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红细胞储存时间：心脏术后谵妄发生的风险因素

Length of red cell unit storage and risk for delirium after cardiac surgery.

Brown CH 4th1, Grega M, Selnes OA, McKhann GM, Shah AS, LaFlam A, Savage WJ, Frank SM, Hogue CW, Gottesman RF.

Anesthesia &Analgesia 2014 119 242–250

背景：输血前红细胞储存的时间可能与一些术后并发症相关，虽然关于这点，现有证据是相互矛盾的。然而，红细胞储存的时间和术后谵妄之间的关系尚未被研究。我们认为，输注红细胞的储存时间与心脏外科术后谵妄的发生有关。

方法：我们进行了一项病例对照研究，纳入了 2005 年至 2011 年在 Johns Hopkins 在体外循环下行冠状动脉旁路手术、瓣膜手术以及升主动脉手术中符合准入标准的患者。如果患者未输注红细胞，或在住院期间输注＞4 个单位红细胞，在术后第一天输注任何血制品以及同时输注了保存≤14 天以及＞14 天的红细胞则被排除在研究之外。符合输血相关入组标准的患者发生了术后谵妄。对照组患者来源于符合标准的同一人群中未发生谵妄的患者，在年龄（±5 岁），手术日期在 2-2.5 年之内以及手术方式的基础上按照 1:1 进行配对。计算了每个患者输注的红细胞的平均储存时间。主要研究结果是输注储存＞14 天的红细胞和输注储存≤14 天的红细胞的患者发生术后谵妄比率的差别。次要研究结果是随着红细胞平均储存时间的增加对术后谵妄发生率的影响。我们利用多因素回归分析来检验我们的假说。

结果：在对 87 对病例-对照组的多因素回归分子中，输注储存＞14 天红细胞的患者与输注储存≤14 天红细胞的患者发生术后谵妄的比率无显著差别（比值比[OR]1.83;95%的可信区间,0.73-4.58，P=0.20）。红细胞储存时间＞14 天，平均储存时间每增加 1 天，术后谵妄的发生率可增加 1.01 到 1.13 倍（OR, 1.07; P = 0.03）。红细胞储存时间＞21 天，平均储存时间每增加 1 天，术后谵妄的发生率可增加 1.02 到 1.23 倍（OR, 1.12; P = 0.02）。

结论：输注储存时间＞14 天的红细胞与术后谵妄发生率的增加无关。然而，红细胞储存＞14 或 21 天，平均储存时间每增加 1 天，心脏手术后谵妄发生率的增加。仍需要更多的研究进一步研究术后谵妄与输注红细胞储存时间之间的关系。

(杜芳译 薛张纲校)

BACKGROUND: The time that red cell units are stored before transfusion may be associated with postoperative complications, although the evidence is conflicting. However, the association between the length of red cell unit storage and postoperative delirium has not been explored. We hypothesized that the length of storage of transfused red cell units would be associated with delirium after cardiac surgery.

METHODS: We conducted a case-control study in which patients undergoing coronary artery bypass, valve, or ascending aorta surgery with cardiopulmonary bypass at Johns Hopkins from 2005 to 2011 were eligible for inclusion. Patients were excluded if they did not receive red cell units, received >4 red cell units during hospitalization, received any transfusion after the first postoperative day, or received red cell units that were not exclusively stored for ≤14 days or >14 days. Eighty-seven patients met transfusion-related inclusion criteria and developed postoperative delirium. Controls who did not develop delirium were selected from the same source population of eligible patients and were matched 1:1 based on age (± 5 years), 2- to 2.5-year band of date of surgery, and surgical procedure. For each patient, we calculated the average storage duration of all transfused red cell units. The primary outcome was odds of delirium in patients who were transfused red cell units with exclusive storage duration >14 days compared with that of ≤14 days. Secondary outcomes were odds of delirium with each increasing day of average red cell unit

storage duration. We used conditional multivariable regression to test our hypotheses.

RESULTS: In conditional multivariable analysis of 87 case-control pairs, there was no difference in the odds of patients developing delirium if they were transfused red cell units with an exclusive storage age >14 days compared with that ≤14 days (odds ratio [OR] 1.83; 95% confidence interval, 0.73-4.58, P = 0.20). Each additional day of average red cell unit storage beyond 14 days was associated with a 1.01- to 1.13-fold increase in the odds of postoperative delirium (OR, 1.07; P = 0.03). Each additional day of average storage beyond 21 days was associated with a 1.02- to 1.23-fold increase in the odds of postoperative delirium (OR, 1.12; P = 0.02).

CONCLUSIONS: Transfusion of red cell units that have been stored for >14 days is not associated with increased odds of delirium. However, each additional day of storage >14 or 21 days may be associated with increased odds of postoperative delirium in patients undergoing cardiac surgery. More research is needed to further characterize the association between delirium and storage duration of transfused red cell units

办公室为基础的麻醉——安全性与成效

Office-Based Anesthesia: Safety and Outcomes

Shapiro, Fred E. DO[*]; Punwani, Nathan MD[†]; Rosenberg, Noah M. MD[‡]; Valedon, Arnaldo MD[§]; Twersky, Rebecca MD, MPH[‖] ; Urman, Richard D. MD, MBA[¶]

Anesthesia &Analgesia 2014 119 276–285

摘要 办公室为基础的医疗和外科手术的数量不断增加，推进了门诊麻醉的次专科——办公室为基础的麻醉（OBA）的出现。目前多种趋势促进着 OBA 的成长，包括医疗、外科手术和麻醉药品的创新，以及供应商报销制度的改进，为患者带来了更大的便利。目前尚缺乏随机对照试验来评估办公室为基础的手术和麻醉是否影响患者的发病率和死亡率，因此本研究属回顾性研究。既往已有文献开始提及办公室为基础的手术和麻醉的安全性问题。然而，最近的数据表明，门诊护理系统可以与医院和门诊手术中心相媲美，尤其是当办公室已被认可、操作者已被委员会认证。办公室为基础的法律诉讼文件可以从以下方面继续提高医护的质量，要使患者参与合适的手术和尊重患者的选择，供应商资格认证，设备认证，并纳入患者安全检查表和专业协会的实践指南。越来越多的地方或联邦政府对该系统行使监管权力，以上策略在办公室系统中对病人的发病率和死亡率愈发重要。本文旨在探讨影响病人安全问题的多种趋势，能最大限度地减少 OBA 患者并发症和死亡率的策略，以及可能会影响该领域的未来发展因素。

（江凌慧译 薛张纲校）

The increasing volume of office-based medical and surgical procedures has fostered the emergence of office-based anesthesia (OBA), a subspecialty within ambulatory anesthesia. The growth of OBA has been facilitated by numerous trends, including innovations in medical and surgical procedures and anesthetic drugs, as well as improved provider reimbursement and greater convenience for patients. There is a lack of randomized controlled trials to determine how office-based procedures and anesthesia affect patient morbidity and mortality. As a result, studies on this topic are retrospective in nature. Some of the early literature broaches concerns about the safety of office-based procedures and anesthesia. However, more recent data have shown that care in ambulatory settings is comparable to hospitals and ambulatory surgery centers, especially when offices are accredited and their proceduralists are board-certified. Office-based suites can continue to enhance the quality of care that they deliver to patients by engaging in proper procedure and patient selection, provider credentialing, facility accreditation, and incorporating patient safety checklists and professional society guidelines into practice. These strategies aiming at patient morbidity and mortality in the office setting will be increasingly important as

more states, and possibly the federal government, exercise regulatory authority over the ambulatory setting. We explore these trends, their implications for patient safety, strategies for minimizing patient complications and mortality in OBA, and future developments that could impact the field.

凝血、絮凝和变性：麻醉学进入细胞质理论研究的世纪

Coagulation, Flocculation, and Denaturation: A Century of Research into Protoplasmic Theories of Anesthesia

Perouansky, Misha MD

Anesthesia &Analgesia 2014 119 311–320

在二十年的麻醉发现中，物化概念“胶质”和生物学概念“细胞质”已经产生。将这些概念融合进入一个理论框架，这个理论框架已被遗忘多年，它预示着基本生物学真理的揭示和“乙醚时代”之后一个世纪的麻醉理论研究。在 19 世纪 70 年代，细胞质凝固将在光学显微镜下观察到的未染色组织的改变浓缩成为一种麻醉理论。细胞质中蛋白质的构象变化产生所有麻醉效应这一根本的理论一直受人追捧到 20 世纪。目的是用基础细胞生物框架中的物理化学变化来解释麻醉。这个巨大的框架在脂质细胞膜理论霸权的几十年中被遗忘，甚至在可兴奋胞膜中蛋白质是麻醉快速起效的介质这一坚实的理论建立起来之后，此框架仍旧黯淡无光。现在人们的注意力越来越多的指向更好的研究（无）意识的本质，因为在常规的病理学概念中麻醉药的非经典结果不能解释。本文就希望在这样一个时刻重新回顾基于“细胞质理论”的持续已久的跨学科的研究。

(盖晓冬译 薛张纲校)

Within two decades of the discovery of anesthesia, the physicochemical concept of colloid and the biological concept of protoplasm had emerged. Fusion of these concepts into a theoretical framework, which has been largely forgotten decades ago, promised to uncover fundamental biological truths and determined research into anesthetic mechanisms for a century after "Ether Day." Observations of optical changes in unstained tissue were condensed into a theory of anesthesia by coagulation of protoplasm in the 1870s. The underlying hypotheses, conformational changes of proteins within the protoplasm cause all behavioral effects of anesthesia, continued to be pursued well into the 20th century. The goal was to explainanesthesia using physical chemistry within a fundamental cell biological framework. This large body of work, swept aside during the decades of lipid membrane hegemony, has remained in obscurity even after proteins in excitable membranes became firmly established as mediators of the immediate anesthetic effects. This article is a reminder of the prolonged interdisciplinary research effort dedicated to "protoplasmic theories" at a time when attention is increasingly directed toward examining the nature of (un)consciousness well as noncanonical consequences of anesthetic exposure that are not easily accounted for within conventional pharmacological concepts**.**

护士管理的程序化镇静与麻醉监管的安全性比较：一项对先进的内窥镜检查病人镇静的回顾性研究

The safety of nurse-administered procedural sedation compared to anesthesia care in a historical cohort of advanced endoscopy patients.

Guimaraes ES[1], Campbell EJ, Richter JM.

Anesthesia &Analgesia 2014 119 349–356

背景：2010 年 4 月，Medicare 和 Medicaid 服务中心开始对住院行内窥镜检查的病人深镇静，针对这一转变，我科对所有行内窥镜检查的病人进行麻醉监管。与护士管理的程序化镇静相比，麻醉监管是否能降低内镜下逆行性胰胆管造影和超

声内镜病人镇静相关并发症或提高镇静质量尚属未知，因此，我们回顾了该政策变化前后 5 年内镇静相关并发症的发生情况。

方法：我们回顾了 2007 年 10 月至 2012 年 10 月期间某中心行内镜下逆行性胰岛管造影或超声内镜检查的 9598 例成年病人的病史资料，对该政策变化前后镇静、内镜检查及总并发症的发生率进行比较，并对主要并发症的发病率和死亡率进行了比较。

结果：该政策变化前后报导的镇静相关并发症发生率为 0.38%（17/4514） VS 0.08%（4/5084），该结果具有统计学差异(P = 0.002, diff = 0.3, 95% 可信区间, 0.11%-0.53%)；内镜检查相关并发症差异不大: 0.66% vs 0.87% (P = 0.293, diff = 0.2, 95% 可信区间，-0.16% - 0.56%)。总并发症(1.11% vs 1.00%, P = 0.618) 和主要并发症的发病率和死亡率(0.27% vs 0.33%, P = 0.581) 差异不明显。

总结：与护士管理的程序化镇静相比，对行先进的内窥镜检查的高危人群进行麻醉监管可显著降低镇静相关并发症的发生率。内窥镜相关并发症发生率差别不大。镇静风险的降低并不能改善主要并发症的发生率和死亡率，对总并发症发生率的影响也不大。

（郝光伟译 薛张纲校）

BACKGROUND: In April 2010, in response to a change in Centers for Medicare and Medicaid Services regulation placing deep sedation under hospital anesthesia services, our institution began providing anesthesia care for all advanced endoscopic procedures. Because it remains unknown whether anesthesia care reduces sedation-related complications or improves quality of care versus nurse-administered sedation for endoscopic retrograde cholangiopancreatography and endoscopic ultrasound patients, we retrospectively compared complications in a 5-year historical cohort before and after the policy change.

