

利多卡因对脑肿瘤患者麻醉诱导时脑氧供需平衡和血液动力学的影响

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摘要目的 研究全麻诱导中利多卡因对幕上肿瘤患者气管插管时脑氧供需平衡、能量代谢和血液动力学的影响。方法 将 24 例幕上肿瘤患者随机分为利多卡因组 (n=12) 和空白对照组 (n=12)。分别在麻醉诱导前和气管插管即刻采取颈内静脉球部静脉血和桡动脉血进行血气分析、乳酸和血糖测定。结果 A 组两组气管插管时较插管前脑氧摄取率、静动脉乳酸含量差下降、颈内静脉球部氧饱和度、动脉氧饱和度、动脉氧分压、颈内静脉球部氧分压、颈内静脉球部氧含量升高。组间比较血气指标在插管时 - 诱导前的变化仅颈内静脉球部氧分压有统计学意义。诱导期间 A 组血液动力学变化小于 B 组。结论 利多卡因对幕上肿瘤患者麻醉诱导时脑氧供需平衡的变化无明显影响。利多卡因能有效抑制脑肿瘤患者诱导时气管插管时血液动力学反应。

关键词 利多卡因 脑肿瘤 麻醉, 全身 脑 / 代谢 氧消耗 血气分析 血液动力学
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Effects of lidocaine on cerebral oxygen supply-consumption balance and hemodynamics during anesthesia induction in patients with supratentorial tumor

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Abstract: Objective To study the effects of lidocaine on the balance between cerebral oxygen supply-consumption and on the hemodynamics during anesthesia induction in patients with supratentorial tumor. Methods Twenty-four patients with supratentorial tumor were randomly divided into lidocaine group (n=12) and control group (n=12). Blood gas analysis and determinations of plasma lactic acid and glucose in the radial artery and internal jugular venous bulb were performed. Oxygen extraction ratio (OER) and blood oxygen content in the artery and internal jugular venous bulb were calculated during anesthesia induction. Results OER and difference declined in plasma lactic acid level between the internal jugular venous bulb and the artery, and blood oxygen saturation as well as blood oxygen pressure in the internal jugular venous bulb and the artery increased along with blood oxygen content in the internal jugular venous bulb in both groups during anesthesia induction. Comparison between the groups showed that only the changes in blood oxygen pressure in the internal jugular venous bulb were statistically significant. Changes in the hemodynamics in lidocaine group were less obvious than those in the control group during anesthesia induction. Conclusion Lidocaine does not significantly influence cerebral oxygen balance and may effectively inhibit hemodynamic response during anesthesia induction in patients with supratentorial tumor.

Key words: lidocaine; brain neoplasms; anesthesia, general; brain/metabolism; oxygen consumption; blood gas analysis; hemodynamics

脑肿瘤患者静息脑血流及脑血流自身调节均有异常改变。全麻诱导插管时脑血流及脑摄氧变化可能更大。这方面的文献报道较少。本研究利用颈内静脉逆行置管技术和血气分析技术对颈内静脉球部血样进行检测,以探讨全麻插管时脑氧供需平衡及能量代谢的变化。

1 对象和方法

1.1 研究对象

幕上肿瘤手术患者 24 例,年龄 20~60 岁,ASA Ⅱ

~Ⅲ级,随机分为利多卡因组 (n=12) 和空白对照组 (n=12)。

1.2 麻醉方法

入室后静脉注射东莨菪碱 0.3 mg、咪唑安定 0.02 mg/kg b.w.、芬氟合剂 0.03 ml/kg b.w.。左侧颈内静脉逆行置管 15~17cm 至颈静脉球部,而后桡动脉穿刺置管。组静脉注射利多卡因 1.5 mg/kg b.w.、琥珀库溴铵 0.15 mg/kg b.w.、芬氟合剂 0.04 ml/kg b.w.、异丙酚 2 mg/kg b.w.。去氮给氧 3 min 后气管插管。B 组除不用利多卡因外,诱导同 A 组。在诱导前插管即刻分别同时采取颈内静脉球部和桡动脉血,后立即测定血气。所有动脉、静脉血标本使用草酸钠-氯化钠抗凝,立即离心分离血浆,并于 1 h 内完成乳酸、血糖含量测定。氧含量、摄氧率、OER 由以下公式

