心停止ドナー肺移植を目標としたプロスタサイクリン吸入の肺保存効果の研究

著者	渡辺 洋宇
著者別表示	Watanabe Yoh
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Intrabronchial administration of prostacycline in rat lung transplantation from Non-Heart-Beating Donors

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Kanazawa University

Principal Investigator

WATANABE Yoh School of Medicine, Kanazawa University Professor, 医学部, 教授 (20019897)

Co-Investigator(Kenkyū-buntansha)

GO Tetsuhiko University Hospital, Kanazawa University Assistant, 医学部・附属病院, 助手 (50313656)
ODA Makoto School of Medicine, Kanazawa University Assistant, 医学部, 助手 (50224241)

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Research Abstract

Backgroud : In lung transplantation using Non-Heart-Beating donors(NHBD), the postmortem period of warm ischemia exacerbates lung ischemia-reperfusion injury, We hypothesized that intrabronchial administ rat ion of Prostaglandin E1 (PGE1) would reduce ischemia-reperfusion injury, and ameliorate the viability of the lung graft.
Method : Rat double-lung blocks were flushed and havested from non-heart-beating donors after 60 minutes of in situ warm ischemia, then stored for 2 hours. The main pulmonary artery and left atrium of donor lung blocks were connected to the left pulmonary artery and veins of a syngeneic recipient using T-shaped tubes. Heart-Beating-Donors aseved as HBD control (group 1) and untreated NHBD as NHBD control (group 2). In group 3, the intrabronchial administration of PGE1 (2 μg/0.2 ml)was

perfomed during in situ warm ischemia (NHBD ischemia PGE1) . In group 4, PGE1 (2 μg/0.2 ml) was administered during reperfusion (NHBD reperfuision PGE1). Serial measurements of graft pulmonary vascular resistance, blood gases were obtained. Lung tissue cyclic AMP and myeloperoxidase, and wet/dry ratio were measured after 60 minutes reperfusion.
Results : Severe IR injury ocurred in NHBD control. Administration of PGE1 during warm ischemia (NHBD ischemia PGE1) significantly decreased PVR, and improved PO2 compared with NHBD control. Administration of PGE1 during reperfusion (NHBD reperfuision PGE1) did not attenuate IR injury. The lung cAMP level in group III was significantly high compared with those of group land 2. Administration of PGE1 (goup 3 and 4) did not decreased lung MPO. grafts in guoup 1 and 3 had significantlu more weight gain compared those of group 2 and 4.
Conclusion : These data suggested that intrabronchial administration of PGE1 during warm ischemia is advantageous for preservation of graft function in lungs harvested from NHBD. This is likely the result of "cytoprotective effect".

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