



## CLINICAL APPROACH TO THE PATIENT WITH TREMOR

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### Abstract.

Tremor is a common symptom of both neurological and non-neurological patients, in everyday clinical medical practice. Its correct clinical assessment may provide important information and guide the further investigation of the patient. In this article, there is an overview of the most common forms of tremor that are encountered during daily practice, in the light of the specific clinical features of each form.

### 1. Introduction.

The synchronous or alternating contractions of antagonist muscles generate rhythmic, involuntary, oscillatory movement which is defined as tremor [1]. It may be related to any part or parts of the body and it is roughly classified into rest or action tremor [2]. In the first case, the affected area is involuntarily activated while it is supported against gravity and in the second case the tremor occurs during a voluntary movement.



The etiology of tremor varies and it may involve both neurological and non-neurological patients. In any case, taking a careful medical history and the clinical characteristics of tremor may help to classification and further investigation.

## **2. Types of tremor.**

### ***2.1 Essential tremor.***

This is the most common form of a pathologic tremor. Its prevalence in the overall population occurs with a frequency of 0.4 to 4% [3]. Its frequency ranges from 4 to 10 Hz and for a particular patient it remains relatively constant. It usually occurs as a monosymptomatic disorder, it is bilateral, it involves arms, head, and less frequently the lower extremities and the trunk are involved [4]. It is manifested as a kinetic action tremor and rarely as a rest tremor. Its discovery signals the careful consideration of any comorbid neurological symptoms, as it may be manifested in the context of a neurodegenerative disease [5].

### ***2.2 Parkinsonian tremor.***

In its classic manifestation it appears as a rest tremor (pill rolling). It is absent in a 10-30% of the patients with Parkinson's disease (PD) [6] whereas in a 60-70% it may be the main manifestation of the disease for several years without developing bradykinesia or gait disorder (benign tremulous PD) [7].

The emergence of tremor in PD is unilateral at least in onset of the disease. The combination of rest and postural tremor in the form of re-emergent tremor in PD may be confused with the essential tremor. So, whereas in a PD patient the tremor subsides when the hands are held outstretched, it may reemerge within 8-10 seconds as a postural tremor, such as idiopathic, only the second one occurs immediately (at a time of 0-2 seconds when the



patient stretched his hands). The presence of other clinical signs of PD such as bradykinesia or rigidity helps to identify the parkinsonian tremor.

### ***2.3 Cerebellar Tremor.***

It is due to a lesion of the deep cerebellar nuclei or the outflow pathways in the superior cerebellar peduncle. Injury to the cerebellar cortex does not cause tremor [8].

It is an action tremor of both low-frequency (3-5 Hz) and large amplitude. It is usually referred to as a terminal tremor since it exhibits an increasing tendency as the target is approached [1]. It is often accompanied by other clinical signs of cerebellar lesion, such as ataxia and dysdiadokinesis. [2].

Structural lesions (tumor, mass, sclerotic plaque, infarct, etc.) cause unilateral tremor occurrence whereas cerebellum degeneration (alcohol, narcotic or toxic drugs abuse), leads to bilateral tremor occurrence. The finding of the coexistence of symptoms associated with cerebellar injury makes a diagnosis with certainty.

### ***2.4 Neuropathic Tremor.***

It is due to peripheral nerves disorders which can cause muscle spasms. It has been typically described in Charcot-Marie-Tooth disease [9]. It is also observed in patients with a mild or moderate form of spinal muscular atrophy and in Kennedy disease as well [10].

### ***2.5 Holmes Tremor.***

Lesion to structures of the midbrain near the red nucleus, because of tumors, strokes, multiple sclerosis, etc., cause malfunction of the cerebellar outflow tract and they cause tremor like the cerebellar one. It is a coarse tremor, of low-frequency (3-5 Hz), postural or action tremor [11]. Clinical signs of the oculomotor nerves or the optic tract malfunction may



coexist. Typical is the sparing of the corticospinal tracts involvement.

## ***2.6 Post-traumatic Tremor.***

It can be manifested in any form, after head injury, within the first 18 months. It is due to central rather than peripheral lesion. After skull-brain trauma, tremor will occur in about a half of the patients over a period that varies and it spontaneously subsides in about half the cases [12,13].

## ***2.7 Psychogenic Tremor.***

It is the most common movement disorder of psychogenic cause. It is usually manifested with an abrupt onset, it exhibits a cycling course of remissions and recurrences, and it rarely affects the fingers [14]. It can appear in any form while the range and frequency vary. It characteristically increases with the intensity of attention and decreases with its distraction. It does not respond to conventional antitremor medications but it is improved with placebo treatment or psychotherapy [15].

## ***2.8 Dystonic Tremor.***

It is the tremor that occurs in a body part that is affected by dystonia [2]. Dystonia is manifested as twisting movements or/and abnormal posture, due to continuous, involuntary contractions of opposing muscles. The dystonic tremor is usually a rest tremor, exhibits a peak at 5 Hz and has a characteristic null point. That is, if the patient moves the affected limb in a position of maximal pull, tremor is modified and often ceases. It can be the first clinical sign of an evolving dystonia [16].

## **3. Conclusion.**



The tremor diagnosis is based on a careful medical history taking and the clinical examination as well. The age of onset, the mode of occurrence, the area of the body that is first-appeared and the progression rate, are important factors to be taken from the medical history. Clinically, the affected extremity should be examined in a position of full support, in a motion state and in various positions of rotation or bent. The finger-nose test will exhibit kinetic terminal tremors. Finally neurologic signs of a coexistent or underlying neurological disease should be sought in any patient with tremor.

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