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物实验发现利多卡因能减轻脑缺血引起的脑组织病理学损害。本研究结果显示,诱导前差值 HR 尧 BP M 尧 BP D 有统计学差异,说明利多卡因能有效平抑气管插管时血液动力学反应。本研究结果还显示,在气管插管时,动脉平均氧含量高于静脉,此外,无论诱导前和气管插管时,均有动脉乳酸含量高于颈内静脉球部的现象。颈内静脉血乳酸在理论上可以作为脑缺氧的监测指标,但实际上对颈内静脉血乳酸的解释比较困难,因为脑可以释放和摄取乳酸。

卢振和等^[10]的临床研究表明,颞颥脑手术应用利多卡因-异氟醚静吸复合麻醉,气管插管时,颅内压不升高,静脉注射利多卡因 1.5 mg/kg b.w. 后,显示颅内大动脉收缩和脑氧耗量降低。张兴安等^[11]的研究表明,利多卡因能减少异丙酚用量,抑制气管插管血液动力学反应。本试验对脑肿瘤患者专门进行了研究,结果显示,是否伍用利多卡因插管时,诱导前差值 PjvO₂ 有统计学差异,其他无统计学变化。利多卡因能收缩脑血管,降低脑血流,抑制插管反应时的脑血流增加,降低脑肿瘤患者气管插管时脑血管意外的风险。两组间诱导前和气管插管时 S_{jv}O₂ 尧 jvO₂ 尧 ER 差值无统计学差异,不足以说明利多卡因影响脑氧供需平衡。

本研究结果显示,颞颥伍用利多卡因和非伍用利多卡因气管插管时, SpO₂ 尧 aO₂ 尧 jvO₂ 尧 aO₂ 尧 jvO₂ 尧 C_{jv}O₂ 尧 ER 尧 aDLac 变化均有统计学意义。颞颥利多卡因对幕上肿瘤患者麻醉诱导时脑氧供需平衡的变化无明显影响。颞颥利多卡因能有效抑制脑肿瘤患者诱导时气管插管时血液动力学反应。总之,利多卡因对脑肿瘤患者气管插管有保护作用。

参考文献

咱暂 徐世元,唐先南,许平,等.罗库溴铵与琥珀胆碱对脑血管血流动力学的影响及比较咱暂临床麻醉学杂志,2000,16(6):280-2.
 Xu SY, Tang XN, Xu P, et al. Comparison of the effects of rocuronium and succinylcholine on cerebrovascular hemodynamics 咱暂 J Clin Anesthesiol, 2000, 16(6): 280-2.

咱暂 张秀荣.肠道菌群粪便涂片检查图谱咱暂北京人民军医出版社,2000.1-15.

咱暂 张秀荣,陈穗,杨海涛,等.广州地区健康青老年人肠道菌群的调查咱暂第一军医大学学报 渊 First Mil Med Univ/Di Yi Jun Yi Da Xue Xue Bao 冤1998,8(4):356.

咱暂 康白.微生物学咱暂大连出版社,1988.64-81.

咱暂 蔡炯,许进,倪国强,等.肠道菌群与膳食纤维咱暂肠外与肠内

咱暂 侯炯,许涛,马宇,等.颅脑肿瘤术中不同药物诱导对脑氧供需平衡的影响咱暂中华神经医学杂志,2002,1(1):37-8.
 Hou J, Xu T, Ma Y, et al. Effects of the different induction anesthetic drugs on cerebral oxygen metabolism at brain tumor operations 咱暂 Chin J Neuromed, 2002, 1(1): 37-8.

