

Comparisons of cutaneous blood flow reactivity to norepinephrine and sodium nitroprusside between patients with heart transplantation and healthy subjects

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Abstract: Heart transplant patients are reported to have impaired regulation of the microvasculature. The purpose of this study was to investigate the cutaneous blood flow and its reactivity to sodium nitroprusside (vasodilator, Nipride 0.1%) and norepinephrine (vasoconstrictor, Levophed 0.1%) in patients after heart transplantation in comparison to normal healthy individuals. Eighteen patients after heart transplantation and 16 healthy, nonsmoking individuals served as subjects of the study. Sodium nitroprusside and norepinephrine were introduced by iontophoresis to the skin of the right and left forearms, respectively. After measuring cutaneous blood flow reactivity in the pre-exercise state by laser Doppler flowmetry, subjects were then asked to close and open their fists for 2 min. The same measurements were repeated after exercise. Comparisons between the groups were carried out by the Wilcoxon signed rank test. The Mann–Whitney *U*-test was used for comparison between pre-exercise and post-exercise states. The results demonstrated that sodium nitroprusside significantly increased forearm cutaneous perfusion at rest but produced only a mild increase after exercise. This reactivity was significantly lower after exercise with no significant differences between groups. Norepinephrine decreased cutaneous blood flow at rest. The transplant patients were significantly less sensitive to norepinephrine before but not after exercise. The changes in norepinephrine reactivity with exercise were significantly different between groups ($p < 0.05$).

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Key words: cutaneous blood flow – heart transplantation – iontophoresis – laser Doppler flowmetry

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