

低酸素負荷後の再酸素化による心筋 収縮力回復に関連ある因子

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Possible Factors Related to Reoxygenation-Induced Recovery of Cardiac Contractile
Force After Hypoxia

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The present study was designed to elucidate possible factors related to reoxygenation-induced recovery of cardiac contractile force after hypoxia. For this purpose, rabbit hearts were perfused for 20min under various degrees of hypoxic conditions, followed by subsequent 45min-reoxygenation, and the hemodynamic and metabolic changes of the perfused heart were examined. Reoxygenation-induced recovery of cardiac contractile force were related to the rise in resting tension of the heart at 20min-hypoxia, myocardial ATP and creatine phosphate at 45min-reoxygenation, and the increase in the release of ATP metabolites from the hypoxic and reoxygenated hearts. The release of ATP metabolites also correlated well with ATP content of the myocardium at 45 min-reoxygenation. These results suggest that a loss of ATP metabolites from the heart takes an important role in an induction of hypoxia-induced irreversible damage in cardiac function.

抄録 本研究は低酸素負荷後の再酸素化による心筋収縮力回復に関連ある因子を明らかにするために企画された。この目的のために、家兎心臓を20分間様々の低酸素負荷条件下で灌流後45分間再酸素化し心血行動力学的、代謝的变化を検討した。再酸素化による心収縮力回復には20分間の静止張力上昇、45分再酸素化時の心筋ATP、CP含量、さらには灌流心からのATP代謝物の遊離に関連があった。ATP代謝物の遊離は45分再酸素化のATP含量にも逆相関した。結果は心筋からのATP代謝産物の遊離が低酸素負荷誘発の心機能障害発生に重要な役割を果していることを示唆した。