METHODS: We reviewed a historical cohort of 9598 consecutive endoscopic retrograde cholangiopancreatography and endoscopic ultrasound examinations for adult patients at a single institution during a 5-year period (October 2007-October 2012). We compared procedures performed before and after the policy change for the incidence of sedation, endoscopic, and total complications, and for major morbidity and mortality.

RESULTS: The incidence of reported sedation-related complications was 0.38% (17 of 4514) before the policy change and 0.08% (4 of 5084) after the policy change, which was statistically significant (P = 0.002, diff = 0.3, 95% confidence interval, 0.11%-0.53%). Endoscopic complications were not significantly different before versus after: 0.66% vs 0.87% (P = 0.293, diff = 0.2, 95% confidence interval, -0.16% to 0.56%). Total complications (1.11% vs 1.00%, P = 0.618) and major morbidity and mortality (0.27% vs 0.33%, P = 0.581) did not differ between the 2 time periods.

CONCLUSIONS: Anesthesia care for advanced endoscopy in a high-risk population significantly reduced sedation complications compared with nurse-administered sedation. Endoscopic complications were unchanged. The sedation risk reduction did not reduce major morbidity, mortality, or total complications.

基于肌电图描记方法的肌肉松弛定量监测装置在一家教学医院麻醉科的应用

The Implementation of Quantitative Electromyographic Neuromuscular Monitoring in an Academic Anesthesia Department

Todd, Michael M. MD; Hindman, Bradley J. MD; King, Brian J. BA

Anesthesia &Analgesia 2014 119 323–331

背景：虽然专家认为定量地监测神经肌肉阻滞相当重要，尤其在麻醉苏醒阶段，但是这项监测并没有得到广泛应用。本文主要介绍我们科室对于应用这项监测的

历程及经验。

方法：在 2010 年中旬，本文的一些主要作者开始关注科室内麻醉医生关于非去极化肌松药的应用，研究方法主要是通过观察和回顾科室内质量保证/不良事件数据库。通过回顾，我们发现每年在 PACU 大约有 2-4 例的苏醒后再插管的发生率，而这些都认为可能与肌松药的不完全逆转有关。对于此，2011 年一月份，我们在所有的手术室安装了定量监测肌肉阻滞装置（Datex-Omeda ElectroSensor™ EMG system）。伴随着新设备的引进，我们面临着将设备普及的任务，但这一过程很缓慢：在 2011 中旬，监测装置在不到 50%的全麻病人中得到应用，关于非去极化肌松药的不良事件仍在发生。因此，从 2011 年八月及随后的两年，我们在 PACU 进行了五次独立的抽样调查，调查记录了 409 名术中应用非去极化肌松药的已拔出气管导管的成年病人及 73 名术中未应用去极化肌松药的病人的 TOF 值。每次调查的结果都要全科室通报，我们同时还进行个体病例的讨论，最新文献的回顾和使用这一装置的再教育。

结果：在第一次 PACU 的抽样调查中（2011 年 8 月），有 96 名病人在术中应用了非去极化肌松药，31%的病人 TOF≤0.9，17%的病人 TOF≤0.8 和 4%的病人 TOF≤0.5。通过记录回顾，在这些病人中只有 51%的病人应用了定量肌松监测而 23%的病人在术中未使用任何监测。在第四次抽样调查中（2012 年 12 月），101 名病人中只有 15%的病人 TOF≤0.9，而 5%的病人 TOF≤0.8(与第一次有显著的统计学差异)。最后一次抽样调查（2013 年 7 月）显示了与前次几乎相近的数据。而在术中未应用非去极化肌松药的病人中 TOF 的最低值为 0.92。在过去的两年中，本科室的麻醉医生在术中应用罗库溴铵及新斯的明的习惯并没有多大改变，但由于非去极化肌松药残余导致的在 PACU 的再插管却再未发生。

讨论：肌电图描记方式为基础的定量肌松监测的普及需要一次持续的再教育过程及重复的 PACU 抽样调查及使用者的反馈。然而，这些努力却显著减少了在 PACU 的病人肌松不完全逆转的发生率。

（王飞译 薛张纲校）

BACKGROUND: Although experts agree on the importance of quantitative neuromuscular blockade monitoring, particularly for managing reversal, such monitoring is not in widespread use. We describe the processes and results of our departmental experience with the introduction of such quantitative monitoring.

METHODS: In mid-2010, the senior authors became concerned about the management of nondepolarizing neuromuscular blockers (NMB) by providers within the department, based on personal observations and on a review of a departmental quality assurance/adverse event database. This review indicated the occurrence of 2 to 4 reintubations/year in the postanesthesia care unit (PACU) that were deemed to be probably or possibly related to inadequate reversal. In response, quantitative blockade equipment (Datex-Omeda ElectroSensor™ EMG system) was installed in all our main operating rooms in January 2011. This introduction was accompanied by an extensive educational effort. Adoption of the system was slow; by mid-2011, the quantitative system was being used in <50% of cases involving nondepolarizing relaxants and adverse NMB-related events continued to occur. Therefore, starting in August 2011 and extending over the next 2 years, we performed a series of 5 separate sampling surveys in the PACU in which train-of-four (TOF) ratios were recorded in 409 tracheally extubated adult patients who had received nondepolarizing NMB (almost exclusively rocuronium) as well as in 73 patients who had not received any nondepolarizing NMB. After each survey, the results were presented to the entire department, along with discussions of individual cases, reviews of the recent literature regarding quantitative monitoring and further education regarding the use of the quantitative system.

RESULTS: In the initial (August 2011) PACU survey of 96 patients receiving nondepolarizing NMBs, 31% had a TOF ratio of ≤0.9, 17% had a ratio of ≤0.8, and 4 patients (4%) had ratios of ≤0.5. A record review showed that the quantitative monitoring system had been used to monitor reversal in only 51% of these patients, and 23% of patients had no evidence of any monitoring, including qualitative TOF

assessment. By December of 2012 (after 2 interim PACU monitoring surveys), a fourth survey showed 15% of 101 monitored patients had a TOF ratio ≤0.9, and only 5% had ratios ≤0.8. ($P < 0.05$ vs August 2011). Clear documentation of reversal using the quantitative system was present in 83% of cases ($P < 0.05$ vs August 2011). A final survey in July 2013 showed nearly identical values to those from December 2012. The lowest TOF ratio observed in any patient not receiving a nondepolarizing NMB was 0.92. There were no changes in the patterns of either rocuronium or neostigmine use over the duration of the project (through December 2012), and there have been no cases of NMB-related reintubations in the PACU during the last 2 years.

DISCUSSION: Implementation of universal electromyographic-based quantitative neuromuscular blockade monitoring required a sustained process of education along with repeated PACU surveys and feedback to providers. Nevertheless, this effort resulted in a significant reduction in the incidence of incompletely reversed patients in the PACU.

麻醉期间综合变异指数用于衡量疼痛与镇痛之间平衡作用的精确性

Accuracy of the Composite Variability Index as a Measure of the Balance Between Nociception and Antinociception During Anesthesia

Sahinovic, Marco M. MD[*]; Eleveld, Douglas J. PhD[*]; Kalmar, Alain F. MD, PhD[*]; Heeremans, Eleonora H. MD[*]; De Smet, Tom Ir MSc[†]; Seshagiri, Chandran V. PhD[‡]; Absalom, Anthony R. MBChB, FRCA, MD[*]; Vereecke, Hugo E. M. MD, PhD; Struys, Michel M. R. F. MD, PhD[*§]

Anesthesia &Analgesia 2014 119 288–301

背景：综合变异指数（CVI）来源于对脑电图的监测，用于评估疼痛与镇痛之间的平衡，而脑电双频指数（BIS）用于评估麻醉过程中的催眠状态。我们通过测定刺激前后的催眠深度（BIS 值）和镇痛作用（依据瑞芬太尼的效应室浓度，CeREMI）来研究这两个指标之间的关系。同时，我们监测在应对伤害性刺激时和体动之间的联系。

方法：我们将 120 位病人随机分为 12 组，分别设置每组不同的催眠深度（BIS 值为 70，50,30）和 CeREMI（0, 2, 4, or 6 ng/mL）。在伪稳定状态观察基线值，并提供一系列刺激。根据 BIS 值、CVI 和心率（HR）以及平均动脉压（MAP）的变化可分析催眠深度、镇痛作用以及对刺激的体动反应。

结果：与 HR, MAP, CeREMI 以及丙泊酚的效应室浓度相比，CVI 和 BIS 值与警觉-镇静-有害刺激评分具有更加精确的关联性（事后比较检验 $P< 0.01$）。对于监测对刺激的反应，CVI 的变化比 BIS, HR 和 MAP 更具有说服力（马修斯相关系数示具有显著性差异 $P < 0.001$）。相比之下，没有一个病人的镇痛状态和阿片类药物浓度以及 BIS 值监测的催眠状态有特定的相关性。

结论：CVI 和应对伤害性刺激的体动反应具有相关性。而未接受刺激时的 CVI 更多的取决于镇静药的作用而非阿片类药物浓度。

（潘艳译 薛张纲校）

BACKGROUND: The Composite Variability Index (CVI), derived from the electroencephalogram, was developed to assess the antinociception–nociception balance, whereas the Bispectral Index (BIS) was developed to assess the hypnotic state during anesthesia. We studied the relationships between these indices, level of hypnosis (BIS level), and antinociception (predicted remifentanil effect-site concentrations, CeREMI) before and after stimulation. Also, we measured their association with movement in response to a noxious stimulus.

METHODS: We randomized 120 patients to one of 12 groups targeting different hypnotic levels (BIS 70, 50, and 30) and various CeREMI (0, 2, 4, or 6 ng/mL). At pseudo-steady state, baseline values were observed, and a series of stimuli were

applied. Changes in BIS, CVI, heart rate (HR), and mean arterial blood pressure (MAP) between baseline and response period were analyzed in relation to level of hypnosis, antinociception, and somatic response to the stimuli.

RESULTS: CVI and BIS more accurately correlate with somatic response to an Observer Assessment of Alertness and Sedation-noxious stimulation than HR, MAP, CeREMI, and propofol effect-site concentration (Tukey post hoc tests $P < 0.01$). Change in CVI is more adequate to monitor response to stimulation than changes in BIS, HR, or MAP (as described by the Mathews Correlation Coefficient with significance level set at $P < 0.001$). In contrast, none of the candidate analgesic state indices was uniquely related to a specific opioid concentration and is extensively influenced by the hypnotic state as measured by BIS.

CONCLUSIONS: CVI appears to correlate with somatic responses to noxious stimuli. However, unstimulated CVI depends more on hypnotic drug effect than on opioid concentration.

择期脑外科术前风险评分的使用证据:系统回顾文献

Evidence for the use of preoperative risk assessment scores in elective cranial neurosurgery: a systematic review of the literature.

