

NEUROSES OR NEUROTIC DISORDERS

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Annotation: Professional neuroses are selective disorders of a particular type of highly coordinated actions that are repeatedly and stereotypically repeated in the course of professional activity. They are characterized by weakness, spasm, tremor or pain that occurs when performing a certain movement during work.

Keywords: musculoskeletal system, selfishness, irritability, dissatisfaction, hereditary predisposition, stereotypical motor activity.

The basis of the pathology is functional disorders of the processes of central nervous regulation of the performance of repetitive complex precise motor acts used in professional activities. The provoking etiologies have not been precisely established. Some authors suggest the influence of biomechanical features: the individual structure of the musculoskeletal system acquired during learning the pattern of performing an action. A hereditary predisposition cannot be excluded, clinically manifested against the background of many years of stereotypical motor activity.

Most experts consider the main cause of the disease to be imbalance of the nervous system due to certain character traits. Studies have shown that the risk of developing pathology is increased in people of a selfish nature: self-important, striving for primacy, claiming exemplary performance, worrying about their own health, critical of others, categorical. Due to selfishness, irritability, dissatisfaction, and emotional lability, many life situations are stressful, which contributes to changes in the functioning of the central nervous system associated with professional activity.

Precise, highly differentiated movements are possible thanks to the coordinated sequential contraction of the muscle groups that provide them. Regulation of voluntary motor activity is carried out by a multi-level, multi-component system, including the motor cortex, subcortical ganglia, reticular formation, and spinal cord motor neurons. The localization of the failure of the regulatory mechanism causing professional coordination neurosis has not been determined. The results of the studies showed an expansion of the zone of sensory representation of the affected fingers in the cerebral cortex of patients with focal dyskinesia of the hand, which indicates the pathogenetic role of increased afferent impulses that occur with an excessive number of stereotypic movements. Enhanced sensory impulses can cause hyperactivation of spinal neurons, as a result of which the latter independently send efferent stimuli to the muscles without receiving corresponding influences from the overlying parts of the central nervous system. The result is an involuntary contraction of the muscles involved in the motor act. In some cases, the process spreads to neighboring muscles and occurs with muscle weakness and pain. There are a large number of varieties of coordination dyskinesias. The classification by type includes the most common professional neuroses. Writing cramp is a tonic contraction of the muscle groups involved in writing, making further work impossible. It

is observed among doctors, teachers, civil servants, and workers in other professions associated with the need to write a lot and quickly.

Keyboard dyskinesia is a dysfunction of the hand muscles that occurs when working on a computer keyboard or the keys of musical instruments. Found among typesetters, pianists, and accordion players.

String dyskinesia is a hand dysfunction associated with playing stringed musical instruments. Possible for violinists, harpists, guitarists.

Mouthpiece dyskinesia is a disorder of the perioral muscles while playing a wind instrument. It is noted among trumpeters, saxophonists, and flutists.

According to W. Govers' classification, the following types of professional neurosis are distinguished according to the form of movement disorders:

Convulsive - performing a disrupted motor pattern leads to muscle spasm.

Trembling - a compromised motor act is accompanied by small-amplitude muscle contraction, clinically manifested by tremor.

Paretic - the clinic is dominated by muscle weakness, which suddenly occurs when performing a problematic motor act.

Neural - the leading symptom of dyskinesia is pain that occurs during movement and forces the patient to stop further movement.

The first manifestations are not obvious and are described by patients as awkwardness. With writing cramp, there is a change in handwriting, a slower pace of writing, and heaviness in the hand. Keyboard and string professional neuroses are characterized by sudden involuntary bending/twisting of fingers, episodic weakness, trembling of one/several fingers. Musicians who play wind instruments complain that "sometimes their lips stop listening." Patients note that irritation, anxiety, and stress cause deterioration, and a calm, friendly attitude makes it easier to perform the problematic action. The increase in these changes significantly complicates professional activities and forces musicians to leave their performing careers. Attempts to overcome the difficulties that have arisen through more persistent training cause aggravation of symptoms. Short breaks (weekends, vacations) promote temporary improvement.

Professional neuroses are characterized by dysfunction strictly limited to a specific motor act. Thus, patients with hand dyskinesia for a long time retain the ability to freely perform almost all other movements: sewing, writing, cutting with scissors, using a knife. As the disease develops, pathological changes appear immediately when attempting to initiate movement and spread to adjacent motor functions. Clinical symptoms become mixed: the convulsive form occurs with a neural component, the paretic form with a trembling component. Hand clumsiness begins to occur during other small movements that require precise coordination: fastening/unbuttoning buttons, tying shoelaces, holding a knife, spoon. Lip dyskinesia is observed when drinking through a straw; its spread to the masticatory muscles makes it difficult to chew food.

