CONCLUSIONS

The volumes of the lower limbs measured by perimetry and perometry are subject to an important observational error and their results should be compared with caution. In addition, the measurement error becomes increasingly relevant as the results are derived from volumes originally measured in error.

INTRODUCTION

Lymphedema is a chronic disorder caused by an imbalance in the ability of the lymphatic system to drain lymph, resulting in a progressive increase in limb volume. Lymphedema is the most prevalent morbidity after lymphadenectomy for gynecologic malignancies and affects patients’ quality of life with physical, social and emotional consequences.

Manual perimetry is a widely used method to detect differences in the circumference of lower limbs. According to this method, lymphedema is diagnosed when the difference in volume is at least 6.5% between legs, or is diagnosed when the difference in circumference between the affected limb and control limb at the corresponding spot is greater than 2 cm.

On the other hand, we have Optoeletronic volumetry (OPVO), a high cost device that automatically calculates limbs volume, but there is no consensus in the literature over the difference in values between the affected and unaffected limb.

We performed a study to assess the agreement between perimetry and perometry in estimating the leg’s absolute volume and the absolute and relative differences between legs of a same subject.

METHODS

A prospective study included 44 patients that had pelvic ± para-aortic lymphadenectomy for gynecologic cancer in AC Camargo Cancer Center. OPVO and perimetry (truncated cone formula) were performed after median follow-up of 6 months to determine limb volume to diagnosis lymphedema.

\[
V = \frac{h (C1 \times C2 + C1^2 + C2^2)}{12 \pi}
\]

\(V\) = final limb segment volume; 
\(C1\) and \(C2\) = circumference measured between the corresponding spots; 
\(h\) = distance between the circles (\(C1\) and \(C2\) in each segment), calculated in centimeters.

The agreement between the two measuring methods was assessed by Pearson’s correlation test and by the Bland-Altman method.

RESULTS

The correlations were strong for all the analyzed outcomes (\(Vd: r = .81\); \(Ve: r = .84\); \(DV: r = .96\); \(DRV: r = .93\)) However, the correlation coefficient does not adequately assess the agreement between methods designed to measure the same thing. In fact, the limits of agreement (LA) between the methods showed a relevant observational error among the observations. In 95% of the times they were performed on the same individual, right leg volumes between the methods ranged from -2752.3 to 2860.9 mL, just due to chance. LAs for left leg volume measurement were similar (-2722.1 to 2749.9 mL). For DV and DRV, LC ranged from -846.7 to 842.5 mL and from -9.2 to 8.8%, respectively.