Reponen E[1], Tuominen H, Korja M.

Anesthesia &Analgesia 2014 119 420–432

背景:术前风险评分通过提供预测的结果来指导病人管理。多种风险评分被用于脑外科术前评估,但对它们的临床相关性研究还是很匮乏的。因此,目前尚不清楚这些风险评分对于脑外科预后是否是有益的或有用的。在这篇综述中,我们总结了目前择期脑外科使用术前风险评分的科学证据。

方法:系统回顾 MEDLINE、Embase,和 PubMed 数据库 2013 年 11 月的 25 个相关研究,每个研究至少 30 例。研究评估术前 ASA 分级, 卡氏行为状态评分(KPS), 查尔森指数,标准化后的兰金规模和性别、位置和水肿评分(SKALE)评估脑外科术的预后情况。文献原始数据中的手术和非手术治疗的并发症被分别评估。为此,根据报告结果研究被分为四类:手术治疗结果,非手术治疗结果,发病率和死亡率。作为首选报告,系统回顾和 Meta 分析指导系统评价。

结果:研究表明 KPS 用以预测手术相关并发症最可靠。研究发现没有任何一种术前评估能够用以预测术后非外科相关并发症。KPS 和 ASA 分级可早期预测(≤30 天)颅内肿瘤患者的发病率。查尔森指数可适用于预测择期手术的颅内动脉瘤患者的死亡率。在设计中只有 4 个研究具有前瞻性。

结论:我们需要大型前瞻性研究来证实术前风险评分对于脑外科手术的意义。不过看来,病人术前的生理和功能状态可以用来预测择期脑外科术后急性和慢性并发症。

（黄文惠译 薛张纲校）

BACKGROUND:Preoperative risk scores are designed to guide patient management by providing a means of predicting operative outcome. Several risk scores are used in neurosurgery, but studies on their clinical relevance are scarce. Therefore, it is not clear whether these risk scores are beneficial or helpful in predicting outcome after elective cranial neurosurgery. In this review, we summarize the current scientific evidence for using preoperative risk scores in elective cranial neurosurgery.

METHODS:A systematic review of the MEDLINE, Embase, and PubMed databases in November 2013 yielded 25 relevant studies with a minimum of 30 patients per study. The studies evaluated the value of the preoperative ASA physical status classification, the Karnofsky performance score (KPS), the Charlson comorbidity score, the modified Rankin Scale and the sex, KPS, ASA physical status classification,

location, and edema (SKALE) score in assessing postoperative outcome in cranial neurosurgery. Surgery-related and nonsurgical complications were assessed separately whenever reported in the original article. For this purpose, the studies were placed into 4 categories based on the reported outcome: surgery-related outcome, nonsurgical outcome, morbidity, and mortality. The Preferred Reporting Items for Systematic reviews and Meta-analyses guidelines for systematic reviews were followed.

RESULTS:KPS has the strongest support in the literature for predicting surgery-related outcomes. There is no strong support in the literature for the use of any preoperative scores in predicting nonsurgical outcomes after elective craniotomies. KPS and ASA physical status classification seem to predict early (≤ 30-day) morbidity of intracranial tumor patients. The Charlson comorbidity score may be applicable in predicting mortality of elective intracranial aneurysm patients. Only 4 studies were prospective in design.

CONCLUSIONS:Large prospective studies are needed to validate the use of the reviewed risk scores in elective cranial neurosurgery. It appears, however, that the patient's preoperative physical and functional status can be used to predict the short- and long-term outcome in elective cranial neurosurgery.

利用多靶点探针对顽固性骶髂关节痛射频消融：一项 60 例患者的临床研究

Sacroiliac joint radiofrequency ablation with a multilesion probe: a case series of 60 patients.

Schmidt PC, Pino CA, Vorenkamp KE.

Anesthesia &Analgesia 2014 119 460–462

摘要：此项研究是回顾性分析研究，利用多靶点探针技术对顽固性骶髂关节痛的患者行 77 次射频消融治疗。其中 16 次（20.8%）治疗，患者疼痛无缓解；55 次（71.4%）治疗后，可缓解超过 50%的疼痛，维持 6 周；42 次治疗后（54.5%，95%可信区间，42.8%-65.8%）患者可缓解超过 50%的疼痛，维持 6 月；12 次（15.6%）治疗，可缓解超过 50%的疼痛，维持一年。研究结果经与既往其他射频消融技术研究相比，结果可靠，存在优势。综上所述，超过半数的顽固性骶髂关节痛患者经过此项射频消融技术治疗后，疼痛缓解可超过半年。

（王嘉兴译 薛张纲校）

This retrospective case series of patients with refractory sacroiliac joint (SIJ) pain presents our first 77 SIJ radiofrequency ablation (RFA) procedures performed with a multilesion probe. Of these, 16 (20.8%) provided no relief; 55 (71.4%) provided >50% pain relief at 6 weeks; 42 (54.5%, 95% confidence interval, 42.8%-65.8%) provided >50% pain relief at 6 months; and 12 (15.6%) continued to provide >50% pain relief at 1 year. These results compare favorably to those published using other RFA techniques. In conclusion, more than half of our patients with refractory SIJ pain received some pain relief for at least 6 months after RFA.

炎性疼痛可能与 IL-6 介导的及突触后密度-95 相关的认知功能受损有关

Inflammatory pain may induce cognitive impairment through an interlukin-6-dependent and postsynaptic density-95-associated mechanism.

Yang L[1], Xin X, Zhang J, Zhang L, Dong Y, Zhang Y, Mao J, Xie Z.

Anesthesia &Analgesia 2014 119 471–480

背景： 疼痛可能与人类认知功能障碍相关联。然而，在临床前模型中这种影响的特征与潜在机制的研究在很大程度上需要进行探索。因此，我们试图建立一个系统，以确定疼痛对认知功能的影响。

方法：将完全弗氏佐剂（CFA）注射在 5 至 8 个月大的野生型和 IL-6 基因敲除小鼠的后肢。对小鼠的学习和记忆功能，皮层和海马的白介素-6 和突触后密度（PSD）-95 水平进行评估。

结果：我们发现，在注射后 3 天和 7 天，小鼠对 CFA 注射引起的疼痛在音调检测中降低了冷冻时间（30.1[16.5]对 56.8[28.1]秒，P = 0.023），这评估了与海马无关的学习和记忆功能，但不是恐惧调节系统的环境测试（15.8[6.7]与 18.6[8.8]秒，P=0.622），后者评估了在注射 3 天后与海马相关的学习记忆功能。小鼠在注射 CFA 后，皮层水平的白细胞介素-6 水平增加(248% [11.6] vs 100% [7.9], P < 0.0001)，PSD-95 水平下降(40% [10.0] vs 100% [20.3], P < 0.0001)，但海马没有(95% [8.6] vs 100% [9.3], P =0.634)。白细胞介素 6 基因敲除小鼠在 CFA 注射后既不降低皮质 PSD-95 的水平，也没有认知损害。

结论：这些结果表明，CFA 注射引起的疼痛可能在皮层增加 IL-6 的水平，减少 PSD-95 的水平，但没有在小鼠的海马，导致小鼠的与海马无关的认知损伤。这些发现需要进一步调查，以确定疼痛在认知功能中的作用。

（吴赤译 薛张纲校）

BACKGROUND: Pain might be associated with cognitive impairment in humans. However, the characterization of such effects in a preclinical model and the investigation of the underlying mechanisms remain largely to be determined. We therefore sought to establish a system to determine the effect of pain on cognitive function in mice.

METHODS: Complete Freund's adjuvant (CFA) was injected in the hindpaw of 5- to 8-month-old wild-type and interleukin-6 knockout mice. Learning and memory function, and the levels of interleukin-6 and postsynaptic density (PSD)-95 in the cortex and hippocampus of mice were assessed.

RESULTS: We found that the CFA injection-induced pain in the mice at 3 and 7 days after injection and decreased the freezing time (30.1 [16.5] vs 56.8 [28.1] seconds, P =0.023) in the tone test, which assesses the hippocampus-independent learning and memory function, but not in a context test of Fear Conditioning System (15.8 [6.7] vs 18.6 [8.8] seconds, P =0.622), which assesses the hippocampus-dependent learning and memory function, at 3 days after injection. Consistently, the CFA injection increased interleukin-6 (248% [11.6] vs 100% [7.9], P < 0.0001) and decreased the PSD-95 (40% [10.0] vs 100% [20.3], P < 0.0001) level in the cortex, but not hippocampus (95% [8.6] vs 100% [9.3], P =0.634), in the mice. The CFA injection induced neither reduction in the cortex PSD-95 levels nor cognitive impairment in the interleukin-6 knockout mice.

CONCLUSIONS: These results suggest that pain induced by CFA injection might increase interleukin-6 levels and decrease PSD-95 levels in the cortex, but not hippocampus of mice, leading to hippocampus-independent cognitive impairment in mice. These findings call for further investigation to determine the role of pain in cognitive function.

心血管麻醉医师协会的 35 年概述

An Essay on 35 Years of the Society of Cardiovascular Anesthesiologists

Reves, J. G. MD

Anesthesia & Analgesia 2014 119 255–265

本文于心血管麻醉医师协会成立 35 周年之际，记述其自 1979 年成立至今所取得

的成就。其中包括为麻醉科等医生提供了关于心脏、胸部及血管手术病人围术期监护的培训方案，拥有经食管超声心动检查技术的认证资格及心胸麻醉的培训资格。此外，该协会还参与《麻醉与镇痛》杂志的发行,并通过建立研究论坛和为同行评议项目提供资金以支持相关研究。心血管麻醉医师协会的第一个 35 年取得了非凡卓越的成就。

（隋永恒 译 陈杰 校）

This is an historical account of the accomplishments of the Society of Cardiovascular Anesthesiologists from its founding in 1989 to the present. It is written on the occasion of the 35th anniversary of the founding of this organization. The society accomplishments include providing a means to educate anesthesiologists and others about the perioperative care of patients undergoing cardiac, thoracic, and vascular surgery. The society has led accreditation of transesophageal echocardiography and education in cardiothoracic anesthesia. The society publishes a section within Anesthesia & Analgesia and supports investigation by providing a forum for the discussion of research and funding peer-reviewed projects. The first 35 years of the Society of Cardiovascular Anesthesiologists has been remarkable in all that has been accomplished.

病态肥胖病人在减肥手术后额外给氧不能减少手术部位感染及愈合相关并发症的发生：一项随机盲法研究

Supplemental Postoperative Oxygen Does Not Reduce Surgical Site Infection and Major Healing-Related Complications from Bariatric Surgery in Morbidly Obese Patients: A Randomized, Blinded Trial

Wadhwa, Anupama MD*; Kabon, Barbara MD†; Fleischmann, Edith MD†; Kurz, Andrea MD‡; Sessler, Daniel I. MD‡

Anesthesia & Analgesia 2014 119 357–365

背景：病态肥胖病人有包括手术部位感染在内的围术期并发症风险。病态肥胖病人较低的基础动脉氧合导致了组织低氧合，这是决定感染风险的基本因素。因此本研究对术后额外给氧 12 到 16 h 可以减少手术部位感染和治疗相关并发症的假说进行了验证。

方法：接受开放式或腔镜减肥手术的病态肥胖病人在术中给予 80%氧气吸入。在术后，这些病人被随机分配到两组，在气管导管拔除后第一组病人通过鼻插管给予 2L/min 氧气，第二组给予大约 80%氧气吸入，两组治疗都持续至术后第一日早晨。术后 60 天评估手术部位感染和主要治疗相关并发症。

结果：在一个初始包含 400 名病人的预先计划的中期分析中，观察到的总体并发症发生率为 13.3%，每个主要并发症的发生率在 0%（腹膜炎）到 8.5%（手术部位感染）之间。在纠正偏倚后，术后第一个 60 天内发生的任何至少发生 1 例的主要并发症的预估 RR 值为 0.94（95%可信区间为 0.52-1.68) (P = 0.80, Cochran–Mantel–Haenszel)。研究小组据此认为研究无效而终止了实验。

结论：术后额外给氧不能减少接受胃分流手术病人术后手术部位感染和治疗相关并发症的发生。

（张帆 译 陈杰 校）

BACKGROUND: Morbidly obese patients are at high risk for perioperative complications, including surgical site infections. Baseline arterial oxygenation is low in the morbidly obese, leading to low tissue oxygenation, which in turn is a primary determinant of infection risk. We therefore tested the hypothesis that extending intraoperative supplemental oxygen 12 to 16 hours into the postoperative period reduces the risk of surgical site infection and healing-related complications.

