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一项VerifyNow® 与PlateletMapping® 的对比—检测出的阿司匹林抵抗及其与尿血栓素的相关性

A Comparison of VerifyNow® with PlateletMapping® -Detected Aspirin Resistance and Correlation with Urinary Thromboxane

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背景：阿司匹林抵抗情况下全血中血小板激活与一种跨细胞的通道有关，单独的血小板聚集功能仪无法检测。由尿血栓素水平下定义的阿司匹林抵抗增加了心肌梗死或心源性死亡的风险。全血重点照护检验也许也可以检测出阿司匹林抵抗。
方法：在200名行侵入性心脏手术的患者中，我们比较了PlateletMapping® 与VerifyNow® 检测阿司匹林抵抗的结果。其中包括10名未接受阿司匹林治疗的患者做为对照。检测结果与患者术后2到8小时的尿11脱氢血栓素B2水平相关。
结果：PlateletMapping检测出患者阿司匹林抵抗发生率为32%。VerifyNow检测出患者阿司匹林抵抗为6%。用光透过血小板聚集测定仪检测对花生四烯酸的血小板聚集反应小于20%的患者被认定为有较好的阿司匹林治疗依从性。PlateletMapping检测出的阿司匹林抵抗患者中尿11-脱氢血栓素B2水平明显高于阿司匹林敏感患者(P < 0.001)，但明显低于未接受阿司匹林治疗的患者 (P = 0.001)。VerifyNow检测出的阿司匹林抵抗患者中尿11-脱氢血栓素B2水平与阿司匹林敏感患者无明显差异，但可信区间跨度很大。PlateletMapping检测出的阿司匹林抵抗与阿司匹林服用剂量无明显相关性。然而，联合应用氯吡格雷(0.0006)或他汀类(0.004)药物的患者阿司匹林敏感性明显增高。吸烟与阿司匹林抵抗也有显著的相关性。
结论：这些结果表明PlateletMapping可以作为重点照护检验分析来用于鉴别阿司匹林抵抗患者，便于进行围术期风险分层与管理。
（张怡 译 马皓琳 李士通校）
BACKGROUND: Aspirin-resistant platelet activation in whole blood is attributable to a transcellular pathway not detected by isolated platelet aggregometry. Aspirin resistance as

defined by urinary thromboxane levels is associated with increased risk for myocardial infarction or cardiac death. Whole blood point-of-care assays may also detect aspirin resistance.
METHODS: We compared PlateletMapping® with VerifyNow® for detecting aspirin resistance in 200 patients undergoing invasive cardiac procedures. This included 10 patients not receiving aspirin therapy for comparison. The assay results were correlated with urinary 11-dehydro-thromboxane B_2 collected 2 to 8 hours after the procedure.
RESULTS: PlateletMapping detected aspirin resistance in 32% of patients. VerifyNow detected aspirin resistance in 6% of patients. A patient's compliance with aspirin therapy was confirmed by a <20% aggregation response to arachidonic acid by light transmission aggregometry. Aspirin-resistant patients as determined by PlateletMapping had significantly ($P < 0.001$) higher urinary 11-dehydro-thromboxane B_2 levels than aspirin-sensitive patients but significantly ($P = 0.001$) lower levels than patients not receiving aspirin therapy. There was no significant difference in urinary 11-dehydro-thromboxane B_2 for aspirin-resistant compared with aspirin-sensitive patients as determined by VerifyNow, but the confidence intervals were wide. There was no significant correlation of resistance as defined by PlateletMapping with aspirin dose. However, there was significant increased aspirin sensitivity with clopidogrel (0.0006) or statin (0.004) cotherapies. There also was a significant correlation of smoking with aspirin resistance.
CONCLUSIONS: These results indicate that PlateletMapping could be a useful point-of-care assay to identify aspirin-resistant patients for better perioperative risk stratification and management.

