EFFECT OF THE VASCULAR ENDOTHELIUM ON CONTRACTIONS INDUCED BY NORADRENALINE AND PHENYLEPHRINE IN PERFORATING BRANCH OF THE HUMAN INTERNAL MAMMARY ARTERY

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The effects of noradrenaline (Nor) and phenylephrine (Phe) on the isolated, non-precontracted perforating branch of the human internal mammary artery (HIMA) were investigated. Nor and Phe induced concentration-dependent contractions of intact and endothelium-denuded arterial rings with no statistically significant differences between the pEC50 and maximal response values. The pretreatment of arterial rings with indomethacin had no effect on Nor- and Phe-induced contractions of both, intact and endothelium-denuded preparations. The pre-addition of L-NMMA did not affect contractions of perforating branch of the HIMA evoked by Nor, but provoked significant potentiation of Phe-induced contractions of perforating branch of the HIMA both intact and denuded of endothelium only at Phe concentration higher than 3 × 10–6 M. The effects of selective α1-adrenoceptor antagonist, prazosin and selective α2-adrenoceptor antagonist, rauwolscine were concentration-dependent, and they induced a significant shift to the right (for both studied antagonists) of the concentration-response curves for Nor in both preparations with or without endothelium. The effects of prazosin and rauwolscine on the concentration-response curves for Phe were similar. In conclusion, this study has shown that Nor and Phe induce concentration-dependent contractions of the perforating branch of the HIMA. Removal of the endothelium did not modify this effect. Products of cyclooxygenase pathway had no influence on Nor and Phe action. Endothelium derived nitric oxide (NO) had no modulatory effect of Nor-induced contractions, but inhibition of NO synthesis provoked potentiation of Phe-induced contractions either in intact or endothelium-denuded preparations. The mechanism of this effect remains still unclear. On the basis of differential affinity of the antagonists and affinities of Nor and Phe themselves, we suggest that α1-adrenoceptor subtype is probably involved in the Nor- and Phe-induced contraction of the perforating branch of the HIMA both intact or denuded of endothelium.

Key words: vasoconstriction, noradrenaline, phenylephrine, endothelium, adrenoceptors, perforating branch of HIMA

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