

Movement disorders - a review article

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Introduction

Involuntary movement disorders are one of the common problems faced in day to day clinical practice. Movement disorders are a group of clinical conditions that interfere with the regulation of voluntary motor activity without directly affecting the power, sensation, or cerebellar functions".

There are classified into Hypokinesia and Hyperkinesia.

Hypokinesia is a type of movement disorder, where movements have a "decreased amplitude and partial or complete loss of muscle movements due to a disruption in the basal ganglia and extra-pyramidal system. Usually it is a symptom of Parkinson's disease.

Hyperkinesia is uncontrollable excessive movements. Patients present with wide variety of abnormal involuntary movements due to uncontrolled muscular action or dyskinesias.

I am revising & reviewing Hyperkinesia with a MNEMONIC.

A mnemonic is a tool that helps us remember certain facts or large amounts of information.

Mnemonic (First "M" is not pronounced) is a memory device, learning technique that aids information retention or retrieval (remembering).

I have listed below a few of the common neurological involuntary movement disorders with an easy mnemonic of first 9 letters of English alphabets

- A - Athetosis
- B - Ballismus
- C - Chorea
- D - Dystonia
- E - Epilepsy

F - Fasciculation

G - Generalised Myoclonus

H - Hand Tremor & Habit spasm

I - Intention Tremor

A - Athetosis

Athetosis means "changeable" in Greek.

It is characterized by slow, flowing, often twisting or sinuous, writhing movements of fingers or toes. Involves mainly Distal muscles.

(hands, fingers)

Athetosis can also affect the face and tongue.

Chorea and athetosis sometimes occur together; this condition is called "CHOREOATHETOSIS." (Figure-1) (Table.1)

Figure. 1



Athetosis

Table.1. Causes of athetosis.

Asphyxia
Neonatal jaundice
Thalamic stroke
Rheumatic fever
Cerebral palsy

Treatment

- Artane, Cogentin, Tetrabenazine, Haloperidol
- Thiopropazate, Diazepam

B – Ballismus

- Sudden onset of violent involuntary flinging movements of the limbs. Usually affects only one side of the body (HEMIBALLISM).
- Rapid, Nonrhythmic, wildly flinging movement of the proximal arm and/or leg; (Table- 2):

Table- 2 Causes of Hemiballismus

CVA with Lesion in contralateral Subthalamic Nucleus of Luys - Stroke
Tuberculomas
Demyelinating plaques
HIV infection
Traumatic Brain Injury
Amyotrophic Lateral Sclerosis
Nonketotic Hyperglycemia

C - Chorea (Chorea means "dance" in Greek)

Chorea is rapid irregular, quasi purposive (semi-purposive), Non-repetitive arrhythmic, unpredictable, jerky movement, which involves the extremities, the face, and tongue. In the limbs, chorea occurs more in the 59 e distal muscles.

Huntington disease

It is an Autosomal-dominant inheritance adult aged above with Progressive dementia. The gait is unsteady with a tendency to fall and with Facial grimacing & involuntary movements of the tongue

Sydenham (St Vitus' Dance)

This is Rheumatic chorea- Choreic movement interferes with usual works and results in Clumsy gait. (Figure – 2)

St. Vitus Dance Figure – 2



Choreic movements and Types of chorea (Table - 3)

Table – 3

Types of Corea
HREDITARY - Huntinton disease, Wilsons disease
Sydenham (Rheumatic chorea)
Infections Encephalitis, SLE
DRUG INDUCEDD –
Antipschotic, Oestrogen, Levpdopa
Hyperthyroidism, Nonketotic Hyperglycemia Encephlopathy
Pregnancy (Chorea Gravidarum)
Senile Chorea
Polycythemia

Associated with dropping or spilling, explosive burst of dysarthric speech. Milkmaid's grip is Generalized hand grip weakness and inability to maintain sustained muscle contraction; Subjects, when asked to squeeze the examiner's fingers; do so by a 'milking' motion of contraction and relaxation

Pronator sign:- The patient is asked to hold outstretched hands above his head; the choreic patient tends to pronate his forearms.

Some patients have "Jack in the box" tongue, where the patient is unable to maintain the tongue in a protruded state, and the tongue moves in and out. Other names for this sign are Flycatcher's tongue, Lizard's tongue, Chameleon tongue, Snake tongue, Adder tongue, Trombonist's tongue, Harley Quinn's tongue Treatb-nebt of chorea – (Table - 4)

Treatment of Chorea - Table - 4

Risperidone,
olanzapine,
clozapine,
quetiapine.
Haloperidol 3-6 mg daily
Dopamine-depleting agents (e.g., reserpine, tetrabenazine, deutetrabenazine), GAB Aergic drugs clonazepam, gabapentin, and valproate,

D - Dystonia

Sustained muscle contractions are frequently causing twisting and repetitive movement or abnormal postures or limbposition. Blepharospasm: involuntary forceful closure of eyes may also be present.

Torticollis: Tendency of neck to twist to one side.
Writer's cramp: Dystonic posturing of the arm when hand used to perform specific tasks, e.g. writing, playing piano
Drug-induced dystonia - Antiparkinsonian drugs, Antipsychotic, Lithium, Phenytoin & Oral contraceptives

Treatment of dystonia

Clonazepam, Myorelaxants (baclofen, tizanidin)

Anticholinergic drugs. Botulinumtoxin

Derived from Clostridiumbotulinum

F - Fasciculation or muscle twitch

Are a spontaneous, involuntary muscle contraction and relaxation involving fine muscle fibers

Causes benign conditions

- A stressful time.
- Trauma.
- Anxiety or depression.
- High-intensity, strenuous exercise.
- Fatigue.
- Drinking alcohol or caffeine.
- Smoking cigarettes.
- A recent viral infection.