丙泊酚催眠过程中红发和黑发人群的脑电双频指数动力学是相似的

Bispectral Index Dynamics During Propofol Hypnosis Is Similar in Red-Haired and Dark-Haired Subjects

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背景:我们以前的研究显示与黑发人群相比，红发人群制动所需的地氟烷量较大。红发对静脉麻醉药需要量的效果仍然未知。我们测试了这样一个假设，即最大脑电反应一半时的作用部位丙泊酚浓度(Ce50)在红发人至少要高50%。
方法：我们，用2步法在29例接受丙泊酚输注导致意识丧失的黑发和红发健康志愿者中建立了丙泊酚浓度与脑电反应的关系模型。双谱指数（BIS）是药效的测量指标。3室药代动力学模型的参数与测得的动脉丙泊酚浓度相符合。用S型Emax模型描述作用部位的丙泊酚浓度（Ce）与BIS之间的关系。用公认的指标和引导程序重采样评估模型性能和所测参数准确性。用减少2对数可能性的阈值6.63（$P<0.01$）来评价最后的模型中头发颜色对Ce50的BIS效应的影响。还评估了体重对该模型的影响。
结果：把头发颜色包含为模型协同变量既不能改进药代动力学模型，也不能改进药效学模型。对黑发人群和红发人群单独分析预测Ce_{50}

$_{BIS}$中位数(95%可信区间)分别为2.71μg/mL(2.28-3.36μg/mL)和2.57μg/mL(1.68-3.60μg/mL)。对CL1和V1来说，体重是个明显的协同变量。
结论：红发表型不会影响丙泊酚的药代动力学和药效学。
（王晓莉 译 马皓琳 李士通 校）

BACKGROUND: We have previously shown that red hair is associated with increased desflurane requirement for immobility, compared with dark hair. The effect of red hair on IV anesthetic requirement remains unknown. We tested the hypothesis that the propofol concentration in the effect site associated with half maximal electroencephalogram response, Ce_{50}, is at least 50% higher in subjects with red hair.
METHODS: We modeled the propofol concentration versus electroencephalogram response relationship using a 2-step approach in 29 healthy dark- and red-haired volunteers receiving a propofol infusion to produce loss of consciousness. Bispectral Index (BIS) was the measure of drug effect. The parameters of a 3-compartment pharmacokinetic model were fit to measured arterial propofol concentrations. The relationship between effect-site propofol concentration (Ce) and BIS was characterized using a sigmoid Emax model. Model performance and accuracy of the estimated parameters were evaluated using accepted metrics and bootstrap resampling. The effect of hair color on the Ce_{50} for BIS response in the final model was assessed using a threshold of 6.63 ($P < 0.01$) in reduction of −2 log likelihood. The influence of body weight on the model was also assessed.
RESULTS: The inclusion of hair color as a model covariate did not improve either the pharmacokinetic or the pharmacodynamic model. A separate analysis for the dark- and red-haired subjects estimated a median (95% confidence interval) $Ce_{50\ BIS}$ of 2.71 μg/mL (2.28–3.36 μg/mL) and 2.57 μg/mL (1.68–3.60 μg/mL), respectively. Body weight was a significant covariate for the CL_1 and V_1.
CONCLUSIONS: Red hair phenotype does not affect the pharmacokinetics or pharmacodynamics of propofol.

在不同照明水平下直接喉镜检查的视敏度

Visual Acuity During Direct Laryngoscopy at Different Illuminance Levels

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背景：在直接喉镜检查中，足够的光线是视觉观察的必要条件。ISO 7376:2009标准规定喉镜检查的最小光照强度。还没有研究能客观地考察在喉镜检查中喉镜光照强度与视敏度之间的关系。
方法：我们用定位在4个人体模型喉部上的近距视觉表在直接喉镜检查时测定50位麻醉医师的近距离视力。用可变电压源将喉镜的光照强度调整为50 光通量密度（lux）、200lux、700lux和2000 lux。在进行到不同光照强度的下一个人体模型之前，参与者根据喉镜的亮度、视觉清晰度、视觉功效和光线的合适性及充分性对他们的体验进行评级。在相同的这几组光线水平