METHODS: Morbidly obese patients having open or laparoscopic bariatric surgery were given 80% inspired oxygen intraoperatively. Postoperatively, patients were

randomly assigned to either 2 L/min of oxygen via nasal cannula or approximately 80% supplemental inspired oxygen after tracheal extubation until the first postoperative morning. The risks of surgical site infection and of major healing-related complications were evaluated 60 days after surgery.

RESULTS: In a preplanned interim analysis based on the initial 400 patients, the overall observed incidence of the collapsed composite of major complications was 13.3%; the observed incidence of components of the composite outcome ranged from 0% (peritonitis) to 8.5% (surgical wound infection). The estimated relative risk of any ≥1 major complications occurring within the first 60 days after surgery, adjusting for study site, was 0.94 (95% confidence interval, 0.52–1.68) (P = 0.80, Cochran–Mantel–Haenszel). The Executive Committee thus stopped the trial for futility.

CONCLUSIONS: Supplemental postoperative oxygen does not reduce the risk of surgical site infection rate and healing-related postoperative complications in patients having gastric bypass surgery.

硬膜外镇痛与降低产后抑郁症风险的相关性:一项前瞻性队列研究

Epidural Labor Analgesia Is Associated with a Decreased Risk of Postpartum Depression: A Prospective Cohort Study

Ding, Ting MD*; Wang, Dong-Xin MD, PhD*; Qu, Yuan MD*; Chen, Qian MD†; Zhu, Sai-Nan PhD‡

Anesthesia & Analgesia 2014 119 383–392

背景：产后抑郁症是一种产后常见的精神疾病。病因尚不清楚,可能涉及多个因素。本试验研究硬膜外镇痛是否与产后抑郁症的风险降低有关。

方法：214 名准备行经阴道分娩的产妇被纳入这项前瞻性队列研究。214 名产妇中有 107 名要求行硬膜外镇痛。分娩后 3 天和 6 周用爱丁堡产后抑郁量表评估产妇的精神状态。产后抑郁症定义为第 6 周评分 10 分或以上。收集产妇的个人资料与围产期参数。使用多元 logistic 回归分析评估硬膜外镇痛和产后抑郁症之间的相关性。

结果：接受硬膜外镇痛的产妇产后抑郁症发生率为 14.0% (15/107)，未接受硬膜外镇痛的产后抑郁症发生率为 34.6%(37/107)（ P < 0.001）。使用硬膜外镇痛与产后抑郁症的发生率降低有关（比值比 OR=0.31，95%可信区间 CI 0.12 --0.82，P = 0.018)。怀孕期间参加分娩教育班(OR=0.30，95% CI 0.30 - 0.12，P = 0.015), 和产后持续母乳喂养 (OR=0.02，95% CI 0.02 - 0.00，P < 0.001)也与产后抑郁症发生率降低有关。产后第三天较高的爱丁堡产后抑郁量表得分与产后抑郁症的发生率增加有关(OR=1.20，95% CI 1.20 - 1.05，P = 0.009)。

结论：硬膜外镇痛与降低产后抑郁症的发生率有关。仍需要大样本进一步研究来评估硬膜外镇痛对产后抑郁症的发生率的影响。

(林雨轩 译 陈杰 校)

BACKGROUND: Postpartum depression is a common psychiatric disorder in parturients after delivery. The etiology remains unclear, and multiple factors may be involved. In this study, we investigated whether epidural labor analgesia was associated with a decreased risk of postpartum depression development.

METHODS: Two hundred fourteen parturients who were preparing for a vaginal delivery were enrolled in this prospective cohort study. Epidural labor analgesia was performed in 107 of 214 patients on their request. Parturients' mental status was assessed with the Edinburgh Postnatal Depression Scale at 3 days and 6 weeks after delivery. A score of 10 or higher on the scale at 6 weeks was used as an indication of postpartum depression. Parturients' characteristics together with perinatal variables

were collected. Multivariate logistic regression analysis was performed to assess an association between the use of epidural analgesia and the occurrence of postpartum depression.

RESULTS: Postpartum depression occurred in 14.0% (15 of 107) of parturients who received epidural labor analgesia and in 34.6% (37 of 107) of those who did not ($P < 0.001$). Use of epidural labor analgesia was associated with a decreased risk of postpartum depression (odds ratio [OR] 0.31, 95% confidence interval [CI], 0.12–0.82, $P = 0.018$). Attendance at childbirth classes during pregnancy (OR 0.30, 95% CI, 0.12–0.79, $P = 0.015$) and continued breast-feeding after delivery (OR 0.02, 95% CI, 0.00–0.07, $P < 0.001$) were also associated with decreased risks of postpartum depression. A high Edinburgh Postnatal Depression Scale score at 3 days postpartum was associated with an increased risk of postpartum depression (OR 1.20, 95% CI, 1.05–1.37, $P = 0.009$).

CONCLUSIONS: Epidural labor analgesia was associated with a decreased risk of postpartum depression. Further study with a large sample size is needed to evaluate the impact of epidural analgesia on the occurrence of postpartum depression.

儿童腹横肌平面阻滞：关于 1994 例来自 PRAN(儿童区域麻醉网络)数据库病例的多中心安全性分析

Transversus Abdominis Plane Block in Children: A Multicenter Safety Analysis of 1994 Cases from the PRAN (Pediatric Regional Anesthesia Network) Database

Long, Justin B. MD*; Birmingham, Patrick K. MD*; De Oliveira, Gildasio S. Jr MD, MSCI†; Schaldenbrand, Katie M. MPH*; Suresh, Santhanam MD*

Anesthesia & Analgesia 2014 119 395–399

背景：目前没有足够证据支持腹横肌平面阻滞用于改善儿童术后疼痛的安全性。在儿童中进行大型随机试验的主要障碍就是被反复提到的安全问题。目前研究的主要目的是确定在儿童中由腹横肌平面阻滞所导致的总体及特定并发症的发生率。此外本研究对相同人群中局麻药剂量选择的方案进行评估。

方法：这是一项使用儿童区域麻醉网数据库进行的观察性研究。腹横肌平面阻滞所导致的并发症定义为存在以下至少一项术中和/或术后因素：腹膜或器官穿刺，血管穿刺，心血管、肺部和/或神经症状/体征，血肿和感染。额外分析用来确定局麻药剂量的方案。

结果：研究纳入了 1994 例接受腹横肌平面阻滞的儿童，只有两例并发症的报道：一例为局麻药误注射入血管，另一例是腹腔注内射，导致总体并发症发生率为 0.1%(0.02%-0.03%)，特定并发症（血管注射或腹腔穿刺）发生率为 0.05%（0.0054%-0.2000%）。这两例并发症都不需要额外的干预措施也没有导致后遗症。双侧腹横肌平面阻滞时的局麻药剂量中位数(95%区间)为布比卡因 1.0mg/kg（0.47-2.29mg/kg），然而受试者的体重不足以解释剂量的巨大差异。1944 例中有 135 例（6.9%；95%CI，5.8%-8.1%）所接受的剂量可能是有潜在毒性效应的。接受潜在毒性剂量的受试者年龄小于未接受潜在毒性剂量的受试者，分别为 64（19-100）个月和 108（45-158）个月。

结论：在儿童中与腹横肌平面阻滞相关的并发症发病率占所有并发症的 0.3%，更为重要的是，并发症影响非常小并且不需要任何额外的干预措施。相比之下，局麻药剂量使用时较大的差异不仅减少了腹横肌平面阻滞可能镇痛的优点，而且还可能导致局麻药毒性作用。只要选择适当的局麻剂量方案，安全问题不应该成为在儿童中进行随机试验以检测腹横肌平面阻滞有效性的一个主要障碍。

（王筱婧 译 陈杰 校）

BACKGROUND: Currently, there is not enough evidence to support the safety of the transversus abdominis plane (TAP) block when used to ameliorate postoperative pain in children. Safety concerns have been repeatedly mentioned as a major barrier to

performing large randomized trials in children. The main objective of the current investigation was to determine the incidence of overall and specific complications resulting from the performance of the TAP block in children. In addition, we evaluated patterns of local anesthetic dosage selection in the same population.

METHODS: This was an observational study using the Pediatric Regional Anesthesia Network database. A complication from the TAP block was defined by the presence of at least one of the following intraoperative and/or postoperative factors: puncture of the peritoneum or organs, vascular puncture, cardiovascular, pulmonary and/or neurological symptoms/signs, hematoma, and infection. Additional analyses were performed to identify patterns of local anesthetic dosage.

RESULTS: One thousand nine hundred ninety-four children receiving a TAP block were included in the analysis. Only 2 complications were reported: a vascular aspiration of blood before local anesthetic injection and a peritoneal puncture resulting in an overall incidence of complications (95% CI) of 0.1% (0.02%–0.3%) and a specific incidence of complications (vascular aspiration or peritoneal puncture) of 0.05% (0.0054%–0.2000%). Neither of these complications resulted in additional interventions or sequelae. The median (95% range) for the local anesthetic dose per weight for bilateral TAP blocks was 1.0 (0.47–2.29) mg of bupivacaine equivalents per kilogram; however, subjects' weights were not sufficient to explain much of the variability in dose. One hundred thirty-five of 1944 (6.9%; 95% CI, 5.8%–8.1%) subjects received doses that could be potentially toxic. Subjects who received potentially toxic doses were younger than subjects who did not receive potentially toxic doses, 64 (19–100) months and 108 (45–158) months, respectively ($P < 0.001$).

CONCLUSIONS: The upper incidence of overall complications associated with the TAP block in children was 0.3%. More important, complications were very minor and did not require any additional interventions. In contrast, the large variability of local anesthetic dosage used can not only minimize potential analgesic benefits of the TAP block but also result in local anesthetic toxicity. Safety concerns should not be a major barrier to performing randomized trials to test the efficacy of the TAP block in children as long as appropriate local anesthetic dose regimens are selected.

