Molds and Mycotoxins
Tremors and Their Causes

In our clinical practices, we sometimes see patients with tremors. There are different kinds of tremors, those that occur at rest and those that occur at movement, but it is often not known what triggers the onset of these disorders. Environmental toxins are often implicated, usually pesticides [11] or heavy metals, but the role of naturally occurring toxins is often not considered. The veterinary literature and limited reports in humans supports the likelihood that toxins from molds, called mycotoxins, can cause tremors in humans.

Several animal species [3, 4, 5, 6, 9, 15] were found to have tremors after exposure or ingestion of mycotoxins [2, 8] from various species of Penicillium [1], Aspergillus, and other molds [12]. More severe exposures will cause unsteadiness of gait and seizures [2, 11, 19]. High amounts getting into the brain has caused “massive degeneration” of the cells of the cerebellum [3], which is the part of the brain that controls coordination, balance, and muscle tone. The study also demonstrated EEG changes with “an increase in the frequency and voltage of electrical activity recorded from the cerebral cortex.” [3]

Penny, for example [13], showed an incoordination syndrome from ingestion of the mycotoxin Penitrem A. Other investigations also found generalized tremors and unsteadiness of gait and microscopic evidence of damage to the cells of the cerebellum [4]. Some authors have concluded that the tremors are induced by a mycotoxin (Verruculogen) causing a decrease in the function of GABA, an inhibitory neurotransmitter in the brain [6]. Recurrent exposures from occupying mold infested buildings may cause persistent effects on “central nervous system neurotransmitters” and a persistence of tremor [7]. Peterson, for example [14], found that Verruculogen also caused changes in neurotransmitters, in this case an increase in the excitatory neurotransmitters glutamate and aspartate.

The exact mechanisms of neurotoxicity from mycotoxins may not always be understood. However, one mycotoxin was found to decrease the number of nerve connections (synapses) in the brain [10]. There are many mycotoxins (Penitrem A, B, E, Verruculogen, Fumitremorgin, Paxilline, Lolitrem B, Roquefortine), which can produce tremors and the mechanism of each may be different. There also appears to be a dose effect, with minimal symptoms at low dose

and severe symptoms at high dose [16]. Limb weakness along with low muscle tone has also been noted to be an effect [17].

Testing for mold effects is first done with intradermal skin tests. When tests are positive or there is a strong suspicion of mold exposure, blood tests for IgE and IgG antibodies are orderedx. If the number of molds is high, the antibodies to mold toxins can be ordered to confirm a toxic exposure, urine tests for mycotoxins are available to document ongoing exposure. Further testing with nervous tissue antibodies will demonstrate the neurological injury. Holistic mycotoxin treatment is expected to resolve symptoms within a year or less in most cases that have not progressed too far.

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