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Effects of mud pack treatment on skin microcirculation

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Joint Bone Spine 2003, 70, 5:367-70

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OBJECTIVES: The objective of this study was to conduct a laser-Doppler flowmetry investigation of skin microcirculation changes induced by mud pack therapy. The magnitude of the changes, potential remote effects, and potential influence of mud pack thickness were studied.

METHODS: Twenty female spa therapy patients aged 28-67 years (median, 51 years) participated in the study. The reason for spa therapy was lower limb venous insufficiency in 14 patients and osteoarthritis in six patients, none of whom had involvement of the shoulders. Mud pack treatment was associated with a significant elevation in skin temperature, by 1.8 +/- 0.2 and 1.0 +/- 0.2 degrees C with the 30- and 15-mm packs, respectively ($P < 0.001$ for both comparisons; nonsignificant difference between the two packs). Skin blood flow increased significantly, by 619 +/- 82 and 410 +/- 124 mV with the 30- and 15-mm packs, respectively ($P < 0.0001$ for both comparisons; nonsignificant difference between the two packs). The vasomotion score increased markedly on the treated side, by 16.7 +/- 2.8 and 13.0 +/- 1.6 with the 30- and 15-mm packs, respectively ($P < 0.005$ for both comparisons; no significant difference between the two packs). Furthermore, low-frequency vasomotion waves of a type not described previously were recorded. The microcirculatory changes lasted longer than did the temperature increase. No significant changes were noted in the other shoulder or in central body temperature.

RESULTS: The patients were volunteers receiving spa therapy and free of diabetes mellitus, vasoactive drug treatment, and inflammatory shoulder disease. Two mud packs, 15 and 30 mm in thickness, respectively, were applied at an interval of 48 h, at the same time of day in a given patient, and at a distance from other spa treatments. The packs were centered on the deltopectoral groove. The side and order of application of the two packs were determined at random. Superficial skin blood flow was measured by laser-Doppler flowmetry (Perimed PF4001, wavelength 82 nm) and recorded by the Perisoft computer program with a 3-s time constant downstream from a broadband filter (12 MHz).

CONCLUSION: These results suggest that the vascular changes induced by mud pack therapy are not fully explained by vasodilation in response to local temperature elevation. Further studies are in order to identify the other mechanisms involved.

PMID: 14563466 [PubMed - indexed for MEDLINE]