海马 tau 蛋白磷酸化在异氟醚诱导的 APP695 转基因小鼠认知功能障碍中的作用
The Role of Hippocampal Tau Protein Phosphorylation in Isoflurane-Induced Cognitive Dysfunction in Transgenic APP695 Mice

Li, Changsheng MD*†; Liu, Sufang MD*†; Xing, Ying MD, PhD*‡; Tao, Feng MD, PhD†

Anesthesia & Analgesia 2014 119 413–419

背景：以往研究表明，暴露于吸入麻醉药可诱发认知功能障碍，这表明全身麻醉可能是造成阿尔茨海默病发展的风险因素。但基本的机制仍有待阐明。本研究测试了关于增强海马 tua 蛋白磷酸化有助于异氟醚诱发阿尔茨海默病的小鼠模型产生认知功能障碍的假设。
方法：对 54 只雄性野生型（WT）小鼠（12 月龄）和 54 只雄性淀粉样前体蛋白 695（APP695）小鼠（12 月龄），进行 1 个 MAC 的异氟醚麻醉 4 小时或者假麻醉（对照）处理。采用 Morris 水迷宫方法来测量小鼠的学习与记忆行为。用定量免疫印迹法分析在 Ser262 位点的海马 tau 蛋白磷酸化水平。

结果：Morris 水迷宫测试中，WT 小鼠和转基因 APP695 小鼠在为期 4 天的培训中均表现为潜伏期缩短。异氟醚暴露可显著的延长 WT 小鼠在第 2 天及第 3 天的潜伏期，同时 APP695 小鼠在第 3 和第 4 天的潜伏期也显著延长（WT：第 2 天 P = 0.005 和第 3 天 P =0.002; APP695：第 3 天 P =0.001，第 4 天 P<0.0001），并且两种小鼠的平台象限逗留时间均减少（WT：P <0.0001; APP695：P <0.0001）。与 WP 小鼠相比，转基因 APP695 小鼠在异氟醚暴露后显示出学习和记忆行为明显落后于前者（第 4 日：逃避潜伏期测试 P =0.0005，平台探头测试 P=0.009）。 免

疫印迹法表明，转基因 APP695 小鼠位于 Ser262 位点上海马 tau 蛋白的磷酸化水平（tau[pS262]）显着高于 WP 小鼠（P <0.0001），而在这两种类型的小鼠中海马 tau 蛋白[高 pS262]的水平跟异氟醚暴露时间均呈依赖性正相关，但在转基因 APP695 小鼠（P <0.0001）中更显著。数据还显示，异氟醚对所有的小鼠（P≥0.54）的海马中的总 tau 蛋白表达没有影响。
结论：异氟醚可能通过增强在 Ser262 位点的海马 tau 蛋白磷酸化水平而诱发认知功能障碍，并且这种影响在转基因 APP695 小鼠身上更为显著。
（秦懿 译 陈杰 校）

BACKGROUND: Previous studies have shown that exposure to inhaled anesthetics can cause cognitive dysfunction, suggesting that general anesthesia might be a risk factor for the development of Alzheimer disease. However, the underlying mechanisms remain to be elucidated. In the present study, we tested our hypothesis that enhanced tau protein phosphorylation in hippocampus contributes to isoflurane-induced cognitive dysfunction in a mouse model of Alzheimer disease.

METHODS: Fifty-four male wild-type (WT) mice (12 months old) and 54 male amyloid precursor protein 695 (APP695) mice (12 months old) were either anesthetized for 4 hours with 1.0 minimum alveolar concentration isoflurane or sham-anesthetized (control). Learning and memory behaviors were measured using the Morris Water Maze test for mice. Phosphorylation of hippocampal tau protein at Ser262 site was analyzed with quantitative Western blotting.

RESULTS: In the Morris Water Maze test, both WT and transgenic APP695 mice showed decreased latency times during a 4-day training period. Isoflurane exposure significantly increased the latency times on days 2 and 3 in WT mice as well as on days 3 and 4 in APP695 mice (WT: $P = 0.005$ for day 2 and $P = 0.002$ for day 3; APP695: $P = 0.001$ for day 3 and $P < 0.0001$ for day 4) and reduced platform quadrant times (WT: $P < 0.0001$; APP695: $P < 0.0001$) in both types of mice. Compared with WT mice, transgenic APP695 mice displayed worse learning and memory behaviors after isoflurane exposure ($P = 0.0005$ for escape latency testing on day 4 training; $P = 0.009$ for platform probe testing). Western blot analysis showed that the levels of phosphorylation of hippocampal tau protein at Ser262 site (tau[pS262]) in the transgenic APP695 mice were higher than those in WT mice ($P < 0.0001$) and that isoflurane exposure time dependently enhanced the hippocampal tau[pS262] levels in both types of mice, but this effect was much more significant in the transgenic APP695 mice ($P < 0.0001$). Our data also showed that isoflurane exposure had no effect on the expression of total tau protein in the hippocampi of all mice ($P \geq 0.54$).

CONCLUSIONS: Isoflurane may induce cognitive dysfunction by enhancing phosphorylation of hippocampal tau protein at Ser262 site, and this effect is more significant in transgenic APP695 mice.

退伍军人膝关节镜检查术后阿片类药物的延长使用情况

Prolonged Opioid Use After Knee Arthroscopy in Military Veterans

Rozet, Irene MD*†; Nishio, Isuta MD, PhD*†; Robbertze, Reinette MBChB, FANZCA*; Rotter, Douglas BS, JD†; Chansky, Howard MD†; Hernandez, Adrian V. MD, PhD‡

Anesthesia & Analgesia 2014 119 454–459

背景：慢性术后疼痛的发生率与择期手术具有明显相关性。已知的危险因素包括:围手术期疼痛和创伤后应激障碍(PTSD)。退伍军人往往存有 PTSD 的风险,因此手术后慢性疼痛的风险可能会增加。本研究目的是确认年轻退伍军人在实施小型择期外科手术后发生慢性术后疼痛的风险因素,包括 PTSD 的影响。

方法：本研究回顾了 2007 到 2010 间在退伍军人管理局普吉湾健康保健系统中，行择期膝关节镜检查的退伍军人（18–50 岁）的医疗和用药的记录。数据包括人

口统计学，ASA 分级，术前合并症，麻醉药物，和术前 3.5 个月及术后 3.5 个月阿片类药物的使用。根据病人的问题列表或者临床记录来确定创伤后应激障碍的存在。将术后阿片类药物的使用时间超过 3 个月作为确认患者存在慢性术后疼痛。

结果：145 例患者符合纳入标准。年龄中位数为 39±8 岁。其中 87%的患者为男性。PTSD 的患病率为 32%（95%置信区间，25%–41%）。PTSD 的发生与吸烟（P = 0.009）及术前阿片类药物的使用（P = 0.0006）呈正相关。44%(63/145)的患者在术前使用过阿片类药物:其中 PTSD 患者与非 PTSD 患者的分别为 64%(30/47）与 34%（33/98），两者差异有统计学意义（P=0.0006）。30%（43/145）的患者被确定存在慢性术后疼痛。慢性术后疼痛的最强的独立预测因子为术前阿片类药物的使用（比值比= 65.3；95%置信区间，14.5–293）。对于在术前没有使用过阿片类药物，年龄大于 27.5 岁的患者来说，PTSD 也可能是慢性术后疼痛的危险因素。**结论：**此项单中心回顾性研究表明，慢性术后疼痛发生的最重要的因素是术前阿片类药物的使用。而术前未使用阿片类药物的患者，创伤后应激障碍可能会增加术后阿片类药物使用的时间以及与患者年龄相关的慢性术后疼痛的潜在风险。

（殷文 译 陈杰 校）

BACKGROUND: Chronic postoperative pain occurs with an appreciable incidence after elective surgery. Known risk factors include perioperative pain and posttraumatic stress disorder (PTSD). Military veterans are a population at particular risk for PTSD and hence may be at increased risk for chronic pain after surgery. Our goal was to identify risk factors for chronic postoperative pain in young veterans after minor elective surgery, including the contribution of PTSD.

METHODS: We reviewed the medical and pharmacy records of veterans (18–50 years old), undergoing elective knee arthroscopy from 2007 to 2010 at the Veteran's Administration Puget Sound Health Care System. The data included demographics, ASA physical status class, comorbidities, anesthesia medications, and opioid prescriptions starting 3.5 months before surgery and ending 3.5 months after surgery. We documented the presence of PTSD based on either the patient's problem list or the clinical notes. We used prolonged postoperative opioid prescription longer than 3 months after surgery as a surrogate for chronic postoperative pain.

RESULTS: We identified 145 patients who met inclusion criteria. The median age was 39 ± 8 years old. Eighty-seven percent of the patients were men. The prevalence of PTSD was 32% (95% confidence interval, 25%–41%). PTSD was associated with increased incidence of smoking (P = 0.009) and preoperative opioid use (P = 0.0006). Preoperative opioids were prescribed in 44% (63 of 145) of the patients: in 64% (30 of 47) of patients with PTSD, compared with 34% (33 of 98) in patients without PTSD (P = .0006). Chronic postoperative pain was identified in 30% (43 of 145) of patients. The strongest independent predictor of chronic postoperative pain was an opioid prescription before surgery (odds ratio = 65.3; 95% confidence interval, 014.5–293.0). In patients older than 27.5 years who did not receive opioids before surgery, PTSD may also have been a risk factor for chronic postoperative pain.

CONCLUSIONS: This single-center retrospective study suggests that the most important predictor of chronic postoperative pain is preoperative opioid use. For patients not taking opioids preoperatively, PTSD may increase the risk of prolonged postoperative opioid prescriptions and chronic postoperative pain, potentially related to patient age.

神经周围注射普瑞巴林在大鼠神经病理性疼痛模型中镇痛的新应用

Novel Use of Perineural Pregabalin Infusion for Analgesia in a Rat Neuropathic Pain Model

Buys, Michael J. MD; Alphonso, Carlo MD

Anesthesia & Analgesia 2014 119 481–488

背景：抗惊厥类药物普瑞巴林和加巴喷丁常全身应用于一些慢性神经病理性疾病的治疗。然而，一些患者因为严重的药物副作用而终止药物治疗。本文阐述了在大鼠神经病理性疼痛模型中，普瑞巴林可能通过作用于受损神经位点阻滞神经病理性疼痛。

方法：40 只雄性 SD 大鼠随机分为四组：坐骨神经挤压伤后进行普瑞巴林神经周围处理（治疗组），挤压伤后进行盐水神经周围处理（盐水对照组），挤压伤后进行普瑞巴林皮下给药处理（全身用药对照组），以及假手术处理（假手术组）。实验动物分别接受 1%普瑞巴林（治疗组和全身对照组）和盐水（盐水对照组）持续输注 7 天，用双足平衡测痛仪，防御评分和热辐射回缩潜伏期来测定疼痛行为学变化(Hargreaves 法)，用免疫组织化学染色检测神经上可能介导普瑞巴林中枢性镇痛作用的 α(2)δ-1 受体。

结果：治疗组防御评分、双足平衡测痛仪评分均优于全身用药对照组和盐水对照组($P < 0.0001$、$P \leq 0.001$)，而热辐射法表明，各组受伤动物之间痛觉迟钝情况没有统计学差异($P = 0.80$)。免疫组织化学染色半定量分析表明所有神经损伤动物受损的神经位点处 α(2)δ-1 钙通道表达情况是相同的。

结论：在神经病理性疼痛模型中，普瑞巴林神经周围用药的镇痛效果优于其全身用药。普瑞巴林的神经周围用药可能替代其全身用药，成为有效治疗神经病理性疼痛的新方法。

（池晓颖 译 陈杰 校）

BACKGROUND: The anticonvulsant drugs pregabalin and gabapentin are often used systemically to treat some forms of chronic neuropathic pain. However, many patients report side effects serious enough to cause discontinuation of the drug. Here we present evidence that pregabalin may block neuropathic pain when applied to the site of nerve injury in a rat neuropathic pain model.

METHODS: Forty male Sprague Dawley rats were randomized into 4 groups: sciatic nerve crush injury with perineural pregabalin treatment (treatment), crush injury with perineural saline treatment (saline control), crush injury with subcutaneous pregabalin treatment (systemic drug control), and sham surgery (sham surgery control). Animals received either continuous infusions of 1% pregabalin for 7 days (treatment and systemic control) or saline (saline control) and were tested for pain behaviors using incapacitance meter, guarding scores, and radiant heat withdrawal latency (Hargreaves method). Nerves were studied using histology and immunohistochemistry for α(2)δ-1 receptors thought to mediate the central analgesic action of pregabalin.