下用标准的字母视力表图测量了参与者的远距视力。
结果：在人体模型及视力表上的视敏度与lux水平（P<0.0001）增长相关联。在700lux下的视敏度较50lux及200lux下有显著的增加，其程度显著超过临床可识别的0.1 logMAR。当光强度增加到2000lux时，视敏度没有统计学上的显著改善。在人体模型视力表上，4种所选光通量密度水平下的logMAR的平均值（标准差）分别为：50lux 0.05（0.13）、200lux 0.06（0.10）、700lux -0.05（0.11）和2000lux -0.07（0.11）。这个结果不受喉镜检查时年龄、资历、亚专业、聚焦困难史和使用透镜的影响。对喉镜光度的主观评价偏爱2000lux，因为其视觉清晰度、喉镜检查光照的合适性及视觉表现。直接喉镜检查的平均观察距离为32cm。
结论：随着喉镜光照强度增加到700lux，视敏度有所改善。当光强度增加到2000lux时，测量的视敏度没有统计学上的显著改善。主观上，在直接喉镜检查时麻醉学医师更加青睐2000lux的光照强度。
（赵晓 译　马皓琳 李士通校）

BACKGROUND: Adequate light is essential for vision during direct laryngoscopy. The ISO 7376:2009 standard specifies the minimal illuminance for laryngoscopes. No studies have objectively examined the relationship between laryngoscope illumination and visual acuity during laryngoscopy.
METHODS: We measured the near visual performance of 50 anesthesiologists during direct laryngoscopy using near vision charts located at the larynx of 4 manikins. A variable voltage supply adjusted the illuminance from the laryngoscope to 50 lux, 200 lux, 700 lux, and 2000 lux. Participants also rated their experience regarding brightness of the laryngoscope, clarity of view, visual performance, and suitability and adequacy of the light, before proceeding to the next manikin with a different light level. The distance visual performance of the participants was also measured using standard letter acuity wall charts at the same light levels.
RESULTS: Visual acuity in manikins and on wall charts was associated with an increasing lux level ($P < 0.0001$). Visual acuity was lower at 50 lux and 200 lux compared with 700 lux by significantly more than the clinically discernible 0.1 logMAR. No statistically significant improvement in visual acuity occurred when illuminance was increased to 2000 lux. The mean (standard deviation) logMAR scores at the 4 chosen lux levels on the manikin charts were: 50 lux 0.05 (0.13), 200 lux 0.06 (0.10), 700 lux –0.05 (0.11), and 2000 lux –0.07 (0.11). This result was unaffected by age, seniority, subspecialty, history of difficulty focusing, or use of lenses for laryngoscopy. Subjective rating of laryngoscope brightness favored 2000 lux for clarity of view, suitability of the light for laryngoscopy, and visual performance. The average observation distance for direct laryngoscopy was 32 cm.
CONCLUSIONS: Visual acuity improves as the laryngoscope illuminance increases up to 700 lux. No statistically significant improvement was measured by increasing the illuminance up to 2000 lux. Subjectively, anesthesiologists favor illuminance of 2000 lux for direct laryngoscopy.

困难气道的拔管和拔管失败

Extubation of the Difficult Airway and Extubation Failure

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拔管后的呼吸系统并发症伴有显著升高的患病率和死亡率，表明需要改善在该临床领域的操作。自从实施困难气道管理的指南以来，插管时呼吸系统副作用的发生率降低，这支持了在提高临床实践中教育和指南的价值。为了对拔管相关并发症的处理加深理解和培养教育，对解释定义和描述不同的临床状况的术语准确使用是最重要的。例如，理解了拔管失败和脱机失败的区别就可以评估预拔管试验的必要性，这些试验集中评估气道通畅和自主呼吸的能力。择期手术后拔管后再插管相对少见，有报道称在手术室和复苏室再插管概率为0.1%-0.45%，但在危重病人相当常见(0.4%-
25%)。一些情况（诸如肥胖症、阻塞性睡眠呼吸暂停、大的头/颈和上气道手术、产科操作和颈椎手术）明显增加了拔管失败的风险，并且常伴有困难气道管理。拔管失败跟随着上呼吸道开放的丧失。水肿、软组织损伤和喉痉挛是上气道堵塞的最常见机制。计划拔管是成功气道管理策略的关键部分，尤其是在拔管失败风险增加的情况下和对有困难气道的病人处理时。充分的计划需要识别有或者可能发展成困难气道的病人，认清拔管后气道塌陷风险增加的情况，并且明白拔管失败的原因和基本机制。为最大程度减少拔管后气道并发症，有效的措施应包括患者状况的预先最优化、拔管合适的时机、有训练过较高水平气道管理的有经验人员及可用必须的设备和适当的拔管后监测。
（王晓莉 译 马皓琳 李士通 校）

