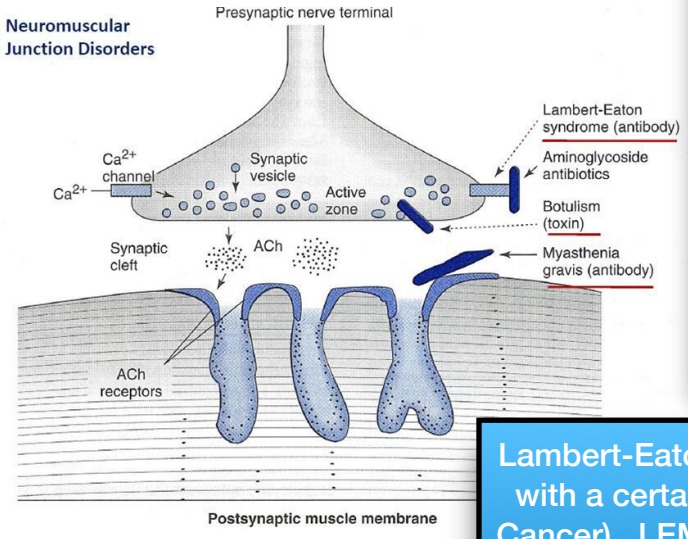
Lambert-Eaton Myasthenic Syndrome

What Is LEMS?



Lambert-Eaton myasthenic syndrome (LEMS) is a very rare condition that affects the signals sent from the nerves to the muscles. Muscles are unable to contract properly, resulting in muscle weakness and a range of other symptoms.

The immune system attacks the neuromuscular junctions - the areas where nerves and muscles connect.

Lambert-Eaton myasthenic syndrome is often associated with a certain type of cancer (SCLC, or Small Cell Lung Cancer). LEMS may result from the body's efforts to fight the underlying cancer.

In some of the remaining cases, Lambert-Eaton syndrome develops following another autoimmune disease. Sometimes the cause is not known.

LEMS is an autoimmune disease characterized by a loss of a fraction of the presynaptic P/Q-type Ca^{2+} channels at the NMJ. These presynaptic P/Q-type Ca^{2+} channels normally open in response to presynaptic action potential activity and allow the influx of Ca^{2+} ions that trigger synaptic vesicle fusion and neurotransmitter release.

The LEMS-induced reduction in the number of presynaptic P/Q-type Ca^{2+} channels causes a decrease in the amount of action potential-evoked neurotransmitter release at the NMJ. Reduced neurotransmitter release leads to less effective initiation of muscle contraction, and as a result, patients with LEMS experience debilitating muscle weakness.