RESULTS: Treatment rats had significantly better guarding scores than systemic drug controls or saline controls ($P < 0.0001$) and had significantly better incapacitance scores than systemic drug controls and saline controls ($P \leq 0.001$). Hargreaves method data showed hypoalgesia in all injured animals with no difference among injured groups ($P = 0.80$). Qualitatively, immunohistochemistry likely showed equivalent expression of the α(2)δ-1 calcium channel at the injured nerve site in all nerve-injured animals.

CONCLUSIONS: Perineural pregabalin administration produced superior analgesia compared with that of systemic pregabalin in this neuropathic pain model. Perineural pregabalin treatment may provide a useful alternative to systemic pregabalin treatment for neuropathic pain.

尼古丁对患者术后镇痛的影响：一项系统性回顾和系统评价

Nicotine for Postoperative Analgesia: A Systematic Review and Meta-Analysis

Mishriky, Basem M. MD; Habib, Ashraf S. MBBCh, MSc, MHSc, FRCA

Anesthesia & Analgesia 2014 119 268–275

背景：围术期尼古丁的使用通常是做为一种辅助镇痛药和预防术后恶心呕吐(PONV)的可能形式来研究的.我们所做的系统性回顾是来评估围术期管理中尼古丁在术后疼痛及术后恶心呕吐方面的影响。

方法：应用于 MEDLINE、CENTRAL、EMBASE 和 CINAHL 数据库的文献检索采用随机对照的方法来调查尼古丁相较于安慰剂在全麻术后患者的疼痛和恶心呕吐方面影响的不同。研究中使用了随机效应模型。最终首要目的是其累计镇痛药消耗量和术后 24 小时的疼痛评分。

结果：共进行了 9 项研究（662 例患者）。其中 6 项使用的是尼古丁透皮贴剂，另外 3 项是尼古丁鼻部喷雾。4 项研究中仅为女性患者，同时 7 项研究中是不吸烟者。围术期尼古丁使用使得术后 24 小时内累积阿片类镇痛药消耗量与控制组相比减少(平均差= -4.85 mg 等量吗啡, 95% 置信区间[CI], = -9.40 到 -0.30, P = 0.04)。疼痛评分在临床上和统计学上均没有减少。尼古丁组的术后恶心率发生显著增高(相对危险度= 1.26, 95% CI, = 1.05 to 1.52)同时在术后一小时需要止吐药干预(相对危险度= 1.54, 95% CI, = 1.37 to 1.74)，术后 24 小时术后恶心发生率显著增高(相对危险度= 1.14, 95% CI, = 1.02 to 1.28).术后 24 小时阿片类镇痛药的使用仅仅见于不吸烟者。当排除一组高危偏差，尼古丁仍然表现出更高的术后 24 小时恶心率(相对危险度= 1.15, 95% CI, = 1.05 to 1.25)。

结论：这项系统回顾可以看出，围术期尼古丁的使用使得术后 24 小时阿片类药物累计使用量减少、疼痛评分降低，二者均有显著统计学意义，围术期尼古丁的使用也增加了全麻患者术后恶心的发生率。阿片类药物缺乏效应似乎仅限于不吸烟者。当前数据并不支持尼古丁在围术期镇痛中的使用。

（赵晓 译 李士通 校）

BACKGROUND The perioperative adminstration of nicotine has been investigated as an analgesic adjunct and a possible modality to prevent postoperative nausea and vomiting (PONV).

We performed this systematic review to assess the impact of perioperative administration of nicotine on postoperative pain and PONV.

METHODS A literature search of MEDLINE, CENTRAL, EMBASE, and CINAHL was done for randomized controlled trials that investigated the effects of nicotine compared with placebo regarding postoperative pain and/or PONV in patients undergoing surgery under general anesthesia. A random effects model was used for analysis. The primary end points were cumulative analgesic consumption and pain scores at 24 hours after surgery.

RESULTS Nine studies (662 patients) were included. Nicotine was administered as a transdermal patch in 6 studies and as a nasal spray in 3. Four studies recruited only women while 7 recruited only nonsmokers.Perioperative nicotine administration was associated with a reduction in cumulative opioid consumption at 24 hours compared with control (mean difference = -4.85 mg morphine equivalents, 95% confidence interval [CI], = -9.40 to -0.30, P = 0.04).Pain scores were neither clinically nor statistically reduced. Nicotine was associated with a significantly higher incidence of postoperative nausea (relative risk = 1.26, 95% CI, = 1.05 to 1.52) and need for rescue antiemetics (relative risk = 1.54, 95% CI, = 1.37 to 1.74) during the first postoperative hour and significantly higher postoperative nausea at 24 hours (relative risk = 1.14, 95% CI, = 1.02 to 1.28). The 24 hours opioid sparing was only seen in nonsmokers. When excluding 1 study with high risk of bias, nicotine was still associated with more postoperative nausea at 24 hours (relative risk = 1.15, 95% CI, = 1.05 to 1.25).

CONCLUSIONS This systematic review suggests that perioperative nicotine administration was associated with a statistically significant reduction in cumulative opioid consumption at 24 hours and a statistically insignificant reduction in pain scores at 24 hours.Perioperative nicotine was also associated with an increased

incidence of postoperative nausea in patients undergoing surgery under general anesthesia. The opioid-sparing effect seemed to be limited to nonsmokers. Current data do not support a role for nicotine in perioperative analgesia.

肥胖患者的丙泊酚靶控输注模式效能：药代动力学和药效动力学分析

Performance of Propofol Target-Controlled Infusion Models in the Obese: Pharmacokinetic and Pharmacodynamic Analysis

Cortínez, Luis I. MD[*]; De la Fuente, Natalia MD[*]; Eleveld, Douglas J. PhD[†]; Oliveros, Ana MD[*]; Crovari, Fernando MD[‡]; Sepulveda, Pablo MD[§]; Ibacache, Mauricio MD, PhD[*]; Solari, Sandra MD[‖]

Anesthesia & Analgesia 2014 119 302–310

背景：肥胖者机体发生了重要生理改变，可潜在的影响了麻醉药物的药代动力学（PK）和药效动力学（PD）。我们设计这个研究来评估 5 种当前可用的丙泊酚药代动力学模式在过度肥胖患者的预测性表现，同时找出这类群体特征性的脑电双频指数（BIS）反应。

方法：研究对象为 20 名 20~60 岁的肥胖患者（体重指数>35 kg/m），拟择期行腹腔镜肥胖外科手术。麻醉方案采用丙泊酚靶控输注复合瑞芬太尼手控输注。记录下 BIS 数值和丙泊酚输注方案。动脉血样分别在开始时、维持期及术后 2 小时采集来测量丙泊酚含量。计算 MDPEs 和 MDAPEs 来监测该模型性能。研发出的 PKPD 模式使用了 NONMEM 来反映出丙泊酚在复合瑞芬太尼情况下的浓度-BIS 动态关系的特征趋势。

结果：20 名肥胖者（平均体重：106kg,范围：85-141 kg；平均年龄: 33.7 岁, 范围: 21-53 岁; 平均体重指数: 41.4 kg/m, 范围: 35-52 kg/m）。共收集了 294 份动脉血样本、分析了 1431 个 BIS 测量值。当全身体重（TBW）做为患者体重来录入，Eleveld 异速生长模式出现了最好的结果（P < 0.0001），MDPE MDPE = 18.2%、MDAPE = 27.5%。但是，5 种经过测试的药代动力学模式，却反映出低估丙泊酚浓度的趋势。用经校正过的体重在 Schnider and Marsh 模式下改良了两种模式，使其达到最低预测错误率(MDPE = <10% and MDAPE = <25%; all P < 0.0001)。将一个 3 隔药代动力学模式通过一阶速率常数置于反曲的禁止 Emax 药效动力学模型能够充分的描绘出丙泊酚浓度-BIS 数值变化。一个滞后时间参数为 0.44 分钟(SE = 0.04 minutes)用来解释适当改良的 BIS 值反应时间的延长。在我们的研究中，典型的患者复合瑞芬太尼情况下，类似的靶向效应浓度为 3.2 μg/mL (SE = 0.17 μg/mL)时预计 BIS 值为 50.

结论：Eleveld 异速生长药代动力学模式证实使用 TBW 时，其优于其他所有测试模式。但是，所有的模式都有低估丙泊酚浓度的倾向。传统的 Schnider and Marsh 模式中用校正的体重替代 TBW 显著的改进了其性能，在所有的模式中达到了最低的预测错误率。我们的研究认为，肥胖患者在时间上的 BIS 反应与丙泊酚浓度-BIS 关系之间不存在相关联系。

（赵晓 译 李士通 校）

BACKGROUND Obesity is associated with important physiologic changes that can potentially affect the pharmacokinetic (PK) and pharmacodynamic (PD) profile of anesthetic drugs. We designed this study to assess the predictive performance of 5 currently available propofol PK models in morbidly obese patients and to characterize the Bispectral Index (BIS) response in this population.

METHODS Twenty obese patients (body mass index >35 kg/m), aged 20 to 60 years, scheduled for laparoscopic bariatric surgery, were studied.Anesthesia was administered using propofol by target-controlled infusion and remifentanil by manually controlled infusion. BIS data and propofol infusion schemes were recorded. Arterial blood samples to measure propofol were collected during induction, maintenance, and the first 2 postoperative hours. Median performance errors (MDPEs)

and median absolute performance errors (MDAPEs) were calculated to measure model performance. A PKPD model was developed using NONMEM to characterize the propofol concentration-BIS dynamic relationship in the presence of remifentanil.

RESULTS We studied 20 obese adults (mean weight: 106 kg, range: 85-141 kg; mean age: 33.7 years, range: 21-53 years; mean body mass index: 41.4 kg/m, range: 35-52 kg/m).We obtained 294 arterial samples and analyzed 1431 measured BIS values. When total body weight (TBW) was used as input of patient weight, the Eleveld allometric model showed the best (P < 0.0001) performance with MDPE = 18.2% and MDAPE = 27.5%. The 5 tested PK models, however, showed a tendency to underestimate propofol concentrations. The use of an adjusted body weight with the Schnider and Marsh models improved the performance of both models achieving the lowest predictive errors (MDPE = <10% and MDAPE = <25%; all P < 0.0001). A 3-compartment PK model linked to a sigmoidal inhibitory Emax PD model by a first-order rate constant (ke0) adequately described the propofol concentration-BIS data. A lag time parameter of 0.44 minutes (SE = 0.04 minutes) to account for the delay in BIS response improved the fit.A simulated effect-site target of 3.2 μg/mL (SE = 0.17 μg/mL) was estimated to obtain BIS of 50, in the presence of remifentanil, for a typical patient in our study.

CONCLUSIONS The Eleveld allometric PK model proved to be superior to all other tested models using TBW. All models, however, showed a trend to underestimate propofol concentrations.The use of adjusted body weight instead of TBW with the traditional Schnider and Marsh models markedly improved their performance achieving the lowest predictive errors of all tested models. Our results suggest no relevant effect of obesity on both the time profile of BIS response and the propofol concentration-BIS relationship.

