

Motor disorders

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Introduction

Motor disorders can be regarded as neurological signs and discussed and classified like organic signs (Kahlbaum). The other approach is to explain them on the basis of patients conscious or unconscious attitudes. Motor disorders in psychiatric disorders can be subjective or objective.

The alienation of motor acts

Normally we experience our actions as being our own and under our control. In certain conditions however this feeling of control over one's actions might be lost. In obsession and compulsions the patient experiences the obsession as appearing against his will. In schizophrenia patient experiences as if he has lost control over his thoughts, feelings or actions - delusion of passivity.

Classification of motor disorders

1. Disorders of adaptive movements
2. Disorders of nonadaptive movements
3. Motor speech disturbance
4. Disorders of posture
5. Abnormal complex patterns of behaviour
6. Movement disorder associated with antipsychotic medication

Disorders of adaptive movements

Disorders of adaptive movements can be of three types: (a) Disorders of expressive movement, (b) Disorders of reactive movements, and (c) Disorders of goal-directed movements.

(a) Disorders of expressive movements: Expressive movements involve the face, arms, hands and the upper trunk. The extent of these movements vary with emotions, between cultures and also within individuals within the same culture. In depression, patients have limited range of expressive movements, omega sign, Veraguth fold, weeping spells, generalized psychomotor retardation; in agitated or anxious depression patient may be restless and apprehensive, sometimes displaying hand wringing. In catatonic schizophrenia, there are stiff expressive face, limited bodily movements, eyes may however be lively giving the expression that the patient is looking through a

mask, excessive grimacing and facial contortions, snout spasm. In mania, expressive movements are exaggerated, cheerful and uses wide expansive gestures; transient depression may interrupt manic activity - emotional lability. In ecstasy, there are rapt, intense look; however patient is not restless, overactive and interfering. He is incommunicable and completely absorbed by the intense experience; found in psychosis, schizophrenia, epilepsy and certain personalities with appropriate religious training.

(b) Disorders of reactive movements: Reactive movements are immediate automatic adjustment to new stimuli. They are reduced or lost in catatonia or stupor. In neurological disorders like parkinsonism also they are reduced. In severe anxiety states reactive movements are prompt and excessive.

(c) Disorders of goal directed movement: Normal voluntary movements are carried out smoothly without any sense of effort on the part of the individual. They reflect both the personality of the patient and their present mood state. In depressive illness there is psychomotor retardation. In mania however psychomotor activity is exaggerated. In catatonia there is blocking or obstruction (Sperrung). Unusual repeated performances of a goal-directed motor action or the maintenance of an unusual modification of an adaptive behaviour posture are known as mannerism. Mannerism can occur in person who has a need to be noticed, persons with a lack of self confidence, in schizophrenia.

Disorders of nonadaptive movements

i) Spontaneous Movements

a) **Tics:** They are rapid, recurring motor movements (motor tics) or vocalizations (phonic or vocal tics) that are non rhythmic, involuntary or semi voluntary and sudden in onset. They are classified as simple and complex motor tics. DSM IV classifies them as transient tic disorder, chronic motor tic disorder, chronic vocal tic disorder, Tourette's disorder. Some consider tics as phylogenetically determined motor habits. Others believe that patient has a constitutional predisposition to tics and this is brought to light by emotional tension. They can also occur after encephalitis or indicate the onset of torsion dystonia or Hutington's chorea. Neuroanatomical and neurochemical studies of Tourette's disorder points to a diffuse disorder in the brain involving the cortico-

striato-thalamo-cortical (CSTC) pathway. Several neurotransmitters and neuromodulators have been implicated including dopamine, serotonin and endogenous opioids.

b) **Static tremors:** It occurs in hands, head and upper trunk when the subject is at rest. It is another example of 'normal' spontaneous movement that occurs in the very anxious or frightened individual. Like any other psychogenic symptom tremors occur in the context of conversion disorder. They also occur in parkinsonism, thyrotoxicosis and alcohol dependence syndrome.

c) **Intentional tremor:** It occurs as the goal of the voluntary movement is being reached. It is associated with cerebellar disorders and may be seen in multiple sclerosis.

d) **In spasmodic torticollis,** there is spasm of neck muscles, especially the sternocleidomastoid which pulls the head towards the same side and twists the face in opposite direction.

