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2 Long-term potentiation in autonomic ganglia: Potential role in cardiovascular disorders

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Abstract

Ganglionic long-term potentiation (gLTP) is an activity-dependent, enduring enhancement of ganglionic transmission. This phenomenon may be induced in autonomic ganglia of an organism under certain conditions where repetitive impulses surge from the central nervous system (CNS) to the periphery. Chronic stress, repetitive epileptic seizure or chronic use of CNS stimulants could induce gLTP, which would result in a long lasting heightening of sympathetic tone to the cardiovascular system causing hypertension and disturbed cardiac rhythm that may lead to sudden cardiac death. These conditions are briefly reviewed in this article.

Key words: Electrophysiology; Ganglionic long-term potentiation; CNS stimulants; Epilepsy; SUDEP; Sudden cardiac death

Core tip: Heightened activity of the central nervous system (CNS) caused by epilepsy, chronic stress and CNS stimulants could provide strong preganglionic stimulation of autonomic ganglia, which may trigger expression of ganglionic long-term potentiation.

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