Permanent diseases like –cause: (Table – 5)

Table - 5

Causes of serious fasciculation
Irritation of anterior horn cells
Polio, MND, Spinal muscular diseases, Syringomyelia
Anterior spinal artery thrombosis
Intramedullary SOL
Cervical spondylosis (Antr. Nerve Root)
Also seen with Organophosphates Poisoning
Benzodiazepin withdrawal,
Magnesium deficiency & Rabies

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G - Generalised Myoclonus

Is involuntary, brief, shock-like sudden muscle contraction.

Negative myoclonus (eg. Asterixis)

Generalized - widespread throughout the body

Focal / segmental – restricted to a particular part of body

Causes of Myoclonus. (Tables – 6 & 7)

Table – 6 Causes of Myoclonus

Physiological
Nocturnal (usually on falling asleep)
Hiccups
Essential
Occurs in the absence of other abnormality
Benign and sometimes inherited
Epilepsy

Myoclonus Contd. Table –7

Neurodegenerative e.g. Wilson's disease
Infectious e.g CJD, Viralencephalitis
Toxic e.g. Penicillin, antidepressants
-Metabolic
Anoxic braindamage
Hypoglycemia
Hepatic failure (" asterix")
Renal failure
Hyponatremia

Treatment of Myoclonus –Table - 8

Valproic acid is drug of choice
May respond to benzodiazepines
e.g. clonazepam
Clonazepam
Valproic acid (depakin)
Carbamazepin, hexamidine
Neurotropic drug (pyracetam) in high dosage
- 12 g i/v (in post hypoxic myoclonus)

H -Habit spasm AKA TICS

an involuntary twitching or tics. A small muscle group of the face, neck, or shoulders spasmodic blinking or rapid jerking of the head to the side precipitated by emotional conflicts rather than by organic disorder. They may serve as a release for tension or anxiety.

Tics

Transient, Involuntary, Coordinated Stereotyped Abnormal Movements May be suppressed voluntarily or with distraction.

Treatment of tics

Clonazepam, baclofen

Neuroleptics (sonopax, tiaprid)

Haloperidol 0.25-10 mg daily

Behavioral therapies

"Geste Antagoniste," – It is a sensory trick

Of voluntary maneuver that temporarily reduces the severity of postures or movements, a form of behavioral / suggestion therapy. The patient is asked to press some parts of his body with a fingertip. The TICS stops,⁴

H - Hand Tremor

Rhythmical, involuntary movement of a body part, synchronous action of alternating contractions of antagonist's muscles.

Fingers toes or tongue

Oscillatory to and pro movements of equal amplitude at a fixed joint, usually fingers, legs, neck.

Tremor Classification

Physiological tremor

Rest

Action tremor

Postural Tremor

The amplitude of tremor - fine or coarse

Body part(s) affected finger toes tongue

Physiological tremor:

Fatigue

Anxiety

Cold

Public speaking

Essential tremor

- It's a type of postural tremor
- Rhythmic, usually symmetric movement in the hands may involve the head
- Autosomal-dominant inheritance
- Onset may be in adolescence or early adult years; if it develops late – senile tremor
- Aggravated by emotional stress, disappears with a small amount of alcohol
- Neurological examination is normal except for tremor
- **Treatment of tremor β -adrenoblockers (propranolol)**
- **Anti-epileptic drugs (primidone, clonazepam)**

Fine tremor

Hypoglycemia

Hyperthyroidism

Drugs caffeine, steroids, salbutamol

Fear anxiety

Carcinoid tumors

Pheochromocytoma

Course tremor

Parkinson disease

Wilson's Disease

Drug-induced

Rubral tremor [red nucleus]

Psychogenic tremor

Rest Tremor causes

Parkinsonian syndrome, Parkinson disease

Heredofamilial disorders

Alcohol withdrawal, Toxins

Drugs: carbon monoxide, manganese, methanol, Neuroleptics,

Dopamine Depleting Drugs, Antiemetics

Table –9: Causes of Postural Tremor

Causes of Postural Tremor
Stroke
Multiple sclerosis
Brain injury
Alcohol abuse
Thyrotoxicosis
Drugs – amphetamine,
Mercury poisoning
Parkinsonism,
Midbrain lesion or cerebellar dysfunction (titubation) (5).
Psychogenic.

Treatment of benign tremor

Propranolol,

Mirtazapine,

Botulinum Toxin

Surgical for – Parkinson disease

Hysterical Tremor

Commonly action tremor

Irregular frequency, Unilateral

Disappear when attention diverted and restart tremor shift to other parts of the body

Asterixis

Not a true Tremor; AKA is known as "Flapping Tremor." The variant of negative myoclonus

Arrhythmic lapses of a sustained posture

Metabolic encephalopathy

Table – 10: Causes asterixis

Anticonvulsant
Unilateral Asterixis
Ant. Cerebral occlusion
Thalamotomy
Mid brain lesion
Hepatic encephalopathy

I –Intention Tremor

Not a true tremor; variant incoordination

Faulty correction of badly directed move More
clumpy as it reaches a target

Causes of Intention Tremor

Multiple sclerosis (Cerebellar)

Vascular events

Benedict's syndrome

Brainstem tumor

Wilson disease

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