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Upper extremity telemedicine rehabilitation after brain injuries

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Introduction: Upper extremity rehabilitation following brain injuries is a crucial component of patient recovery. Brain injuries can lead to significant impairments in the motor skills and functionality of the upper limbs, severely impacting the quality of life. The primary goal of rehabilitation is to restore functional ability and improve patient independence in daily activities.

Materials and methods: Consecutive polytrauma patients were recruited after recovery over a five-year period - September 2018 to October 2023 - from the waiting lists at Ternopil Emergency Hospital that serves as a rehabilitation center. A total of 38 patients with upper extremity injuries were enrolled in the study after the resolution of the surgical sequelae and monitored during a 3-weeks period. Home remote monitoring for the 16 test subjects included use of a portable device with Axis-sensor, temperature, volume and pulse sensors, that were fixed to the injured limb. Software permits the monitoring of exercise time, local temperature, the biomechanics of active movements of the injured limb.

Results: The integration of telemedicine into upper extremity rehabilitation post-brain injury presents new opportunities for patients. Telemedicine enables continuous support and specialist consultation regardless of the patient's location. Telemedicine platforms can include video conferencing, remote monitoring of exercise performance, and the use of specific programs and applications to track rehabilitation progress. Medical stuff during telerehabilitation took significantly less time to consult patients (1.9 minutes) than the traditional rehabilitation (15.2 minutes). Patient satisfaction was higher for the telerehabilitation (78.3%) than for the traditional rehabilitation (36.7%).

Conclusions: Combining traditional rehabilitation methods with telemedicine can significantly enhance treatment outcomes for patients with brain injuries, facilitating a faster return to active and independent living.

Key words: telemedicine, rehabilitation, brain injuries.

Biography

Andriy Tsvyakh has completed his PhD at the age of 42 years from Ternopil Medical University and Doctor of Science degree at the age of 48 years from Ternopil Medical University. He is the chief of Traumatology and Orthopaedic department. He has published more than 60 papers in reputed journals. He is co-author of one book on traumatology for medical student. He was invited as a speaker of several International Congresses of American Telemedicine Association.