

# Hyperkinetic extrapyramidal syndromes

**Hyperkinetic extrapyramidal syndromes** are characterized by abnormal involuntary movements.

They include:

- tremor,
- chorea,
- ballism,
- dystonia,
- myoclonus,
- tics.

## Tremor

A tremor is a rhythmic oscillatory movement of a body part caused by alternating contractions of muscle agonists and antagonists. It is the most common extrapyramidal symptom.

### Types of tremor

- **resting** - Parkinson's disease, Parkinson's syndrome, essential tremor, cerebellar tremor.
- **static, postural** - physiological tremor during cold, hunger, emotions and exhaustion, essential tremor, Wilson's disease.
- **kinetic** - lesions of the cerebellum and its pathways, essential tremor, psychogenic (hysterical) tremor.
- **intention** - in cerebellar syndrome, present ataxia, and hypermetria.

Tremor is characterized by frequency, amplitude, symmetry, body location, triggering and suppressing factors, and reactivity to drugs.

Different types of tremors are formed in different areas of the central or peripheral nervous system. The center of creation is the so-called oscillator (source of rhythmic activity).

### Differential diagnosis

Rhythmic myoclonus, and asterixis (flapping tremor) - can be differentiated by EMG.

## Chorea

Chorea is made up of irregular, random movements of various parts of the body. These are random and unpredictable involuntary movements that are short, fast, and usually torsional. They are most often on the limbs and in the orofacial area. They usually intensify in movement, speech, and emotions. A typical example is the characteristic dance walk. It is the most common extrapyramidal symptom.

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- **kin**

### Etiology

Striatal damage (especially *putamen*), causes a predominance of dopaminergic neurotransmission.

### Causes

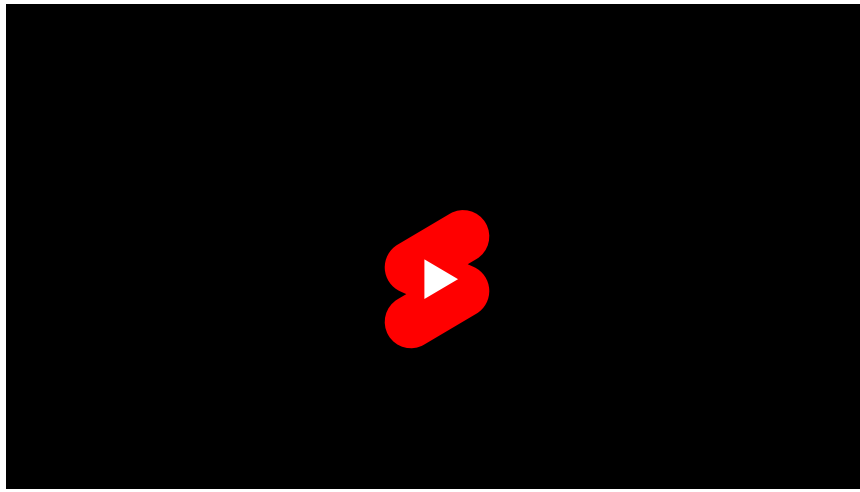
Metabolic, toxic, and drug effects.

### Symptom

Chorea occurs regularly in the following diseases: \*Huntington's chorea

- Dopaminergic dyskinesia
- Parkinson's disease
- Focal lesions of the [[BG|basal ganglia] (perinatal encephalopathy)
- Striatal damage in streptococcal infection
- Chorea in pregnancy

### Choreatic movements in Huntington's disease



### **Treatment**

Antidopaminergic treatment with neuroleptics.<sup>[1]</sup>

## **Ballism**

Ballismus is similar to chorea. These are violent, irregular, jerking movements of greater amplitude, mainly on the proximal parts of the limbs.

Hemiballism is a ballism that affects only one half of the body. It is the most common manifestation of ballism.

### **Etiology**

Damage to the contralateral subthalamic nucleus of Luysi or putamen. The cause can be a stroke, post-medication, hyper- or hypoglycemia, expansive processes in the CNS, brain trauma, encephalitis, MS, or neurodegenerative diseases (chorea, etc.).

