

Anestherita, Fitri, et al, 2021 Abstract

Muscle Activation And Plantar Sensory Deficit In Leprosy

Objective

The researchers sought to observe extrinsic foot and ankle muscles activity ratio and sensory disturbance in leprosy and its implication to foot deformity and walking capacity.

Results

Significant differences of foot ulcer and foot deformities were found in the plantar sensory deficit group. There was strong correlation between foot deformities and decreased Tibialis Anterior-to-Peroneal (TA/PE) ratio. There were significant differences of Tibialis anterior-to-Gastrocnemius (TA/GA) ratio and TA/PE ratio based on the foot ulcer, and no significant difference of Timed Up and Go Test (TUG) results within the plantar sensory deficit group. No significant correlation was found between walking capacity and TA/GA ratio, and TA/PE ratio.

The study concluded that plantar sensory deficit and decreased extrinsic muscle activation ratio during gait had been proven to affect foot impairment, but have not been proven to inhibit walking capacity.

Participants and Clinicians

Thirty-three leprosy patients without walking aids and/or orthotic prosthetic were enrolled using consecutive sampling. The researchers were Fitri Anestherita, Ibrahim Agung, Nelfidayani Nelfidayani, Andri Setiawan Kokok, and Johanes Putra, all from the Physical Medicine and Rehabilitation Department, Faculty of Medicine, Universitas Indonesia, Cipto Mangunkusumo Hospital, Jakarta, Indonesia.

Methods

The patients started in a seated position, then patients were asked to follow instructions given by the examiner. Patients were asked to stand up, walk three meters, turn around, walk back to the chair, and sit down. Foot deformity score was calculated and muscle activity was measured using **surface electromyography (sEMG)**. Muscle activation ratio was calculated in TA/GA and TA/PE. Walking capacity was assessed using TUG. The measurement of extrinsic foot muscle activation during gait was done using the **Neurotrac Myoplus 4** (Verity Medical) for sEMG. The placement of the electrode was determined according to the **SENIAM** recommendation.

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