

论著

血糖改变时兔脑细胞外液与血液中葡萄糖及乳酸变化的差异

赵玉武¹, 孙荣², 丁素菊³, 郑惠民³, 蔡建英³

1上海交通大学附属第六人民医院神经内科, 上海 200233; 2济南军区总医院内分泌科, 山东 济南 250031; 3第二军医大学附属长海医院神经内科, 上海 200433

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摘要 目的: 观察不同血糖条件下兔脑细胞外液与血液中葡萄糖 (Glu) 及乳酸 (Lac) 含量变化的差异。方法: 采用微透析技术, 每10 min收集脑细胞外液并静脉采血1次, 观察正常条件下, 以及静注20% Glu 0-60 min、胰岛素0-70 min期间血液及脑细胞外液中Glu及Lac的动态变化。结果: 正常状态下, 脑细胞外液中Glu明显低于血液, 仅为血浆的30%, 而Lac却显著高于血液, 为血浆的165%; 在高血糖及低血糖期间, 脑细胞外液中Glu随着血糖浓度的改变而变化, 但时间较血糖延迟30 min左右; 脑细胞外液中Glu波动期间, Lac的水平无明显变化。结论: 脑细胞外液中Glu及Lac水平与血液有很大差异, Lac可能参与了中枢神经系统的能量代谢。

关键词 [兔](#); [脑](#); [葡萄糖](#); [乳酸](#)

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Different changes in glucose and lactate levels between brain extracellular fluid and plasma during hyperglycemia-hypoglycemia in rabbits

ZHAO Yu-wu¹, SUN Rong², DING Su-ju³, ZHENG Hui-min³, CAI Jian-ying³

1Department of Neurology, Sixth People's Hospital, Shanghai Jiaotong University, Shanghai 200233, China; 2Department of Endocrinology, Jinan Military General Hospital, Jinan 250031, China; 3Department of Neurology, Changhai Hospital, Second Military Medical University, Shanghai 200433, China

Abstract

AIM: To study the difference in glucose and lactate levels between brain extracellular fluid (ECF) and plasma in rabbits in the different blood glucose levels. METHODS: Using intracerebral microdialysis technology, brain ECF levels of glucose and lactate were measured in every 10 min under basal conditions and during a hyperglycemia-hypoglycemia clamp study. RESULTS: Under basal condition, brain ECF glucose levels were markedly lower than ambient plasma levels (30% of plasma), whereas ECF lactate levels were substantially higher (165% of plasma). During the hyperglycemia-hypoglycemia clamps, the relationship between plasma and ECF levels of glucose remained similar, but changes in ECF glucose lagged about 30 min. There were no substantially changes in ECF levels of lactate during dynamical study. CONCLUSION: There are striking differences in glucose and lactate levels between brain ECF and plasma. Lactate may involve in the metabolic process of central nervous system.

Key words [Rabbits](#) [Brain](#) [Glucose](#) [Lactic acid](#)

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