咱暂 Cavazzuti M, Porro CA, Barbieri A, et al. Brain and spinal cord metabolic activity during propofol anaesthesia [J]. Br J Anaesth, 1991, 66(4): 405-9.

咱暂 Fox J, Gelb AW, Enns J, et al. The responsiveness of cerebral blood flow to changes in arterial carbon dioxide is maintained during propofol-nitrous oxide anesthesia in humans 咱暂 Can J Anesthesiol, 1992, 39: A43.

咱暂 唐先南,徐世元,萧广均,等.气管插管时脑血流动力学变化及艾司洛尔的平抑作用咱暂中华麻醉学杂志,1999,19(4):200-2.
 Tang XN, Xu SY, Xiao GJ, et al. Cerebrovascular hemodynamics and the effects of esmolol during endotracheal intubation[J]. Chin J Anesthesiol, 1999, 19(4): 200-2.

咱暂 Mitchell SJ, Pellett O, Gorman DF. Cerebral protection by lidocaine during cardiac operations 咱暂 Ann Thorac Surg, 1999, 67(4): 1117-24.

咱暂 Bedford RF, Persing JA, Pobereskin L, et al. Lidocaine or thiopental for rapid control of intracranial hypertension 咱暂 Anesth Analg, 1980, 59(6): 435.

咱暂 Wang D, Wu X, Zhong Y. Effect of lidocaine on improving cerebral protection provided by retrograde cerebral perfusion: a neuropathologic study 咱暂 J Cardiothorac Vasc Anesth, 1999, 13(2): 176-80.

咱暂 卢振和,高崇荣,关合女,等.颅脑手术应用利多卡因-异氟醚静吸复合麻醉 87 例咱暂临床麻醉学杂志,1993,9(3):140-1.
 Lu ZH, Gao CR, Guan HN, et al. General anesthesia by isoflurane-lidocaine in operation for 87 neurosurgical patients [J]. J Clin Anesthesiol, 1993, 9(3): 140-1.

咱暂 卢振和,高崇荣,何雁冰.利多卡因对脑氧耗和脑血管功能的影响咱暂中华麻醉学杂志,1999,19(6):335-6.
 Lu ZH, Gao CR, He YB. Effect of lidocaine on oxygen consumption and cerebrovascular function 咱暂 China J Anesthesiol, 1999, 19(6): 335-6.

咱暂 张兴安,吴群林,聂煌.芬太尼和利多卡因对异丙酚静脉麻醉作用的比较咱暂中华麻醉学杂志,2001,21(10):617-20.
 Zhang XA, Wu QL, Nie H. Effects of fentanyl and lidocaine on the hypnotic effect of propofol in total intravenous anesthesia 咱暂 Chin J Anesthesiol, 2001, 21(10): 617-20.

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cholera vaccine of capsule [J]. J First Mil Med Univ/Di Yi Jun Yi Da Xue Xue Bao, 1998, 18(4): 329.

咱暂 Viret J F, Favre D, Wegmuller B, et al. Mucosal and systemic immune responses in humans after primary and booster immunizations with orally administered invasive and noninvasive live attenuated bacteria 咱暂 Infect Immun, 1999, 67(7): 3680-5.

咱暂 曹亚平,张秀荣,严浩,等.广东地区健康人肠道菌群调查分析咱暂中国微生态学杂志,1999,11(6):357,360.
 Cao YP, Zhang XR, Yan H, et al. A survey on intestinal flora of health people in Guang Dong province[J]. Chin J Microecol, 1999, 11(6): 357, 360.

咱暂 陈清,俞守义,王雅贤,等.冻干口服霍乱 rBS-WC 菌苗安全性及免疫原性的人群试验咱暂中华预防医学杂志,1996,30(6):330-3.
 Chen Q, Yu SY, Wang YX, et al. Community trial for safety and immunogenicity of oral-administered lyophilized rBS-WC cholera vaccine 咱暂 Chin J Prev Med, 1996, 30(6): 330-3.