

## Transtentorial Herniation: Wartenberg Reflex

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**Received:** July 06, 2018; **Published:** July 17, 2018

Volume 2 Issue 2 July 2018

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The corneomandibular reflex, also known as Wartenberg reflex, is contralateral deviation of the jaw when the cornea is stroked with a cotton wisp. This clinical sign is extremely rare, and the pathophysiological basis is unclear. It is probably result of provoking the relationship between the orbicularis oculi and the lateral pterygoid muscle after supranuclear lesion of the trigeminal nerve [1]. The ophthalmic part of the trigeminal nerve form the reflex afferent fibers, which is triggered by the stimulation of conjunctiva and light touch receptors in the cornea. The fibers from the ophthalmic branch of the trigeminal nerve reach the trigeminal ganglion through superior orbital fissure, and then to main sensory nucleus of the trigeminal nerve [2].

The efferent fibers reach the facial nerve motor nucleus with the intraneurons and as a reflex it provides the eyelid closure. The inhibitory neurons, located near ipsilateral trigeminal nerve motor nucleus in mesencephalic trigeminal nucleus, inhibits massive trigeminal motor neuronal activity. In the presence of a cortico-pontin lesion, or less likely lesions in the brainstem, this inhibitory effect is lost, resulting the activation of the entire trigeminal motor nucleus by corneal stimulation, leading masseter contraction, thus cornea mandibular reflex [3-5]. According to Wartenberg, there is no more valuable test showing the supranuclear lesion of the trigeminal nerve [6]. Presence of the reflex shows the brain stem lesion and supratentorial event; transtentorial herniation is also an indicator. The reflex may also occur in the acute coma state, especially if the coma is related to the structural lesion, and may also be seen in elevated intracranial pressure, brain stem pressure secondary to large cerebral hemispheric lesion, intrinsic lesion of upper brain stem or diencephalon and involvement of the corticobulbar pathways in multiple sclerosis or amyotrophic lateral sclerosis [1,8].

A reflex develops in the contralateral side of the lesion by the unilateral lesion of the brain stem pressure. The reflex may occur bilaterally in most of the cases also it may occur more on one side and reflexes may occur temporarily [8].

### CASE

A 63-year-old male patient was consulted to neurology because of unable to regain consciousness postoperatively following an open heart surgery operation. The patient was not taking a sedative agent, general condition was poor and was on mechanical ventilation. He was stuporous, grimacing to painful stimuli, isocoric pupils with slight reaction to light, oculocephalic reflexes were bilaterally present, corneal reflexes observed bilaterally, jerky movement was noted during the stimulation of the cornea. This observation is evaluated as

**Citation:** Dilara Mermi Dibek and Mehmet Fevzi Öztekin. "Transtentorial Herniation: Wartenberg Reflex". *Medical Research and Clinical Case Reports* 2.2 (2018): 161-163.

bilateral corneamandibular reflex (video 1). The extremities did not respond to painful stimulus, plantar reflexes were bilateral extensor; bilateral hemispheric and cerebellar hypodense areas were seen in the brain computerized tomography of the patient, these were evaluated as subacute infarction (Figure 1). The patient died on the 5th day of the surgery.

It was thought that bilateral cornea-mandibular reflex in the patient developed due to transtentorial herniation caused by extensive hemispheric involvement. The disappearance of the corneamandibular reflex and the light reflex in the next day, supported the diagnosis.

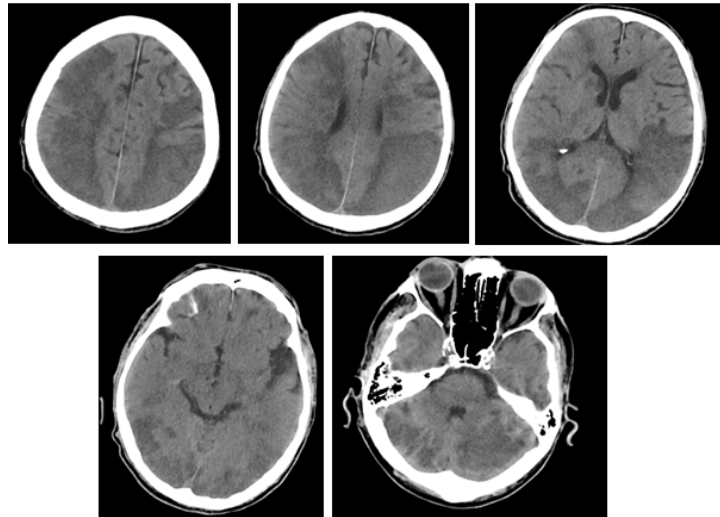


Figure 1

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