持续无创血红蛋白监测的精确性研究：一项系统性回顾和 Meta 分析

Accuracy of Continuous Noninvasive Hemoglobin Monitoring: A Systematic Review and Meta-Analysis

Kim, Sang-Hyun MD, PhD[*]; Lilot, Marc MD[*]; Murphy, Linda Suk-Ling MLIS[†]; Sidhu, Kulraj S. MD[*]; Yu, Zhaoxia PhD[‡]; Rinehart, Joseph MD[*]; Cannesson, Maxime MD, PhD

Anesthesia & Analgesia 2014 119 332–346

背景：无创血红蛋白（Hb）监测装置在临床中应用广泛，但其相对于中心实验室 Hb 检测的准确性和精确度缺少系统性回顾和 Meta 分析评估。

方法：我们对 2005 年至 2013 年 8 月间收录于 Pubmed、Web of Science 和 Cochrane Library 的文献进行了全面搜索，对检索到的文献进行回顾分析，并联系作者以确定无创 Hb 监测相对于中心实验 Hb 检验的准确性。2 篇独立的综述评估了这些研究的特性。采用随机效应模型计算这些研究的总平均差和标准差(SD)（95%置信区间）。采用 I^2 统计量评估异质性。

结果：总共 32 个研究（4425 位受试者，样本中位数 44，每个研究 10-569 位病人）纳入 Meta 分析。总混合随机效应平均差（无创-中心实验室）和 SD 为 0.10 ± 1.37 g/dL (-2.59 to 2.80 g/dL, I^2 = 95.9% for mean difference and 95.0% for SD)。亚组分析中，13 个围术期研究的总平均差和 SD 为 0.39 ± 1.32 g/dL (-2.21 to 2.98 g/dL, I^2 = 93.0%, 71.4%)；5 个重症监护室研究的总平均差和 SD 为-0.51 ± 1.59 g/dL (-3.63 to 2.62 g/dL, I^2 = 83.7%, 96.4%)。

结论：尽管无创 Hb 和中心实验室检测之间的平均差较小，当基于无创 Hb 做临床决定时，临床医生应该注意较宽的置信区间。

(江继宏 译 李士通 校）

BACKGROUND Noninvasive hemoglobin (Hb) monitoring devices are available in

the clinical setting, but their accuracy and precision against central laboratory Hb measurements have not been evaluated in a systematic review and meta-analysis.

METHODS We conducted a comprehensive search of the literature (2005 to August 2013) with PubMed, Web of Science and the Cochrane Library, reviewed references of retrieved articles, and contacted manufactures to identify studies assessing the accuracy of noninvasive Hb monitoring against central laboratory Hb measurements. Two independent reviewers assessed the quality of studies using recommendations for reporting guidelines and quality criteria for method comparison studies. Pooled mean difference and standard deviation (SD) (95% limits of agreement) across studies were calculated using the random-effects model. Heterogeneity was assessed using the I statistic.

RESULTS A total of 32 studies (4425 subjects, median sample size of 44, ranged from 10 to 569 patients per study) were included in this meta-analysis. The overall pooled random-effects mean difference (noninvasive-central laboratory) and SD were 0.10 ± 1.37 g/dL (-2.59 to 2.80 g/dL, I = 95.9% for mean difference and 95.0% for SD). In subgroup analysis, pooled mean difference and SD were 0.39 ± 1.32 g/dL (-2.21 to 2.98 g/dL, I = 93.0%, 71.4%) in 13 studies conducted in the perioperative setting and were -0.51 ± 1.59 g/dL (-3.63 to 2.62 g/dL, I = 83.7%, 96.4%) in 5 studies performed in the intensive care unit setting.

CONCLUSIONS Although the mean difference between noninvasive Hb and central laboratory measurements was small, the wide limits of agreement mean clinicians should be cautious when making clinical decisions based on these devices.

富氢盐水改善心脏停搏和心肺复苏后大鼠的存活率和神经学结果

Hydrogen-Rich Saline Improves Survival and Neurological Outcome After Cardiac Arrest and Cardiopulmonary Resuscitation in Rats

Huo, Ting-ting MD, PhD[*]; Zeng, Yi MD, PhD[*]; Liu, Xiao-nan MD, PhD[†]; Sun, Li MD, PhD[‡]; Han, Huan-zhi MD[§]; Chen, Hong-guang MD[§]; Lu, Zhi-hong MD, PhD[*]; Huang, Yi MD, PhD[*]; Nie, Huang MD, PhD[*]; Dong, Hai-long MD, PhD[*]; Xie, Ke-liang MD, PhD[§]; Xiong, Li-ze MD, PhD[*]

Anesthesia & Analgesia 2014 119 368–380

背景：心搏骤停是人类死亡的主要原因。75%的心脏停搏病人入院前已经死亡，或者出现明显的神经损伤。具有便携、易于管理、安全输送氢气装置特点的富氢盐水，可以通过调节氧化应激、炎症和凋亡可以产生器官保护作用。我们在本实验中研究富氢盐水治疗是否能够改善心脏停搏和心肺复苏后大鼠的存活率和神经学结果，并探索期其可能机制。

方法：SD 大鼠接受窒息产生 8 分钟心脏停搏。心肺复苏前 1 分钟、自主循环建立后的第 6 小时和 12 小时分别通过静脉给予大鼠不同剂量的富氢盐水和生理盐水。评估大鼠生存率、神经学结果、氧化应激、炎症标记物以及凋亡等指标。

结果：富氢盐水治疗剂量依赖性改善心脏停搏复苏后大鼠生存率和神经学功能。此外，富氢盐水治疗剂量依赖性减轻心脏停搏复苏后脑损伤，表现为增加海马 CA1 区神经元存活率、减轻皮层和海马区脑水肿，保护血脑屏障完整性，以及减少血清 S100β 和神经元特异烯醇化酶。而且，我们发现富氢盐水的有益作用与减轻血清及脑组织中的氧化产物（8-异前列腺素 F2α 和丙二醛）、炎症因子（TNF-α，IL-1β，HMGB-1）以及增加抗氧化酶（超氧化物歧化酶和过氧化氢）有关。另外，富氢盐水治疗能够减轻心脏停搏复苏后皮层和海马中 caspase-3 活性。

结论：富氢盐水治疗改善心脏停搏复苏后大鼠生存率和神经学结果，其部分通过减轻氧化应激、炎症和凋亡介导。

(江继宏 译　李士通 校）

BACKGROUND Sudden cardiac arrest is a leading cause of death worldwide. Three-fourths of cardiac arrest patients die before hospital discharge or experience significant neurological damage. Hydrogen-rich saline, a portable, easily administered, and safe means of delivering hydrogen gas, can exert organ-protective effects through regulating oxidative stress, inflammation, and apoptosis. We designed this study to investigate whether hydrogen-rich saline treatment could improve survival and neurological outcome after cardiac arrest and cardiopulmonary resuscitation, and the mechanism responsible for this effect.

METHODS Sprague-Dawley rats were subjected to 8 minutes of cardiac arrest by asphyxia. Different doses of hydrogen-rich saline or normal saline were administered IV at 1 minute before cardiopulmonary resuscitation, followed by injections at 6 and 12 hours after restoration of spontaneous circulation, respectively. We assessed survival, neurological outcome, oxidative stress, inflammation biomarkers, and apoptosis.

RESULTS Hydrogen-rich saline treatment dose dependently improved survival and neurological function after cardiac arrest/resuscitation. Moreover, hydrogen-rich saline treatment dose dependently ameliorated brain injury after cardiac arrest/resuscitation, which was characterized by the increase of survival neurons in hippocampus CA1, reduction of brain edema in cortex and hippocampus, preservation of blood-brain barrier integrity, as well as the decrease of serum S100β and neuron-specific enolase. Furthermore, we found that the beneficial effects of hydrogen-rich saline treatment were associated with decreased levels of oxidative products (8-iso-prostaglandin F2α and malondialdehyde) and inflammatory cytokines (tumor necrosis factor-α, interleukin-1β, and high-mobility group box protein 1), as well as the increased activity of antioxidant enzymes (superoxide dismutase and catalase) in serum and brain tissues. In addition, hydrogen-rich saline treatment reduced caspase-3 activity in cortex and hippocampus after cardiac arrest/resuscitation.

CONCLUSIONS Hydrogen-rich saline treatment improved survival and neurological outcome after cardiac arrest/resuscitation in rats, which was partially mediated by reducing oxidative stress, inflammation, and apoptosis.

Pierre Robin 序列征：一项围术期综述

Pierre Robin Sequence: A Perioperative Review

Cladis, Franklyn MD, FAAP[*]; Kumar, Anand MD[†]; Grunwaldt, Lorelei MD[†]; Otteson, Todd MD[‡]; Ford, Matthew MS, CCC-SLP[†]; Losee, Joseph E. MD, FAAP[†]

Anesthesia & Analgesia 2014 119 400–412

临床中三联征小颌畸形（小下颚），舌后坠（向后，舌位置不正），气道阻塞被定义为 Pierre Robin 序列征（Pierre Robin Sequence ，PRS）。气道阻塞和呼吸窘迫是临床性标志。病人可以表现为喘鸣，发绀。严重的气道阻塞可引起进食困难，反流，不能呼吸。治疗方案依赖气道阻塞的严重性，包括俯卧位，鼻咽道，舌嘴唇的粘附力，下颌骨的牵引骨生成，气管造口术。患有 PRS 的新生婴儿和成人的护理涉及多个专业包括麻醉学，整形学，耳鼻喉科学，语言病理学，胃肠病学，放射学，新生儿学。麻醉医师涉及 PRS 患者的护理要和多学科临床合作。术前访视要与多个专业合作包括麻醉科，整形科，耳鼻咽喉科，语言科，我们就背景和 PRS 的患者临床表现探讨一下以及关于护理的争议。

(王晓莉 译　李士通 校）

The clinical triad of micrognathia (small mandible), glossoptosis (backward, downward displacement of the tongue), and airway obstruction defines the Pierre Robin sequence (PRS). Airway obstruction and respiratory distress are clinical hallmarks. Patients may present with stridor, retractions, and cyanosis. Severe

obstruction results in feeding difficulty, reflux, and failure to thrive. Treatment options depend on the severity of airway obstruction and include prone positioning, nasopharyngeal airways, tongue lip adhesion, mandibular distraction osteogenesis, and tracheostomy. The neonate and infant with PRS require care from multiple specialists including anesthesiology, plastic surgery, otolaryngology, speech pathology, gastroenterology, radiology, and neonatology. The anesthesiologist involved in the care of patients with PRS will interface with a multidisciplinary team in a variety of clinical settings. This perioperative review is a collaborative effort from multiple specialties including anesthesiology, plastic surgery, otolaryngology, and speech pathology. We will discuss the background and clinical presentation of patients with PRS, as well as some of the controversies regarding their care.

三种双腔支气管导管置换难易的模拟试验

A Simulator Study of Tube Exchange with Three Different Designs of Double-Lumen Tubes

Gamez, Ryan MD, FRCPC; Slinger, Peter MD, FRCPC

Anesthesia & Analgesia 2014 119 449–453

背景：本文旨在探讨可视喉镜下三种双腔支气管导管(DLT) (Rusch, Mallinckrodt, Fuji)通过气管导管置换器(AEC)置入气道的难易程度。

方法：为了方便，我们从多伦多的一个教学医院招募了 17 名至少有三年麻醉工作经验的麻醉科住院医生和研究员参与我们的这个随机交叉试验。每个受试者向模拟人气管里通过 AEC 分别置入每种 DLT，并通过可视喉镜记录整个置入的过程。DLT 置入气管的顺序是由随机盲目地从盒子中抽 DLT 厂家名字决定的。我们主要的观察结果是置管时间（从可视喉镜屏幕中见着支气管腔到管腔进入声门的时间）。同时记录受试者主观感觉置入的难易程度及失败率（尝试 2 分半钟未成功置管即为失败）。

结果：使用 Fuji-Phycon DLT 的置管时间(平均两秒钟)要快于 Rusch (平均 27 秒 P = 0.0144) 和 Mallinckrodt (平均 21 秒 P = 0.0117). 把置管难易程度分为 1-1O 分，10 分最容易，1 分最难，结果表明使用 Fuji-Phycon 被认为是最容易的(平均 10 分) ，而 Rusch 平均 3 分,（ P = 0.0186) ，Mallinckrodt 平均 4 分（ P = 0.0123). 使用 Rusch 的置管失败率明显高于另外两种 DLT（P = 0.002）。

结论：在这个模拟人试验中，与其他双腔支气管导管相比，Fuji-Phycon 能更容易的通过置换器置入气道。因此 Fuji-Phycon 双腔支气管导管可值得考虑应用于单肺通气困难气道的患者。

（王慧娟 译　李士通 校）

BACKGROUND We sought to determine whether the design of 3 different double-lumen endobronchial tubes (DLT) (Rusch, Mallinckrodt, Fuji) has an effect on the ease of placement over an airway exchange catheter (AEC) using a video laryngoscope.

