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红细胞储存时间：心脏术后谵妄发生的危险因素

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


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入选标准的患者。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设。

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)
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.
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

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 explain anesthesia 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）VS0.08%（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 年中旬，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检测。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太大改变，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.

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

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Anesthesia & Analgesia 2014 119 288–301

**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.

Evidence for the use of preoperative risk assessment scores in elective cranial neurosurgery: a systematic review of the literature.
Reponen E, Tuominen H, Korja M.
Anesthesia & Analgesia 2014 119 420–432

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%）治疗后，可缓解超过50%的疼痛，维持1年。结果显示与既往其他射
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 interleukin-6-dependent and postsynaptic density-95-associated mechanism.
Yang L1, Xin X, Zhang J, Zhang L, Dong Y, Zhang Y, Mao J, Xie Z.
Anesthesia & Analgesia 2014 119 471–480
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
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.

### 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

**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妇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.

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

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†

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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 tau 蛋白磷酸化有助于异氟醚诱发阿尔茨海默病的转基因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）。
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 ≥ 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

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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，因手术期疼痛和创伤后应激障碍(PTSD)。退伍军人往往有 PTSD 的风险，因此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
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烈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阿片类药物，年龄大于27.5岁而言，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。

背景：慢性术后疼痛在择期手术后有可检测的发病率。已知的风险因素包括术前术后疼痛和创伤后应激障碍（PTSD）。军事退伍军人是特别容易患PTSD的人群，因此术后慢性疼痛的风险可能更高。我们的目标是识别年轻退伍军人在小计划手术后术后慢性疼痛的风险因素，包括创伤后应激障碍。

方法：我们回顾了18–50岁的退伍军人的医疗和药物记录，他们于2007至2010年在退伍军人管理局Puget Sound Health Care System接受了膝关节镜手术。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：我们确定了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烈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阿片类药物，年龄大于27.5岁而言，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。

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
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）, 压挤伤后进行盐水神经周围处理（盐水对照组）, 压挤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 ≤ 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。

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. MBCh, MSc, MHSc, FRCA
背景：围术期尼古丁的使用通常是作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在全麻术后患者的疼痛和恶心呕吐方面的影响。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项研究中只为女性患者，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到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到1.74），术后24小时恶心发生率显著增高（相对危险度=1.14, 95% CI, = 1.02到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到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，二者的综合统计学意义，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。
The 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.

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

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**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/m²), 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.

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

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Anesthesia & Analgesia 2014 119 332–346

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

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背景：心脏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存活率和神经学结果。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 和神经元特异性烯醇化酶。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酶) 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

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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的新生儿儿和成人的护理涉及多个专业包括麻醉学，整形学，耳鼻咽喉科，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.

三重双腔支气管导管置入难易的模拟试验
A Simulator Study of Tube Exchange with Three Different Designs of Double-Lumen Tubes
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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) 通过气管导管置入器 (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 1-10 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 = 0.0022)。

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 能更容易地通过置管器置入气道。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）
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.
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

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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。我们最重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 和他们的 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; WMW odds 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; WMW odds 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; WMW odds 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; WMW odds 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 WMW odds results, possible differences in onset time and duration comparable to differences in the performance time between groups cannot be excluded.