Respiratory complications after tracheal extubation are associated with significant morbidity and mortality, suggesting that process improvements in this clinical area are needed. The decreased rate of respiratory adverse events occurring during tracheal intubation since the implementation of guidelines for difficult airway management supports the value of education and guidelines in advancing clinical practice. Accurate use of terms in defining concepts and describing distinct clinical conditions is paramount to facilitating understanding and fostering education in the treatment of tracheal extubation-related complications. As an example, understanding the distinction between extubation failure and weaning failure allows one to appreciate the need for pre-extubation tests that focus on assessing airway patency in addition to evaluating the ability to breathe spontaneously. Tracheal reintubation after planned extubation is a relatively rare event in the postoperative period of elective surgeries, with reported rates of reintubation in the operating room and postanesthesia care unit between 0.1% and 0.45%, but is a fairly common event in critically ill patients (0.4%–25%). Conditions such as obesity, obstructive sleep apnea, major head/neck and upper airway surgery, and obstetric and cervical spine procedures carry significantly increased risks of extubation failure and are frequently associated with difficult airway management. Extubation failure follows loss of upper airway patency. Edema, soft tissue collapse, and laryngospasm are among the most frequent mechanisms of upper airway obstruction. Planning for tracheal extubation is a critical component of a successful airway management strategy, particularly when dealing with situations at increased risk for extubation failure and in patients with difficult airways. Adequate planning requires identification of patients who have or may develop a difficult airway, recognition of situations at increased risk of postextubation airway compromise, and understanding the causes and underlying mechanisms of extubation failure. An effective strategy to minimize postextubation airway complications should include preemptive optimization of patients' conditions, careful timing of extubation, the presence of experienced personnel trained in advanced airway management, and the availability of the necessary equipment and appropriate postextubation monitoring.

椎管内镇痛分娩及其对哺乳的影响：目前知识的局限性

Intrapartum Neuraxial Analgesia and Breastfeeding Outcomes: Limitations of Current Knowledge

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尽管大量的研究阐释了椎管内镇痛分娩（特别是硬膜外使用芬太尼）和哺乳之间的关系，但是研究设计的主要局限妨碍了当前的文献提供有力的有临床意义的结论。缺乏随机对照实验，研究过程中对于哺乳缺乏标准化评价，及无法控制的混杂变量都构成很大问题。椎管内阿片药使用与哺乳之间的具体关系仍需要进一步研究来阐释。如果两者之间有显著关系，那么是否这些药物直接作用于新生儿的脑组织从而减少哺乳行为的表现。在本综述中，我将具体指出目前文献的不足并对今后的研究提出建议。
（王赟 译 马皓琳 李士通 校）
Although numerous studies have addressed the relationship between intrapartum neuraxial analgesia, particularly epidural fentanyl, and breastfeeding, substantial study design limitations have precluded the current literature from furnishing strong, clinically significant conclusions. Lack of randomized controlled trials, nonstandardization of breastfeeding evaluations across studies, and failure to control for confounding variables all pose significant problems. Further research is needed to elucidate the specific relationship between neuraxial opioids and breastfeeding and, if there are significant associations, whether these drugs act directly on neonatal brain tissue to attenuate exhibition of breastfeeding behaviors. In this review, I will detail the deficiencies of the current literature and make recommendations for future research.

