ABSTRACT

Lymphedema is swelling, particularly in the subcutaneous tissues, due to accumulation of lymph. Previous imaging techniques have demonstrated associated structural changes and have been used for evaluating the status of soft tissues. However, the reliability of measurements using ultrasonography has not been evaluated and the ultrasonographic method has been unable to show changes in tissue softness. There is a need to determine if ultrasonography is a reliable technique to assess skin and subcutaneous thickness in the upper extremities with or without pressure and if the measure of compliance in soft tissue thickness is also reliable. Two examiners measured tissue thicknesses using ultrasonography and calculated the compliance with and without pressure on the forearm and upper arm, independently. The intra- and inter-rater cross-correlation coefficients of measuring soft tissue thickness were excellent (>0.75) in the forearm (p<0.05). In the upper arm, the reliabilities were fair-to-good. The intraclass correlation coefficients of pressure compliance in the forearm and upper arm were excellent and fair-to-good, respectively (p<0.05). This study suggests that measurement of thickness of soft tissues using ultrasonography may be reliable and pressure compliance may reflect tissue softness in the upper extremity.