ABSTRACT

Lack of a standardized experimental counterpart of peripheral lymphedema (LE) in a small animal has hampered research into treatment of this debilitating condition. We recently refined a rodent model consisting of radical unilateral lymphatic/nodal groin excision in conjunction with a circumferential integumental gap, followed by regional irradiation of the groin to reproduce stable unilateral hindlimb LE (1). In the current study, Wistar-Fuzzy rats with established right hindlimb LE, were subdivided into five groups and subjected to one of the following daily physical regimens over a 5-day period: pneumatic compression pumping at 30 torr (PCP); low-stretch multi-layered compressive bandaging using Coban (CB); manual lymphedema drainage (MLD) or a light massage consisting of stationary circular motions using the fingertips; combined physiotherapy (CPT consisting of MLD + CB); and a no treatment or control group (CTRL). Hindlimb and LE volumes were serially measured before and after treatment.

Whereas CTRL showed progressive worsening of hindlimb swelling, PCP, CB, CPT and MLD each produced similar and substantial edema reduction over the 5 day interval. PCP, CB and CPT induced vacillating edema reduction which, however, exceeded rebound swelling on a daily basis. MLD, on the other hand, showed a steady gradual daily decline in LE volume.