METHODS A convenience sample of 17 anesthesia residents and fellows with at least 3 years of anesthesia training was recruited from teaching hospitals in Toronto for a randomized crossover trial. Each participant passed each DLT over an AEC in an airway simulator, visualized and video recorded via a video laryngoscope (GlideScope). The order of exchange was randomized by blindly pulling the name of the manufacturer of a DLT from a box. The primary outcome was time to intubate, defined as time from the bronchial lumen entering the GlideScope view to the bronchial lumen passing the vocal cords. Also recorded were participants' subjective rating of the ease of use and failure rate, defined as an attempt >150-second duration.

RESULTS Time to intubate was faster with the Fuji-Phycon DLT (median 2 seconds) compared with both the Rusch (median 27 seconds, P = 0.0144) and Mallinckrodt

(median 21 seconds, P = 0.0117). On a scale of 1 to 10, with 10 being very easy to use and 1 being very difficult, the Fuji-Phycon was judged to be easier to use (median 10 seconds) compared with the Rusch (median 3, P = 0.0186) and the Mallinckrodt (median 4 seconds, P = 0.0123). The Rusch was associated with significantly more failures than the other DLTs, P = 0.002.

CONCLUSIONS The Fuji-Phycon DLT was easier to pass over an AEC in this simulator trial and warrants consideration in patients with difficult airways who require 1-lung ventilation

抑制在动作电位产生中起多种作用的钠、钾通道是利多卡因对脊髓背角神经元亚型细胞的主要作用机制

Mechanisms of Lidocaine's Action on Subtypes of Spinal Dorsal Horn Neurons Subject to the Diverse Roles of Na+ and K+ Channels in Action Potential Generation

Wolff, Matthias Dr. med; Schnöbel-Ehehalt, Rose Dr. med; Mühling, Jörg Dr. med; Weigand, Markus A. Dr. med; Olschewski, Andrea Dr. med

Anesthesia & Analgesia:August 2014 - Volume 119 - Issue 2 - p 463–470

背景：脊髓背角浅层神经元接收来自 Aδ 神经纤维和 C 纤维的感觉信息。根据它们对持续去极化的反应将神经元分为三种：强直放电神经元(TFN),适应神经元(AFN)和单穗放电神经元(SSN)。在利多卡因脊麻时，这些神经元接接触到的利多卡因的浓度是不尽相同的。本实验探讨利多卡因浓度对感觉神经元兴奋性的影响。

方法：我们用全细胞膜片法记录到的大鼠脊髓背角神经元来研究利多卡因对兴奋性的影响。为了评估被利多卡因(100 μM)封锁的几种电压门控性钾通道对不同神经元兴奋性的影响，利多卡因对钠通道和钾通道的抑制作用依据河豚毒素和四乙基铵对其影响的机制来探讨。统计分析用配对设计符号秩检验。

结果：在利多卡因的作用下，三种神经元的动作电位形状都发生了变化。单个动作电位的最大振幅降低了(SSN, AFN,和 TFN 的 P 值分别为 0.031,0.013,和 0.014)。动作电位持续时间延长了(SSN, AFN,和 TFN的P 值分别为 0.016, 0.032, 0.031)。在使用了利多卡因后，动作电位最大正斜率(P_{SSN}= 0.016 ，P_{TFN} = 0.0010 ）和负斜率（ P_{SSN} = 0.016, P_{AFN} = 0.0025, and P_{TFN} = 0.020）都减小了。利多卡因减少了强直放电神经元的重复放电，类似于河豚毒素和四乙基铵合用时的作用。河豚毒素和利多卡因对单穗放电神经元的作用相仿。

结论：低浓度利多卡因通过作用于电压门控钾通道对强直放电神经元有抑制作用，而对适应性神经元影响是通过抑制电压门控钠通道。然而单穗放电神经元的放电模式未受到利多卡因的影响。 对低浓度的钠通道阻滞剂尤其是钾通道阻滞剂的敏感性不同说明可能对于不同的脊髓背角神经元需用不同的阻滞剂。

（王慧娟 译　李士通 校）

BACKGROUND:Superficial dorsal horn neurons of the spinal cord receive sensory information from Aδ and C fibers. According to their response to sustained depolarization, these cells can be divided into 3 groups: tonic (TFN), adapting (AFN), and single spike firing (SSN) neurons. During spinal and systemic administration of lidocaine, these neurons are exposed to different concentrations of the local anesthetic lidocaine. In this study, we explored its effect on the excitability of sensory neurons.

METHODS:Whole-cell patch-clamp recordings from dorsal horn neurons of Wistar rats were used to study the action of lidocaine on firing properties. To estimate the impact of a blockade of voltage-gated potassium channels by lidocaine (100 μM) on the firing properties of different neurons, the sodium and potassium channel inhibition of lidocaine was investigated in the light of the effects of tetrodotoxin (TTX, 10 nM) and tetraethylammonium (10 mM). For statistical analysis, the Wilcoxon

matched-pairs signed rank test was used throughout.

RESULTS:All 3 types of neurons responded to lidocaine with changes in the shape of their action potentials. The peak amplitude of the single action potentials was decreased (P = 0.031, P = 0.013, and P = 0.014 for SSN, AFN, and TFN neurons, respectively), and the duration of the action potentials was increased (P = 0.016, P = 0.032, and P = 0.031 for SSN, AFN, and TFN neurons, respectively). The maximum positive slope (P = 0.016 and P = 0.0010 for SSN and AFN, respectively) and the negative slope (P = 0.016, P = 0.0025, and P = 0.020 for SSN, AFN, and TFN neurons, respectively) decreased after application of lidocaine. In tonically firing neurons, lidocaine reduced the repetitive firing (P = 0.0016), and this effect was mimicked by a combination of TTX and tetraethylammonium. In AFN, TTX mimicked the action of lidocaine.

CONCLUSIONS:Lidocaine at low concentrations suppresses tonic firing neurons by interacting with voltage-gated potassium channels. The effects on adapting firing neurons can be explained by an interaction with voltage-gated sodium channels. In contrast, the firing pattern of SSN is not affected at the administered concentrations. This different sensitivity to low concentrations of sodium and particularly of potassium channel blockers might represent a novel approach for a differentiated blockade of different spinal dorsal horn neurons.

局麻药对坐骨神经双重阻滞的起始时间及持续时间的影响：一个预期的、随机的、单盲的研究

Effect of Local Anesthetic Dilution on the Onset Time and Duration of Double-Injection Sciatic Nerve Block: A Prospective, Randomized, Blinded Evaluation

Cappelleri, Gianluca MD[*]; Ambrosoli, Andrea Luigi MD[†]; Turconi, Stefania MD[†]; Gemma, Marco MD[‡]; Ricci, Erika Basso MD[*]; Cornaggia, Gabriele MD[*]

Anesthesia & Analgesia:August 2014 - Volume 119 - Issue 2 - p 489–493

背景：在所有影响成功率的因素中，周围神经阻滞的起始时间和持续时间仍然不确定。在这项预期的、随机的、单盲的研究中，我们主要评估改变固定剂量的甲哌卡因溶液的稀释浓度是否会影响坐骨神经阻滞的起始时间和持续时间。

方法：90 个 ASA 评分 I-II 级行足部手术的患者被随机收集来分别接受用 12ml 2%甲哌卡因（45 人）和 24ml 1%甲哌卡因（45 人）诱导的坐骨神经双重阻滞。神经刺激器设置的初始值为 2Hz，0.1 毫秒,1mA。局麻药的总量（240mg）保持不变被平均分配到腓骨和胫骨神经。所有的病人都接受一个超声引导下腘坐骨神经导管植入术来行术后镇痛。记录手术准备、效能维持及局麻药补充的次数。 我们最主要的终点事件是确定各组间局麻药消耗时间的差异。我们用连续变量来表示中值并将它与 Wilcoxon-Mann-Whitney U 测试相比较。WMWodds 和他们 95%的可信区间一起被报道。

结果：所有研究中坐骨神经阻滞的成功率为 99%。第 I 组人群中作用时间为 120s，比第 II 组人群的作用时间（150s）缩短。第 I 组人群坐骨神经感觉和运动阻滞的起始时间为 4 分钟，第 II 组为 6 分钟。而第 I 组感觉阻滞的维持时间为 235 分钟，第 II 组为 240 分钟。

结论：我们没有发现证据表明改变一个固定总剂量甲哌卡因的体积和浓度会改变坐骨神经阻滞的起始时间和持续时间。考虑我们的 WMWodds 结果,可能不同的起始时间和持续时间与性能之间的差异不能排除。

（王晓莉 译　李士通 校）

BACKGROUND: Among the various factors influencing the success rate, onset time, and duration of peripheral nerve blocks, the role of local anesthetics concentration remains uncertain. In this prospective, randomized, single-blinded study, we evaluated

whether varying the dilution of a fixed dose of mepivacaine solution influenced onset time and duration of sciatic nerve block.

METHODS: Ninety ASA physical status I to II patients scheduled for foot surgery were randomly allocated to receive a double-injection Labat sciatic nerve block with 12 mL mepivacaine 2% (group concentration I = 45 patients) or 24 mL of mepivacaine 1% (group volume II = 45 patients). The nerve stimulator was initially set at 2 Hz, 0.1 millisecond, 1 mA. The total amount of local anesthetic (240 mg) was kept constant and equally divided between the peroneal and tibial nerves. All patients also received an ultrasound-guided popliteal sciatic nerve catheter for postoperative analgesia. Times to readiness for surgery, performance, and offset of local anesthetic were recorded. Our primary end point was to determine a possible difference in offset time between groups. Continuous variables were expressed as median (IQR) and compared with the Wilcoxon-Mann-Whitney U test; WMWodds are reported together with their 95% confidence interval.

RESULTS: The overall success rate of sciatic nerve block was 99%. Time of performance was shorter in group I, 120 seconds (90–150 seconds), than that in group II, 150 seconds (120–180 seconds) (P = 0.0048; WMWodds 2.26 [1.35–4.34]). The onset time of sensory and motor sciatic nerve block was 4 minutes (2–9 minutes) in group I and 6 minutes (4–10 minutes) in group II (P = 0.41; WMWodds 1.21 [0.77–1.95]), while the duration of sensory block was 235 minutes (203–250 minutes) in group I, and 240 minutes (218–247 minutes) in group II respectively (P = 0.51; WMWodds 1.20 [0.69–2.16]).

CONCLUSIONS: We found no evidence that varying volume and concentration while maintaining a fixed total dose of mepivacaine alters the onset time and duration of double-injection sciatic nerve block. Considering our WMWodds results, possible differences in onset time and duration comparable to differences in the performance time between groups cannot be excluded.