

The Clonus: 2nd Hypothesis of Pathophysiology

For more details concerning the 2nd Hypothesis of the Pathophysiology of Clonus, see the linked video:



Clonus is a rhythmic, oscillating, stretch reflex, the cause of which is not totally known; however, it relates to the lesions of the upper motor neurons and therefore is generally accompanied by the hyperreflexia. It can be evaluated in many joints but is most commonly seen in the ankle joint by briskly dorsiflexing the foot.

Sometimes, we obtain a similar movement in normal individuals, however it should be less than five oscillations in such cases. Provided, it is accompanied by other signs and/or symptoms of hyperreflexia, one should think of its morbidity even in a low rhythm.

Normally, one stimulus launches its related reflex circuit only. For an example, tapping on Achilles tendon launches its own reflex circuit (i.e., the ankle jerk reflex). However, in the upper motor injuries and because of the induced overactive hyperreflex, the contraction of the related muscles (i.e., the Gastrocnemius and Soles muscles in our example) can be brisk and too severe. The severe muscle contraction could activate another group of receptors that belong to the antagonistic muscle(s) (i.e., the Tibial muscle in the same example).

In turn, the severe tibial muscle contraction will activate the receptors of the antagonist muscles (i.e., the Gastrocnemius & the Sole muscles). Hence, a vicious circle of two opposite overactive hyperreflexes arises. In such a way, one overactive hyperreflex activates the antagonistic overactive hyperreflex circuit, and vice versa.

*However, every coming hyperreflex circuit will be of less energy than the precedent. At times, the muscle contraction ends to be too weak to launch a new circle of the vicious circle. The clonus then stops. Moreover, the abused muscles of both sides of the vicious circle will eventually exsanguinate the stock of energy. So finally, they give up the game. And the clonus also stops; **figure (1)**.*

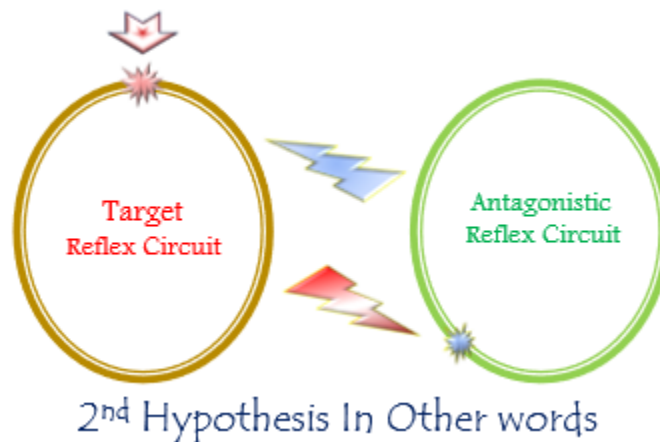
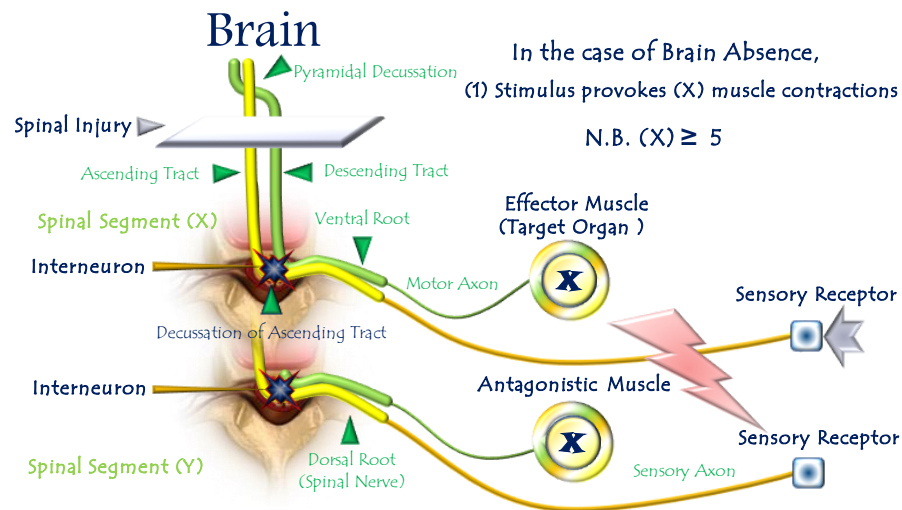


Figure (1)
The Pathophysiology of the Clonus, 2nd Hypothesis

[For more details concerning the 2nd Hypothesis of Pathophysiology of the Clonus, see the linked video:](#) 

In upper motor injuries, and because of the induced hyperactive hyperreflex, the contraction of the effector muscles (i.e., the Gastrocnemius and the Soles muscles in the case of ankle jerk reflex) can be brisk and too severe. However, the severe muscle contraction could activate another group of receptors that belong to the antagonistic muscle(s) (i.e., the Tibial muscle in the same example).

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