Teaching Video NeuroImage: Delayed Radiation-Induced Unilateral Myokymia of the Tongue

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A 49-year-old man with undifferentiated nasopharyngeal carcinoma underwent two cycles of chemotherapy followed by right-side head and neck radiation therapy. Thirteen years later he developed progressive dysphagia and dysarthria. Neurologic examination showed atrophy associated with wavelike movements and prominent rippling in the right side of the tongue, needle electromyography revealed myokymic discharges in the right genioglossus muscle (Video 1). Magnetic Resonance Imaging of the head and neck confirmed isolated unilateral tongue atrophy (Figure), while laryngoscopy showed delayed initiation of swallowing and reduced laryngeal elevation.

Delayed effects of radiation therapy could be seen even decades later and are directly related to radiation dosage1. Myokymic discharges of the tongue are likely due to the damage of the hypoglossal nerve induced by microvascular injury and fibrosis with subsequent hyperexcitability of the axon membrane.1 In an oncology patient, myokymia is usually associated with radiation-induced neuropathy rather than cancer recurrence.2

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References


Video 1

Atrophy and myokymia of the tongue on the right side (part 1). Needle electromyography of the right genioglossus muscle shows myokymic discharges consisting of repetitive bursts from a single motor unit potential occurring at regular interval (3 per second) with an intraburst frequency of about 50 Hz (part 2).

Figure 1

Magnetic Resonance Imaging of the tongue.

Axial T1- (A) and T2-weighted (B) images showing prominent right hemi-tongue atrophy (arrows). The dotted line indicates the course of the lingual septum.