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Technical Tips

Wrinkle sign for the Silfverskiöld test

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Abstract

Shortening of the triceps surae is evaluated using the Silfverskiöld test. The increase in dorsiflexion with the knee in flexion compared to the knee in extension makes the test positive. To perform the test, the examiner uses both hands and is not able to hold any device for objective measurement while assessing the magnitude of dorsiflexion. In view of this obstacle, this paper aims to describe a tip of a physical examination technique for evaluating the shortening of the triceps surae through the evaluation of the anterior wrinkle of the ankle. We performed the technique in a patient with shortening of the gastrocnemius and recorded the test, showing an increase in the anterior skinfold of the ankle. The test is simple, reproducible, requires no additional apparatus and shows variety in the severity of shortening.

Level of Evidence V; Therapeutic Studies; Expert Opinion.

Keywords: Gastrocnemius muscle; Ankle joint; Contracture; Orthopedic procedures.

Introduction

Gastrocnemius tightness is associated with many orthopedic disorders. The clinical test used to detect this problem was described by Nils Silfverskiöld in 1924 and is still very useful nowadays[1]. Ankle dorsiflexion is tested with the knee extended and flexed. The test is positive when dorsiflexion increases with knee flexion. Because the gastrocnemius proximal insertion is located at the distal femur, knee flexion will relax the gastrocnemius if it is tight, thus increasing ankle dorsiflexion. It is very important to hold the subtalar joint in a neutral position or in slight inversion to avoid midfoot dorsiflexion and false-negative results. Because the maneuver is passive, the patient should be relaxed throughout the test. The examiner flexes the knee with one hand, while the other hand keeps the subtalar joint in a neutral position or in slight inversion and pushes the ankle joint in dorsiflexion. The examiner uses both hands to perform the test and is not able to hold any device to objectively measure ankle dorsiflexion during its accomplishment. The authors describe a simple sign to check the Silfverskiöld positivity during the test without the use of any device.

Technique

This study was approved by the Institutional Review Board. With the patient lying supine and relaxed, the examiner stands facing the lateral aspect of the leg to be examined. One hand bends the knee by holding the proximal posterior aspect of the leg. The other hand positions the hindfoot in slight inversion, thus blocking the subtalar joint, and forces the ankle in dorsiflexion while passively extending and flexing the knee with the other hand (Figure 1). In this position, once ankle dorsiflexion is achieved, wrinkles can be seen on the anterior aspect of the joint (Figure 2A). While gazing at the wrinkles, the examiner gradually extends the leg and observes whether the wrinkles will disappear or not, which will depend on the degree of flexion resulting from the shortening of the gastrocnemius: the more the wrinkles disappear, the greater the severity of shortening of the gastrocnemius and the positivity of the test (Figure 2B).

Study performed at the Hospital Moinhos de Vento, Porto Alegre, Rio Grande do Sul, Brazil.

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Figure 1. Position of the examiner and the leg during the Silfverskiöld wrinkle sign test.

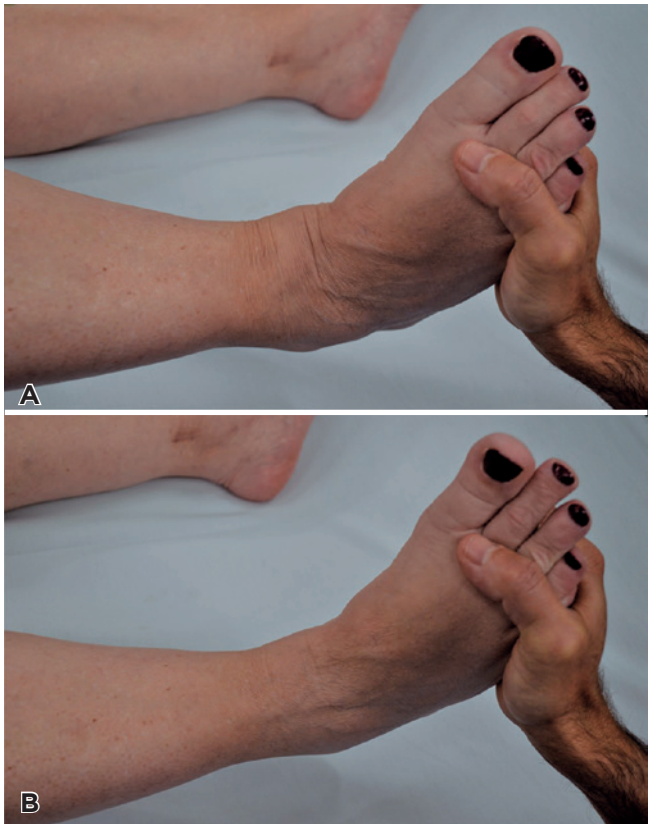

Figure 2. A. Wrinkles at the anterior part of the ankle with knee flexion during the test. B. Disappearance of the wrinkles with knee extension due to ankle plantar flexion (positive test).

Discussion

Gastrocnemius tightness is associated with a variety of orthopedic conditions, especially in the foot and ankle. To date, numerous studies have demonstrated the benefits of gastrocnemius recession in the treatment of these disorders[2,3].

The Silfverskiöld test was described almost 100 years ago, but few studies have been dedicated to assessing its reproducibility. Molund et al.[4] described a new device for measuring isolated gastrocnemius contracture. Twenty-four feet were examined by 4 examiners on 3 different occasions, and a low intraobserver and interobserver correlation coefficient was found when the classic Silfverskiöld test was performed; however, both intraobserver and interobserver correlations were much higher with the use of the device[4].

The wrinkle sign proposed here to assess the positivity of the Silfverskiöld test is simple, reproducible and does not require the use of any device. Although the Silfverskiöld test has been described as a qualitative measure, positive or negative, it is expected to show variable severity, which is demonstrated when performing the Silfverskiöld wrinkle sign test. The wrinkles will disappear more or less depending on the severity of gastrocnemius tightness.

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