e) **Chorea:** Derived from the Greek word 'dance'. It refers to involuntary arrhythmic movements of a forcible, rapid, jerky type. Although the movements are purposeless, the patient may incorporate them into a voluntary act to make them less noticeable. The movements are usually discrete but if they become numerous they become confluent and resemble athetosis. The limbs are often slack and hypotonic and knee jerks tend to be pendular. Chorea differs from myoclonus mainly with respect to the speed of the movement. The neuroanatomical substrate of chorea often corresponds to lesions in basal ganglia. Diseases characterized by chorea include inherited disorders (Huntington's chorea, benign hereditary chorea, neuroacanthocytosis), rheumatic chorea (Sydenham, chorea gravidarum), drug induced chorea (antipsychotics, oral contraceptives, phenytoin), chorea symptomatic of systemic disease (lupus erythematosus, thyrotoxicosis, polycythaemia vera [PCV], hyperosmolar nonketotic hyperglycemia, acquired immunodeficiency syndrome [AIDS]), hemichorea, rarely associated with stroke, tumour, vascular malformation, other rare causes (Wilson's disease, Hallervorden Spatz disease, paraneoplastic).

f) **Athetosis:** Derived from Greek word meaning 'unfixed' or 'changeable'. This disorder is characterized by inability to sustain fingers and toes, tongue or any other part of the body in one position and with slow, sinuous purposeless movements that have a tendency to flow into one another. As a rule, the abnormal movements are more pronounced in the digits and hands, face, tongue, throat. Diseases associated with athetosis include hypoxia and kernicterus,

posthemeplegic athetosis, Huntington's chorea, drug induced, other neurodegenerative and metabolic disorders.

g) **Hemiballismus:** Uncontrolled, poorly patterned, flinging movement of an entire limb. Ballistic movements are usually unilateral and the result of an acute lesion of subthalamic nucleus. Rarely a transitory form is linked to a subdural haematoma, or thalamic or parietal lesion. Bilateral ballismus is very infrequent and usually asymmetrical and here a metabolic disturbance particularly nonketotic hyperosmolar coma is the cause. In most cases medication with phenothiazines or haloperidol suppresses the violent movements. In extreme cases stereotactic lesions placed in the ventromedial thalamus and zona inerceta have proved effective.

A stereotypy is defined as a frequent, almost mechanical repetition of the same posture, movement or form of speech which are not goal directed. The stereotyped movements discussed earlier including choreic and athetoid movements are also sometimes encountered in catatonia.

ii) Abnormal induced movements

Some abnormal induced movements can be regarded as the result of undue compliance on the part of the patient while others may be interpreted as indicating rejection of the environment.

a) **Automatic obedience:** Strict obedience of command without critical judgement. Most commonly occurs in catatonia and dementia (occasionally).

b) **Echopraxia and echolalia:** Echopractic patients imitate simple actions that they see such as hand clapping, snapping fingers and so on. In echolalia the patient repeats a part or the whole of the word that has been said to them.

c) **Perseveration:** Pathological repetition of the same response to different stimuli, as in a repetition of the same verbal response to different questions (organic brain disorders and schizophrenia). In logoclonia the last syllable of the last word is repeated. In palilalia the patient repeats the perseverated word with increased frequency. Freeman and Gathercole (1996) studied perseveration in schizophrenia, arteriosclerotic dementia and senile dementia. They described three forms of perseveration - Compulsive repetition in which the act is repeated until the patient receives the next instruction, more common in schizophrenia; impairment of switching, here the repetition continues even after the patient has been given a new task, more common in dementia; ideational perseveration, here the patient repeats the words or phrases during their reply to a question, equally common in both groups.

d) **Forced grasping:** It is another type of abnormal induced movement found commonly in catatonia and dementia.

e) **Magnet reaction:** If the examiner touches the palm and steadily withdraws his finger the patient's hand may follow the examiner's fingers rather like a piece of iron following a magnet; found in catatonia and organic brain disorders.

f) **Cooperation (mitmachen):** Here the body can be put into any position without any resistance on the part of the patient, although they have been instructed to resist all movements. Mitgehen is an extreme form of cooperation, because the patient moves their body in the direction of slightest pressure on the part of the examiner; found in catatonia and neurological diseases affecting the brain.

g) **Opposition (Gegenhalten):** Some individuals with catatonia oppose all passive movements with the same degree of force as that is being applied by the examiner.

h) **Negativism:** Verbal or nonverbal opposition or resistance to outside suggestion and advice. Commonly seen in catatonic schizophrenia in which the patient resists any effort to be moved (passive) or does the opposite of what is asked (active).

i) **Ambitendency:** It can be regarded as a mild variety of negativism or as the result of obstruction. The patient makes a series of tentative movements that do not reach the intended goal when they are expected to carry out a voluntary action.

