge, assuring

that he was absolutely healthy and able to work, though because of the hemiparesis and bad general state he lost an ability to independent walking. Illusions of senses are quite common and various, they are: visual, auditory and gustatory hallucinations and body scheme disorders (anosotopognosiae).

Hallucinations are observed in some 10-12 % of all the cases with tumour diseases of the brain. More often they are unpleasant: the patients would smell smoke, burning, drugs, corpses, etc., see animals (often fantastic and ready to attack them) or strange figures of people, hear dirges or sad melodies, a baby's whine, etc. The patients feel enlargement or diminution of the size of their body parts, a change in their position or shape, or their absolute separation from the body.

The hallucinations, particularly visual, and anosotopognosiae may become significantly expressed and give rise to bad feelings. Having seen a skeleton covered with a shroud and holding a scythe in his hands, one female patient with a glioma in her right temporal region felt blind fear. Another female patient with a tuberculoma in the parietal lobe felt some screw-like twisting of her extremities, so with an expression of horror on her face she entreated the surrounding people to keep her legs. The hallucinations may appear both separately and in various combinations. The most complex hallucinations are observed in temporal lobe tumours. Such patients simultaneously develop olfactory, auditory and visual hallucinations.

In connection with the above mental disorders, there are also changes both in the patient's behaviour and his relationships with other people. These initial disturbances sometimes resemble other mental diseases: Korsakoff's, pseudoparalytical syndromes, manic-depressive psychosis, etc. Patients with brain tumours more often die at mental hospitals than at other types of medical institutions.

Frontal lobe tumours develop the organic psychosyndrome with changes in the personality, drives, mood, as well as disturbed attention and capacity for critical self-estimation and logic conclusions.

If the tumour is localized in the frontotemporal region, the psychoorganic syndrome is a background for developing various kinds of cloudiness of consciousness and the paranoid syndrome.

A lesion in the basal portion of the frontal lobe manifests itself by disintegration of psychic activity, weak motives, speech disturbances, ataxia. Some patients demonstrate disinhibition. Occipital tumours are characterized by a distorted perception of one's own body (disorders in sensory synthesis and body scheme), when the patients complain that their arms or legs have become excessively large, the head enlarges, the neck twists.

Tumours in the central region early develop convulsive seizures, as well as agnostic, apraxic and aphasic disturbances. Rather often the clinical picture of temporal tumours first of all manifests itself by paroxysmal hallucinations (more commonly olfactory and gustatory), as well as visual and gustatory illusions, phenomena of depersonalization, distortions in the perception of time and body scheme.

In occipital tumours, a local cerebral syndrome is often disguised by crises of the intracranial pressure. The most typical symptoms are homonymous hemianopsiae: distortions of colour perception, elementary visual hallucinations, paroxysmal photopsiae. Patients with cerebellar tumours suffer from severe headaches in the frontal region and a feeling that their head bursts.

In slow growing brain stem haemangiomas, a slow increase in motives and affectivity, some disinhibition and restlessness develop. Disturbances of consciousness and mnemonic functions are the earliest symptoms.

In basal tumours of the mesodiencephalic region, Korsakoff's syndrome often develops. Focal symptoms in such patients are not accompanied by disturbance of consciousness. Typical in this case are long periods of lethargic sleep with emotional bluntness and difficulties in processes of thinking. The patients can be awaked, but they rapidly fall asleep again.

Patients with tumours in the Turkish saddle region are notable for absence of activity, indifference, poor motives, loss of appetite, weaker sexual drive. By mistake, these symptoms are sometimes interpreted as depressive.

In tumours of the third ventricle, liquor tracts get obstructed much earlier if compared with tumours of other localizations. It results in attacks of higher intracranial pressure, ventricular attacks. At the same time, the organic psychosyndrome develops with memory disturbance, and it rapidly turns into dementia.

Children with psychopathological manifestations of tumours demonstrate a combination of organic disorders, caused by the tumour process, with peculiarities typical for mental maturation stages. The symptoms of brain tumours in children are less expressed: along with vomiting in the morning, they often suffer from sudden headaches, convulsive seizures. Some children behave like adults, others demonstrate apathy with foolishness. With a slow augmentation of the disorders there are behavioural changes: shortness of temper, conflicts at school, school dysadaptation with a gradually increasing loss of interest in games, apathy and organic dementia.

Psychopathological symptoms may often be the first evidence of a brain tumour. For a long period of time they remain the only ones even during a few months up to the appearance of neurological symptoms. Most commonly, at first

the feelings of fear, depression and low spirits develop, but often they are interpreted as a response to some overload or psychogenic effect. Later, cerebral functions are progressively disrupted.

**The prognosis** of the disease depends upon the histobiology of the tumour, the phase of clinical course by the moment of surgical intervention, localization of the tumour, peculiarities of the surgical intervention, the patient's age, state of his cardiovascular system and internal organs. The most favourable prognosis is in case of radical removal of the tumour and making an operation at the stage of subcompensation. Some patients after radical operations, even if they were accompanied by resection of some brain portion, completely restore all their psychic functions. Resection of the frontal lobes or one of the hemispheres may form the psychoorganic syndrome, even if it was absent before the operation, as well as changes in the personality.

