Restoring Cough Using Microstimulators

Tech ID: 18769 / UC Case 2007-023-0

BACKGROUND

Respiratory complications are the most common cause of morbidity and mortality following spinal cord injury. Patients with such injuries often suffer a disruption in the neuromuscular central nervous system control of the expiratory muscles. Such disruption or loss of control leads to direct loss of the ability to cough or produce an inner effective inner to clear airway secretions. This inability to cough or to clear airways results in respiratory tract infections and other related complications. These health risks arise partly due to the loss of supraspinal control over the expiratory muscles, such as abdominal and lower intercostal muscles.

TECHNOLOGY DESCRIPTION

Current techniques for management of expiratory dysfunction in patients with spinal cord injuries have varying degree of effectiveness and require active assistance.

This invention introduces an improved, less invasive and more effective method of inducing forced expiration in patients. It is an injectable microstimulator placed adjacent to one or more thoracic spinal nerves to innervate an intercostal muscle. The microstimulator can be placed within an external distance of a neuroforamen through which the spinal nerve emerges from a thoracic vertebra. The method can also entail applying a stimulating controlled electrical current from the microstimulator to the thoracic spinal nerve at a sufficient intensity and duration to induce a forced contraction of the intercostal muscle innervated by that spinal nerve. The microstimulators can also be remotely activated to apply the current, without the use of lead lines into the body.

APPLICATIONS

This technology would improve respiratory function in patients with spinal cord injuries.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,532,778	09/10/2013	2007-023

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OTHER INFORMATION

CATEGORIZED AS

» **Medical**
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