Motor speech disorders in mental disorders

Attitude to conversation:

a) Patients with negativism tend to turn away from all attempts to speak to them. Other patients with schizophrenia appear to have difficulty to attend to what is being said due to continuous auditory hallucinations. Some patients turn toward the examiner when he speaks to them and stare at him with an expressionless face without saying a word or reply to every question whether sensible or not.

b) Flow of speech - Some patients with mania or schizophrenia may demonstrate pressure of speech. Individuals with fantastic delusions may be extremely voluble when describing their fantastic experience. The quality of speech in catatonia as in motor aphasia may be strange and stilted. Catatonic patients may

demonstrate unusual intonation, talk in falsetto tone, or have staccato speech or nasal speech. Some patients never speak above a whisper or speak with an unusual strangled voice (Wurgstimme).

c) Mannerism and verbal stereotypies

d) Perseveration

e) Echolalia

Disorders of posture

Abnormal postures occur in some individuals in the context of attention seeking behaviour and individuals with over anxious personalities. Manneristic posture is an odd stilted posture that is an exaggeration of a normal posture that is not rigidly maintained. While a stereotyped posture is an abnormal and nonadaptive posture that is rigidly maintained. Psychological pillow is an example of stereotyped posture found in catatonia and also in dementia.

Perseveration of posture (catalepsy): Here the patient tends to maintain for long periods postures that have arisen fortuitously or which have been imposed by the examiner. The patient maintains such postures atleast for one minute and usually much longer. Catalepsy is often variable; found in catatonia, encephalitis, vascular disorders and neoplasms affecting the midbrain.

Abnormal complex patterns of behaviour

I) Non-goal-directed abnormal patterns of behaviour: The two important patterns of behaviour of this type are stupor and excitement, which although dramatically opposed patterns of behaviour, often occurs in the same psychiatric disorders.

a) Stupor: Stupor is a state of more or less complete loss of activity where there is no reaction to external stimuli. It can be regarded as an extreme form of hypokinesia. Stupor may occur in states of shock, dissociative or conversion disorders, depression, psychosis, catatonia and organic brain disease. Psychogenic stupor may occur in states of severe psychological shock, such as those that may occur during bombardment in wartime. Stupor may occur in epilepsy when there is continuous epileptic discharge on the electroencephalogram (EEG) or repeated bursts of such discharge. The most common variety of functional psychosis in which stupor occurs is catatonic schizophrenia.

Difference between catatonic stupor and depressive stupor

Stupor in catatonic schizophrenia

- i) Deadpan facial expression.
- ii) No emotional response to affect laden questions.
- iii) Increased muscle tension
- iv) Catalepsy may be present.
- v) Incontinence may be present

Depressive stupor

- i) Depressive facies
- ii) Becomes more depressed when affect laden topics are mentioned.
- iii) Normal muscle tension.
- iv) Catalepsy absent .
- v) usually absent

b) Excitement: In paranoid schizophrenia a sudden increase in the intensity of hallucinatory voices may lead to excitement. In appreciation needing personalities excitements are motivated by a desire for attention. In mania excitement can be understood as a consequence of elated mood. However excitement also occurs in catatonia and organic brain disease where it cannot be understood as arising from some other psychological abnormality. Psychogenic excitements may be acute reactions (in response to stressors) or goal directed reactions (part of attention seeking behaviour). In typical manic excitement patient is cheerful, restless and interfering. However sometimes the patient is angry and irritable and becomes violent and threatening when thwarted. In catatonic excitements the face is deadpan and the movements of the body are often stiff and stilted. The violence is usually senseless and purposeless. In delirium there may be ill directed overactivity.

Pathological drunkenness (mania a potu): Here there is senseless violence after the patient has drunk a small quantity of alcohol. Patient is not ataxic and does not have the usual signs of drunkenness. The episodes last for an hour or so and the patient has amnesia for it.

II) Goal directed abnormal patterns of behaviour: Patients with hebephrenic schizophrenia behave in a childish, spiteful way. Few individuals with schizophrenia and persecutory ideation attack their alleged persecutors. Delusion-like ideas of marital

infidelity are more likely to give rise to violent and murderous behaviours than are true delusions of persecution. If an individual with schizophrenia kills someone they may be acting in response to instruction given by hallucinatory voices or may be acting in accordance with grandiose religious beliefs. Very rarely individuals with depression may kill their loved ones before committing suicide themselves - extended suicide.

Movement disorders associated with antipsychotic medication

They include akathisia, acute dystonia, tardive dystonia, acute and tardive dyskinesia. However tardive dyskinesia are associated with schizophrenia even prior to the prescription of any medication (Gervin et al. 1998).

Management: Reducing antipsychotic dose, changing to another medication, prescribing additional medication (anticholinergics).

References

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