Myokymia in a female triple jumper university athlete : A Case Report

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Background

Myokymia is the occurrence of irregular muscle twitching, elicited by abnormal spontaneous electrical activity by grouped discharges of motor unit action potentials.

Myokymia is due to abnormal excitability of lower motor neurons or nerves, appearing on EMG as a group of potentials, firing at 5 to 60 hz and cyclic occurring at .2 to 1 second intervals.

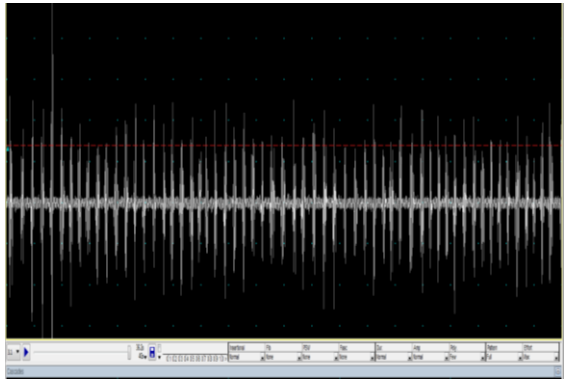
Case Description

A healthy 22-year-old female, who competes as a varsity jumper on the university track and field team, presented in August 2020 for evaluation of involuntary twitching in her right foot in the absence of muscle atrophy or hypertrophy. The patient denied antecedent trauma or injury.

Physical examination was normal, including the neurological exam, with the exception of a regular tremor noted in her right toes.

A lower extremity EMG showed spontaneous, repetitive, continuous 3 hz tremor in the flexor digitorum brevis without membrane instability, while other tibial innervated muscles were normal.

EMG



EMG

Needle EMG Examination									
	Spontaneous				Volitional MUAPs			Recruitment	
Muscle	Insertional	Fib	PSW	Fasc	Dur.	Amp	Poly.	Pattern	Effort
R. Tibialis anterior	Normal	None	None	None	Normal	Normal	Few	Full	Max
R. Peroneus longus	Normal	None	None	None	Normal	Normal	Few	Full	Max
R. Gastrocnemius (Medial head)	Normal	None	None	None	Normal	Normal	Few	Full	Max
R. Abductor hallucis	Normal	None	None	None	Normal	Normal	Few	Full	Max
R. Flexor digitorum brevis	Normal	None	None	None	Normal	Normal	Few	3HZ tremor	Max

Skin temperature was maintained above 30.0C. The right peroneal nerve CMAP has normal distal latency, normal amplitude, and normal conduction velocity.The right tibial CMAP has normal distal latency, normal amplitude, and normal conduction velocity.

The right peroneal F waves are within normal limits.The right tibial F waves are within normal limits.

The right sural SNAP has normal amplitude and normal conduction velocity. The right superficial SNAP is present.

Needle EMG examination of the muscles was performed as patient tolerated. The muscles listed above show no membrane instability, normal motor unit action potentials, and no loss of motor units. The flexor digitorum brevis has noted 3 Hz tremor without membrane instability or neurogenic motor units.

Discussion

Generalized myokymia with neurological abnormalities, can be seen in cases of Guillan-Barre, Multiple sclerosis, and brainstem neoplasms.

Focal myokymic pattern, is seen in peripheral nerve injuries such as radiation plexopathies or compressive entrapment.

In this athlete, myokymia of the FDB suggests a compression of the medial plantar nerve other muscles with tibial nerve innervation were normal. The patient was advised to abstain from her athletic endeavors for several weeks and initiated on gabapentin, botulinum toxin injection will be considered should her symptoms persist.

Conclusion

Focal myokymia can be the only presentation of compressive entrapment neuropathy, and evaluation with EMG should be warranted given clinical scenario

Though atypical, a peripheral neuropathy may be the presenting sign of an overuse injury

References

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