

The Development of Glossopharyngeal Breathing and Palatal Myoclonus in a 29 Year Old after Scuba Diving

Cristian Jivcu, MD

Manoj Mathew, MD

David M Baratz, MD

Allen R Thomas, MD

Banner Good Samaritan and Phoenix VA Medical Centers

Phoenix, AZ

Introduction

Palatal myoclonus is a rare movement disorder characterized by brief, rhythmic involuntary movements of the soft palate. Palatal myoclonus is further subdivided into “essential palatal tremor” (EPT) and “symptomatic palatal tremor” (SPT). EPT is characterized by involvement of the tensor veli palatini, myoclonus that might persist during sleep, as well as ear clicks, usually the patient’s presenting complaint. The MRI and neurological exam are normal in EPT. SPT is characterized by involvement of the levator veli palatini and myoclonus which consistently perseveres during sleep. The MRI shows olivary hypertrophy and clinical features may include ataxia, dysarthria and nystagmus, depending on the size of the lesion¹. Glossopharyngeal breathing is a technique used by deep-sea divers to increase lung vital capacity, which is also useful in patients with ventilator dependence from poliomyelitis and Duchenne muscular dystrophy. To date there have been no reported cases of palatal myoclonus and glossopharyngeal breathing occurring simultaneously. We present the case of a 29 year-old female with palatal myoclonus and glossopharyngeal breathing after scuba-diving.

Case Presentation

A 29 year-old female presented to her physician with complaints of fevers, chills, rapid shallow breathing, ear clicks and inspiratory “spasms of the neck.” The symptoms started three days after a week-long scuba-diving trip. She reported a total of four consecutive and uneventful dives no deeper than 50 feet. Her descents and ascents were well-controlled. On initial presentation she was ruled-out for pulmonary embolism and was discharged home. Two months after first presentation she was referred to our office with persistent symptoms of ear clicks, intermittent headaches and neck spasms. The headaches were bilateral, starting in the occipital region, radiated frontally to the eyes and felt “like a hang-over.” The neck spasms which initially occurred with a frequency of one with every breath had decreased to one spasm every 2-3 breaths. Symptoms of dyspnea, wheezing, cough were absent and the rest of her medical history, including a psychiatric history, was unremarkable. Her vital signs showed a blood pressure of 110/76; Heart rate of 85 beats per minute; Temperature of 99F; Respiratory Rate of 16, and oxygen saturation of 100% while breathing room air. On exam palatal tremor was noted with every breath, and glossopharyngeal breathing occurred every 1-2 breaths. Cranial nerves II – XII were intact and no difficulty was noted with swallowing or speaking. Her strength was 5/5 in bilateral upper and lower extremities, and her biceps, brachioradialis and patellar reflexes were normal (+2). Her gait was normal. The rest of the physical exam was normal. Her workup included a normal chest X-ray and a normal MRI of the brain. Notably absent in the brain MRI was olivary hypertrophy. She was started on clonazepam for palatal myoclonus and neck spasms which were consistent with glossopharyngeal breathing. After one week of administration the patient reported symptomatic improvement. By week 2 the palatal myoclonus and glossopharyngeal breathing had completely resolved.

Discussion

Glossopharyngeal breathing was first noted in 1951 when a respirator-dependent poliomyelitis patient with a paralyzed diaphragm was noted to be “gulping air” and

increased his vital capacity from 250cc to 600cc². In our case the glossopharyngeal breathing was unintentional, and occurred after a scuba-diving trip. There are no reported cases of this entity in the medical literature. Furthermore there have been no reported cases of symptomatic palatal tremor in the setting of glossopharyngeal breathing. A possible explanation of this co-existent entity can be found through anatomic relationships. The glossopharyngeal nerve is involved in the movements used in glossopharyngeal breathing. This nerve also sends a branch to the pharyngeal plexus, which in turn innervates the levator veli palatini, the muscles involved in SPT. An overstimulation of the glossopharyngeal nerve could theoretically result in glossopharyngeal breathing as well as palatal myoclonus.

Summary

Palatal myoclonus and glossopharyngeal breathing are usually two unrelated clinical findings. Our conclusion is that an overstimulation of the glossopharyngeal nerve through inadvertent air-gulping during scuba-diving resulted in symptomatic palatal tremor and unintentional glossopharyngeal breathing. Treatment with benzodiazepines resulted in complete symptom resolution.

References

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