### **Treatment**

Neuroleptics.

## **Dystonia**

Dystonia is made up of persistent muscle contractions that cause twisting and repetitive movements or abnormal positioning of the affected body parts. Symptoms of dystonia are usually activated or accentuated by free movement.

### **Distribution**

*According to localization and extent of manifestations:* focal, segmental, generalized, multifocal, and hemidystonia.

*According to etiology:* idiopathic, symptomatic (secondary) - especially in persistent diseases.

### **Treatment**

Anticholinergics.

## **Torsion dystonia**

Torsion dystonia can be:

1. generalized (affects trunk muscles) – tonic generalized spasms, lordosis increases when walking, turns into trunk torsion (twisting) + head tilt making walking impossible (dysbasia lordotica progressiva),
2. localized (affects only certain muscle segments/groups of muscles), e.g. torticollis muscularis spastica (this is torsional dystonia of the neck),
3. also professional cramp (writer's cramp) - often in musicians.

## **Myoclonus**

Myoclonus is made up of violent jerks of muscles with an irregular rhythm, affecting individual muscles on the limbs, trunk, head, and face in isolation or at the same time. Unlike tremor, both agonists and antagonists contract simultaneously. Unlike chorea, they are violent and jerky. They can be irregular or rhythmic. Intensity is mainly

influenced by emotions.

### Distribution

- By scope: focal, segmental, multifocal, and generalized.
- According to the cause: idiopathic, symptomatic (secondary).
- According to the location of the cause:
  - **Cortical** - sudden jerks of the muscles of the face and limbs, spreading craniocaudally.
  - **Subcortical** (trunk, reticular) – affects eye muscles (opsoclonus) or soft palate.
  - **Spinal** – affects the limbs and trunk.

### Other manifestations

- **Hiccups** (singultus) are physiological myoclonus of the diaphragm.
- **Asterixis**, the so-called negative myoclonus, on the other hand, is caused by a sudden short-term loss of muscle tone.

### Etiology

- Metabolic disorders.
- Pharmacological and toxic effects (lithium, tricyclic antidepressants...).
- Inflammation of the brain or spinal cord.
- Injuries, demyelination, or tumors of the spinal cord.

### Therapy

- Cortical etiology – nootropics (piracetam).
- Subcortical and spinal – GABAergic preparations (clonazepam, valproate).

## Tics

Tics are rapid, irregularly repeating, stereotyped movements or vocalizations accompanied by a release of internal tension. They have a compulsive nature, but are partially influenced by will. They ease when concentrating on another activity, and worsen with stress and excitement. Unlike other hyperkinetic disorders, they persist even during sleep.

### Distribution

- Movement x sound.
- Simple x complex.
- Simple movement tics – clonic (e.g. twitching of the nose) or dystonic (e.g. opening and twisting of the mouth).
- Complex movement tics (eg throwing strands of hair out of eyes).
- Simple sound tics (eg coughing).
- Complex sound (vocal) tics (e.g. coprolalia, echolalia, pallialia).

*By cause:* idiopathic (Tourette syndrome), symptomatic (secondary).

### Etiology

Dysfunction of the basal ganglia - transiently increased sensitivity of dopaminergic receptors.

## MKN-10

According to MKN-10:

- **Other extrapyramidal and movement disorders G25 (<https://mkn10.uzis.cz/prohlizec/G25>)**
- **Extrapyramidal and movement disorders in diseases classified elsewhere G26 (<https://mkn10.uzis.cz/prohlizec/G26>)**

## Links

### References

1. NEVŠÍMALOVÁ, Soňa, Evžen RŮŽIČKA a Jiří TICHÝ. *Neurologie*. 1. vydání. Praha : Galén, 2005. s. 30-35. ISBN 80-7262-160-2.
2. ↑ SEIDL, Zdeněk a Jiří OBENBERGER. *Neurologie pro studium i praxi*. 2. vydání. Praha : Grada Publishing, 2004. ISBN 80-247-0623-7.
1. **Cite error: Invalid <ref> tag; no text was provided for refs named Nevšímalová**

