Essential Tremor (ET)

Post-traumatic tremors

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Tremor may occur as a consequence of trauma to the central or peripheral nervous systems. While brain and nerve injuries are relatively common, post-traumatic tremor has been reported infrequently.

One reason for the apparent rarity of post-traumatic tremor may be that the occurrence of tremor after trauma may require genetic, chemical or other "pre-disposition". Another reason may be that a relationship between trauma and subsequent tremor is not reported or recognized by patients or their physicians. Furthermore, uncertainty about the maximum latency period allowed between trauma and the onset of tremor for the two to be considered related contributes to probable underdiagnosis of post-traumatic tremor. Intuitively, the shorter the latency between injury and tremor onset, the more likely the two are related. Similarly, more severe injury is more likely to produce tremor.

Closed or, more probably, open head injury may cause damage to any part of the brain; therefore, tremor may be only one component of the post-traumatic neurologic syndrome. Tremor following brain trauma is usually associated with lesions of the cerebellum. This posterior portion of the brain is normally responsible for coordination of movements.

Cerebellar tremor is typically classified as "kinetic" tremor, which means that it occurs primarily during movement. The term "intentional" is sometimes used to describe this form of cerebellar tremor. Kinetic tremor is most evident during eating; the patient often spills liquids and has difficulty using utensils, particularly when eating soup. During neurologic examination, kinetic tremor is best elicited by the "finger-to-nose" test. During this goal-directed movement, the tremor increases in amplitude when the patient's index finger moves from his nose to the examiner's finger. Another example of cerebellar tremor typically seen after head injury is "titubation", an oscillatory (swinging to and fro) movement of the head and trunk.

Another example of post-traumatic tremor is the so-called "midbrain" or "rubral" tremor, resulting from damage to the pathways connecting the cerebellum to the brainstem, including midbrain structures such as the red (rubral) nucleus. Typically, this tremor is present during a voluntary maintenance of posture (i.e., when the arms are outstretched). The midbrain also contains the substantia nigra, damage to which can cause Parkinsonian tremor. This tremor is present chiefly when the affected body part is at rest, typically producing a pill-rolling movement of the fingers and hands. Legs, lips, jaw, and tongue may also be involved. Some physicians estimate that Parkinsonism may be a consequence in up to 1.5 percent of all brain injuries.

Post-traumatic tremor may also be a consequence of peripheral trauma. Injuries to the peripheral nerves can result in all three types of tremor: rest, postural, and kinetic. Although these tremors may remain restricted to the site of the lesion, they sometimes spread to involve other body regions. In a series of patients with peripheral post-traumatic tremors we studied at Baylor College of Medicine, 60 percent had some evidence of predisposition to tremor such as a family history of ET and/or a prior exposure to certain tranquilizers resulting in tremor as a side effect. Dystonic movements often accompany this type of tremor. In addition, pain, changes in the color and temperature of the skin, abnormal sweating, and atrophy of the bones and nails in the injured part may also appear. The cause of this tremor is uncertain, but it has been hypothesized that peripheral nerve lesions somehow lead to abnormal activity in the predisposed central nervous system. Pharmacologic management of post-traumatic tremors is unsatisfactory in most cases.

Drugs prescribed for PD or ET only rarely improve post-traumatic tremors. Thalamotomy or deep brain stimulation of the thalamus may be helpful in some patients, though it is associated with risks including weakness, numbness and possible speech problems. Finally, physical therapy may be useful. For example, using a two- to three-pound wrist weight may enable a patient with severe kinetic tremor to eat or write.

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The IETF funds research to find the cause of essential tremor (ET) that leads to treatments and a cure, increases awareness, and provides educational materials, tools, and support for healthcare providers, the public, and those affected by ET.

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