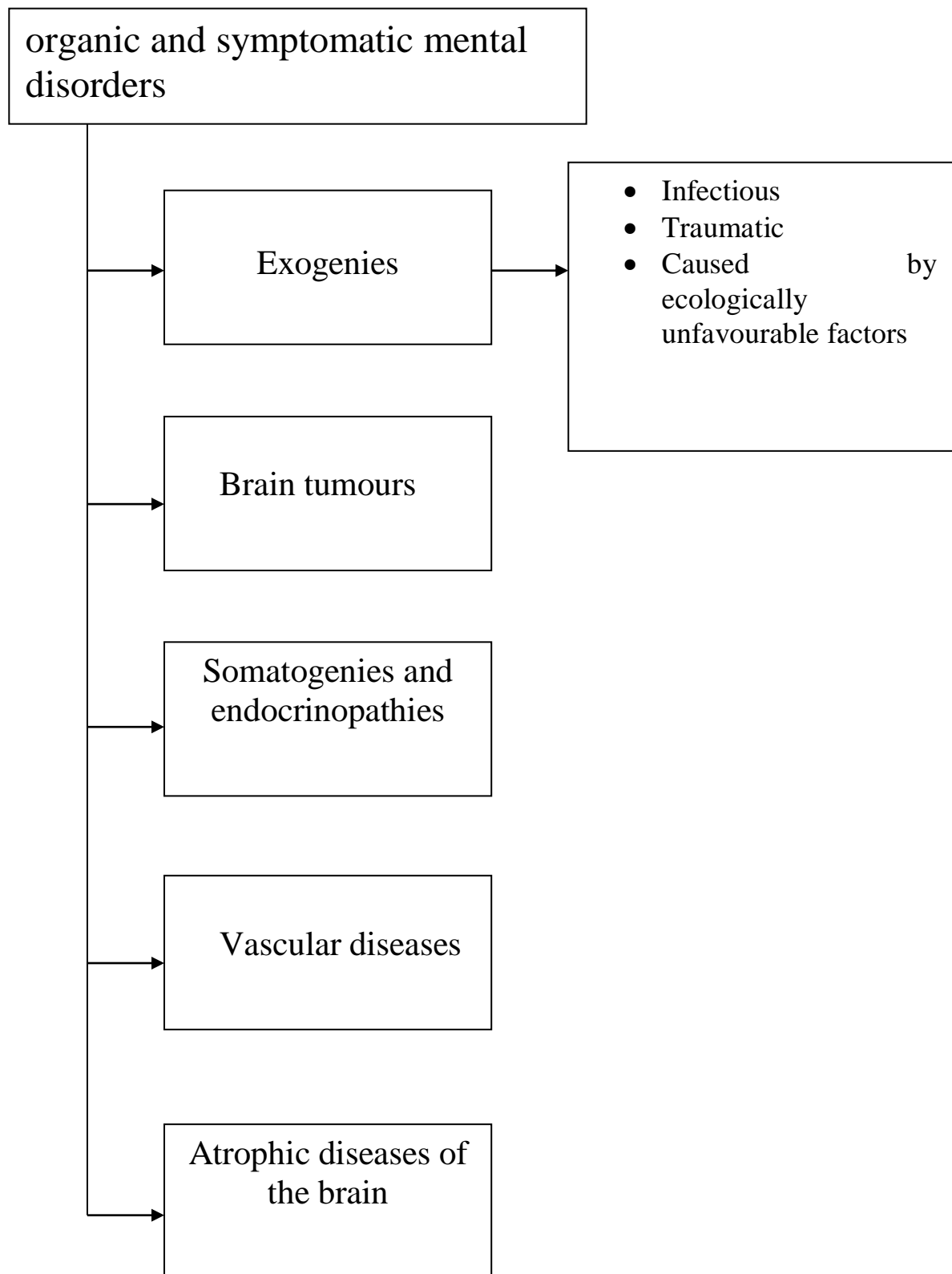
**The diagnosis** of brain tumours can result from a complex psychopathological, neurological and general somatic examination. But during the patients' life, brain tumours are not always diagnosed, in 2/3 of cases they are not revealed. For many years such patients remain under the supervision of psychiatrists with the following diagnoses: vascular psychoses, senile dementia, alcoholic epilepsy, schizophrenia.

It is possible to differentiate brain tumours from other organic lesions of the brain by the analysis of the duration of the process, within which the defect developed, the rate of the mental disorder augmentation, presence of episodes of disturbed consciousness and paroxysmal states, revealing of focal neurological symptoms, by the data of computed tomography and MRI. In some cases it is difficult to differentiate tumour-induced mental disorders from schizophrenia. But schizophrenia-like (hallucinatory-delirious, catatonic, hebephrenic) symptoms in tumours are not characterized by the integrity and dynamics, typical for schizophrenia, and usually develop against a background of disturbed consciousness. Besides, in brain tumours there are no disturbances in the association process and psychic automatisms typical for schizophrenia.

Surgical intervention aimed at removal of the tumour is **the basic method of treatment**. It may result in a total or partial removal of the tumour, decompression-type operation. The surgical treatment is usually accompanied by radiotherapy, hormonal and immunological therapy, chemotherapy, selective introduction of radioactive isotopes into the tumour. Depending upon the psychopathological symptoms, antidepressants and neuroleptics are administered. If there is the psychoorganic syndrome during the postoperative period, it is expedient to use nootropic drugs.

*Experts' examinations* depend upon the tumour localization and expressiveness of mental disorders.

Graphological structure of organic and symptomatic mental disorders (by the nosological principle):



Graphological structure of mental disorders of the infectious genesis:

