ABSTRACT

Horses are highly susceptible to lymphedema. Knowledge of the morphological components of lymphatic collectors is therefore essential to understanding the function of the lymphatic system. A better knowledge of the lymphatic system allows the development of more effective treatments against lymphedema. The composition of hypodermal and deep lymphatic collectors was investigated with immunohistochemical staining, using antibodies against proteins of the collector walls from the skin in the hind limbs of 10 healthy horses. Lymphatic collectors can be subdivided into passive (elastic fibers) and active (smooth muscle cells and myofibroblasts) components. The presence of myofibroblasts in equine lymphatic collectors has not previously been described. The high concentration of myofibroblasts, especially in the dermal collectors, suggests their possible importance in lymph flow. Myofibroblasts may act as pacemaker cells for the contraction of smooth muscle cells during training, as there appears to be correlation between the percentage of smooth muscle cells in equine lymphatic collectors and level of physical fitness. The response of the lymphatics to stimulation may allow effective treatment of lymphedema without using pharmacological drugs. The high percentage of elastic fibers (approximately 45% in equine lymphatic collectors) indicates the importance of passive components within the lymph flow.