

Effectiveness of temporary deafferentation of the arm on somatosensory and motor functions following stroke: a systematic review.

After a cerebrovascular accident (stroke), more than 80% of patients have sensory-motor dysfunctions of the upper limb in the acute phase and 50 to 70% of them keep a non-functional arm¹. These deficiencies limit activities and restrict participation in situations of everyday life. Hence, the work of therapists is fully oriented towards the recovery of function or compensation by appropriate therapies². A novel approach, capable of modulating mechanisms of bilateral cortical reorganization, is temporary deafferentation³. It reduces voluntarily the somatosensory input in a body part by temporary anesthesia. Early studies on deafferentation used a pneumatic tourniquet, or nerve block to achieve anesthesia. However, these methods have significant disadvantages. Currently, studies focus on the use of an anesthetic cream (such as Emla[®]) covered with an occlusive bandage. This anesthesia is an inexpensive technique with only minimal side-effects and is better tolerated by the patients. The rapid changes in somatosensory and motor bilateral cortical representations during and after deafferentation have been demonstrated in several functional brain imaging studies. These changes occurred in healthy subjects but also in patients with chronic stroke. To date, there is no systematic review summarizing these studies. Therefore, our goal is to produce a systematic review of studies on the effectiveness and acceptability of temporary deafferentation on sensorimotor functions of the upper limb after stroke.

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