Complications

The resulting movement disorder is the subject of anxiety, increased stress of the patient, aggravating dyskinesia. A vicious circle is formed, which causes the progressive course of the disease. Compensatory techniques that facilitate the action (shaking hands,

kneading fingers, writing in a standing position) become ineffective. The patient has to give up further professional activity and move to another job. Self-centered, selfish character traits cause the patient's disadaptation to new life circumstances and are the basis for the development of neurotic disorders: hypochondria, depression, generalized anxiety disorder.

Diagnosics

In the initial period, professional neuroses cause certain diagnostic difficulties associated with the spread of symptoms exclusively to one action, difficulties in verifying the dyskinesia described by the patient in cases where the presence of a musical instrument is required. In most situations, there is a belated visit to doctors due to the non-obviousness of the disorders to the patient himself (in the case of writer's cramp), or fear of harming one's career (for musicians). Diagnostic techniques include:

Examination by a neurologist. Examination of pathological movement reveals dystonia, uncoordinated contraction of antagonist muscles. The long course of the pathology is accompanied by a decrease in the strength of the muscles involved in the movement. There are no other neurological symptoms.

Consultation with a psychiatrist. Includes psychological testing, research of the mental sphere by observation and conversation. Allows you to determine the patient's personal characteristics and exclude the presence of a mental disorder.

Electroneuromyography. When examining the muscles involved in dyskinesia, increased bioelectrical activity at rest and rapid exhaustion under tension are revealed. ENMG helps to differentiate secondary movement disorders that occur against the background of demyelination, axonal degeneration, nerve injury, and muscle pathology.

MRI of the brain. Necessary to exclude organic damage to the central nervous system (brain tumor, cerebral cyst), which can manifest as focal dyskinesias. In the case of professional neurosis, there are no morphological changes.

It is necessary to differentiate professional neuroses from neuritis, initial manifestations of hyperkinesia (athetosis, torsion dystonia) with central damage to the extrapyramidal system, radicular syndrome, and muscle diseases. The differential diagnosis is based on the connection of the pathology with stereotypical professional motor activity, the selective nature of the disorders, and electroneuromyography data.

Treatment of professional neuroses. Therapy begins with normalizing the daily routine with a mandatory sufficient amount of sleep. It is necessary to limit the problematic movement, to exclude everyday overloads of the hand: carrying heavy bags, needlework. The treatment is long-term, carried out with the participation of a neurologist, kinesiologist (physical therapy doctor), rehabilitation specialist, psychotherapist, and includes the following main methods. With increased emotional lability, it is recommended to take sedatives and electro sleep.

Therapeutic gymnastics (kinesiotherapy). It is carried out according to an individually developed motor strategy. Requires regularity, perseverance, gradual increase in loads and execution time. With writer's cramp, writing training is carried out; with string dyskinesia, exercises are performed with a dystonic finger while fixing healthy ones.

Use of orthoses. For writer's cramp, a finger fixator and special handles are used; for computer keyboard dyskinesia, a gel pad under the wrist is used. These devices relieve the load from the muscles involved in the movement and change the motor stereotype. Botulinum therapy. Botulinum toxin is administered strictly into compromised muscles. The drug makes it difficult to transmit nerve impulses to the muscles, blocking involuntary movements, spasms, and tremors. Precise administration presents certain difficulties, which limits the widespread use of the method. Psychotherapy. Required for patients with neurotic conditions. It is carried out using the methods of psychoanalysis, cognitive behavioral psychotherapy, and psych correction. It is aimed at helping patients understand internal conflict and reconsider their attitude towards life situations, including the need for professional reorientation. Among the causes of the development of neurosis in modern science, two components are considered: psychogenic and biological.

Psychogenic causes of neurotic disorders are the inability to adequately respond to external stimuli, which causes stress. The first reason for an inadequate reaction may be low resistance to stress, high susceptibility even to those things that in stronger people do not cause any pathological reaction from the psyche. For example, dripping water from a tap can cause severe irritation for some, while others simply do not notice these sounds. Consequently, the tendency and risk of developing neurosis is much higher in the former. It is impossible to talk about the presence of psychopathology in such a person; this is a personality trait, a character determined by hereditary, genetic or acquired (a consequence of upbringing, social environment) factor.

The second cause of psychogenic neurosis is a strong external stimulus, which is difficult to cope with even for people with a "strong psyche". Such irritants include chronic stress at work (professional failures, interpersonal relationships, management bias), conflicts at home, domestic problems, health problems, loss of loved ones, financial problems, etc. The risk of neurosis increases with constant overwork, lack of adequate rest, and inability to relax.

The biological cause of neurotic disorders is a disruption in the exchange of neurotransmitters, hormones, vitamins, and other biologically active substances responsible for the normal functioning of the central nervous system and higher nervous activity in particular. This reason cannot be considered separately from psychogenic neurosis, since in the end it all comes down to the impaired function of brain neurons, but what is the primary factor in pathological changes in nerve cells is considered the main cause of neurotic disorder.

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