The influence of alterations in room temperature on skin blood flow during contrast baths in patients with diabetes


Abstract

BACKGROUND:
Contrast baths (CB) have been used for over two thousand years. But it only was recently that CB were shown to improve limb circulation to a greater extent than that which can be seen after continuous exposure to a warm, constant temperature, bath. However, other studies show that this type of response to temperature can be impaired if the sympathetic nervous system applies vasoconstriction to the blood vessels. Therefore the purpose of the present investigation was to examine the relationship between sympathetic outflow on the magnitude of the change of blood flow (BF) during contrast baths in controls and with people diabetes. Sympathetic vasoconstriction activity was altered by global heating.

MATERIAL/METHODS:
Fourteen patients with type 2 diabetes were compared to 14 age-matched controls. BF was measured during 16 minutes of serial contrast baths of the foot following 3 minutes of warm water and 1 min of cold immersion at 2 different room temperatures, 19 and 32 deg C.

RESULTS:
When subjects were exposed to global heating (warm room) there is a greater response to CB than when subjects were initially in a cooler room. However, for both temperatures, subjects with diabetes had a response that was over 50% less than that seen in control subjects.

CONCLUSIONS:
Removing sympathetic vasoconstrictor tone by global heating benefits subjects with diabetes and control subjects in their response to CB. For subjects with diabetes, global heating may be necessary to increase blood flow to acceptable levels for effective therapy.