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Neuroplasticity and upper extremity motor recovery after stroke

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Stroke is a leading cause of disability. There are common motor impairments after stroke such as hemiparesis in the upper extremity contralateral to the affected hemisphere. Many stroke patients may suffer long term upper limb motor deficits. This decrease in hand dexterity could negatively affect the performance of daily activities that need skilled upper limb use such as grasping force control and coordination as well as appropriate fine motor skills. Participation, satisfaction and activity of stroke patients decline and difficulty in using the paretic hand in daily tasks and functional limitation have been associated with decrease in participation and quality of life. Thus, improving the affected hand function of chronic stroke patients is vitally important. It has been reported that there is functional re-organization after stroke and that such cortical plasticity might be correlated with upper limb motor recovery. Understanding the neurophysiological changes after stroke and how these changes are associated with hand motor recovery as well as how to promote such plastic changes would assist in developing effective therapeutic interventions that are based on neurophysiological evidence in order to resolve upper limb motor impairments in stroke patients. During the last two decades, the significant progress in neuroscience has led to novel concepts for rehabilitation interventions post stroke. The constraint-induced movement therapy (CIMT) has been shown to improve function and amount of use of the paretic hand of chronic stroke patients and is thought to induce cortical plasticity. The aim of the speech is to demonstrate and discuss the role of cortical re-organization (plasticity) in motor recovery of the paretic upper extremity of chronic stroke patients as well as the efficacy of CIMT in improving upper extremity motor function of chronic stroke patients and its potential underlying mechanism. It also shows the potential cellular mechanisms that underlie neural plasticity.

Biography

Ibrahim Ali Almoghassil has attained his Master's degree in Health Practice in Rehabilitation from Auckland University of Technology, New Zealand, after completing his Postgraduate Diploma in Health Science from AUT University. He has worked as an Assistant to the Director of Rehabilitation Department in Directorate of Health Affairs, Saudi Arabia and as Physiotherapy Department Head under Ministry of Health. He is presently the Director of Takamol Alelaj Medical Center, a well acclaimed clinic noted for its systematic and standardized rehabilitation services in Qatif, KSA.

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