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Personal Biography

As member of the “Montpellier and Nimes University Hospitals Federation of PRM”, I am in charge of the Department of Physical Rehabilitation and Medicine and oversee more than one hundred in and out patients receiving musculoskeletal and neurologic rehabilitation at any time. I am especially involved in rehabilitation of patients who sustained stroke, traumatic brain injuries, multiple sclerosis or cerebral palsy. Before I arrived in Montpellier in 2008, I was a PRM hospital practitioner for 13 years in Raymond Poincare Hospital (Garches, France), where I got a special expertise in care of patients with spinal cord injury and sequellae of poliomyelitis.

The principal focus of my scientific research concerns impairment, recovery and rehabilitation of the upper arm of stroke patients. My research activities are conducted at the Euromov Laboratory (Montpellier University, France), where I am currently leader of the “Neuroplasticity and Rehabilitation” group, which includes researchers in movement sciences and behavioral neurosciences, medical doctors and physiotherapists. Our group has two focuses: 1. Fundamental studies aiming to understand the link between brain lesions and disabilities through kinematic analysis of upper arm movements and functional brain imagery: the purpose is to explore brain plasticity and motor control adaptation leading to functional recovery after lesion. 2. Clinical studies and trials aiming to develop new rehabilitation protocols that include new devices such as rehabilitation robotics, virtual reality, and serious games.

In my daily practice, I have a special interest in spasticity and neuro-orthopedics. A few years ago, together with my PRM colleagues and our surgeons, we created the “Institute of Neuro Orthopedics of Montpellier (INOM)” dedicated to the care of patients with limb and spine deformities due to neurological diseases. Currently, we perform more than 1500 treatment procedures each year, including botulinum toxin injections, motor blocks and phenol injections, non pharmacological interventions, mini invasive percutaneous tenotomia, surgical procedures, and others. This activity is crucial in PRM since spasticity and its consequences often lead to the worsening of functional impairment in neurological patients, whatever age and underlying disease.

Summary of the Lecture

Spasticity and neuro-orthopedics, the beating heart of PRM

Neuro-orthopedics includes limbs and spine deformities related to various neurological diseases, mostly in a context of spastic troubles. PRM specialists are very familiar with such deformities that often lead to functional consequences, rendering their prevention and treatment more than ever crucial in our specialty.

The better understanding of the musculoskeletal and neurological physiopathology underlying these phenomena has enabled us to improve our preventive and curative approaches. The clinical assessment of spastic and neuro-orthopedic deformities, based on a rigorous anatomical and physiological knowledge, is deeply rooted in our PRM clinical examination. The evaluation of their functional consequences relies on a patient-centered approach including fine-grained analysis of gait and of upper limb function. Motor blocks, dynamic EMG and movement analysis raise an increasing interest in these indications. The treatment of spasticity and its consequences is emblematic of PRM care because it is based on an integrative multimodal approach including rehabilitation, drugs, local treatments like botulinum toxin injections, and micro-invasive or conventional surgery in a multidisciplinary perspective.

Lastly, spasticity and neuro-orthopedics represent an incredible field of research for the future of PRM, covering basic science, non pharmacological and pharmacological studies, surgical procedures improvements, and technological developments (neuromodulation, functional electrical stimulation, robotics...).