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Changes in muscle oxygen saturation have low sensitivity in diagnosing chronic anterior compartment syndrome of the leg

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Near-infrared spectroscopy (NIRS) measures muscle oxygen saturation (StO₂) in the skeletal muscle. The purpose of this study was to investigate the diagnostic value of changes in muscle oxygen saturation during exercise in chronic anterior compartment syndrome (CACS) patients. All participants, 159 patients with exercise induced leg pain, 31 healthy subjects, performed an exercise test. StO₂ and intramuscular pressure (IMP) were recorded. Reoxygenation at rest after exercise was calculated as the time period required for the level of muscular StO₂ to rise by 50% (T₅₀), 90% (T₉₀) and 100% (T₁₀₀) of the baseline value. IMP at rest after exercise was 47 mmHg (SD=15) in the 87 CACS patients and 16 mmHg (SD=6) in the 72 non-CACS patients. The lowest level of StO₂ during exercise was 6% (SD=10) in CACS patients and 13% (SD=16) in the non-CACS patients. The time period for reoxygenation was 9 (SD=7) seconds at T₅₀, 30 (SD=15) seconds at T₉₀ and 50 (SD=29) seconds at T₁₀₀ in the CACS patients. It was 13 (SD=10) seconds at T₅₀, 38 (SD=22) seconds at T₉₀ and 53 (SD=27) seconds at T₁₀₀ in the non-CACS patients. If T₉₀ ≥ 30 seconds was set as a cut-off value for prolonged time for reoxygenation, indicating a diagnosis of CACS, the sensitivity of measuring oxygen saturation was 38% and the specificity was 49%. Changes of muscle oxygen saturation during and after an exercise test that elicits the patient's leg pain cannot distinguish patients with CACS from patients with other causes of exercise induced leg pain.

Biography

Kajsa Rennerfelt has completed her PhD in 2015 from University of Gothenburg, Sahlgrenska University Hospital, Gothenburg, Sweden. She works full time as a Senior Consultant in Orthopaedic surgery. Specialist in Spine Surgery and Sports related injuries.

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