非颈动脉大血管手术中围术期卒中的发生率、预测因子及预后

Incidence, Predictors, and Outcomes of Perioperative Stroke in Noncarotid Major Vascular Surgery

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背景：围术期卒中是手术的一个潜在的灾难性的并发症。行血管手术的病人遭受着全身动脉粥样硬化，并且预计此并发症风险增加。我们使用美国外科学院国家质量改进项目数据库来研究非颈动脉大血管手术后围术期卒中的发生率、预测因子及预后。
方法：我们从美国外科学院国家质量改进项目数据库中确认了2005至2009年间在非退伍军人管理医院中行非颈动脉血管手术的47750名病人。我们对行择期下肢截肢、下肢血管重建或开放性主动脉手术的病人进行了分析，以确定围术期卒中的发生率、独立预测因子以及30天死亡率。
结果：手术后30天围术期卒中（n = 37,927）的总体发生率为0.6%。多变量分析显示年龄每增加1岁[比值比 1.02，95%可信区间(CI)

(1.01~1.04)]、心脏病史[1.42，(1.07~1.87)]、女性[1.47，(1.12~1.93)]、脑血管疾病史[1.72，(1.29~2.29)]、以及急性肾功能衰竭或透析依赖[2.03，(1.39~2.97)]是卒中的独立预测因子。只有15%(95% CI, 11%–
20%)的卒中发生在手术后的第0或1天。在一个对比研究评估中，围术期卒中使30天全因死亡率[3.36，(1.77 至 6.36)] 增加3倍，并使平均外科住院时间由6 (95% CI，2~28) 天增加到13 (95% CI，3~43) 天(P < 0.001，WMWodds 2.5，95% CI，2.0~3.2)。
结论：显著增加的平均外科住院时间和30天全因死亡率反映出围术期卒中是发病率和死亡率的一个重要来源。在这个群体中，我们已确定卒中的独立预测因子不容易改变以及大多数的卒中发生在术后第一天。还需要进一步研究来确定潜在的可改变的围术期卒中的术中及术后风险因素。
（唐莹 译 马皓琳 李士通 校）

BACKGROUND: Perioperative stroke is a potentially catastrophic complication of surgery. Patients undergoing vascular surgery suffer from systemic atherosclerosis and are expected to be at increased risk for this complication. We studied the incidence, predictors, and outcomes of perioperative stroke after noncarotid major vascular surgery using the American College of Surgeons National Quality Improvement Program database.
METHODS: Forty-seven thousand seven hundred fifty patients undergoing noncarotid vascular surgery from 2005 to 2009 at nonVeterans Administration hospitals were identified from the American College of Surgeons National Quality Improvement Program database. An analysis of patients undergoing elective lower extremity amputation, lower extremity revascularization, or open aortic procedures was performed to determine the incidence, independent predictors, and 30-day mortality of perioperative stroke.
RESULTS: The overall incidence of perioperative stroke within 30 days of surgery (n = 37,927) was 0.6%. Multivariate analysis revealed that each 1-year increase in age [odds ratio 1.02, 95% confidence interval (CI) (1.01 to 1.04)], cardiac history [1.42, (1.07 to 1.87)], female sex [1.47, (1.12 to 1.93)], history of cerebrovascular disease [1.72, (1.29 to 2.29)], and acute renal failure or dialysis dependence [2.03, (1.39 to 2.97)] were independent predictors of stroke. Only 15% (95% CI, 11%–20%) of strokes occurred on postoperative day 0 or 1. Perioperative stroke was associated with a 3-fold increase in 30-day all-cause mortality [3.36, (1.77 to 6.36)] and an increased median surgical length of stay from 6 (95% CI, 2 to 28) to 13 (95% CI, 3 to 43) days (P < 0.001, WMWodds 2.5, 95% CI, 2.0 to 3.2) in a matched-cohort assessment.
CONCLUSION: Perioperative stroke is an important source of morbidity and mortality, as reflected by significant increases in median surgical length of stay and all-cause 30-day mortality. The independent predictors of stroke that we have identified in this population are not readily modifiable and the majority of strokes occurred after postoperative day 1. Additional studies are required to identify potentially modifiable intraoperative or postoperative risk factors of perioperative stroke.

影响做出参加临床麻醉研究工作决定的主要因素

Determinants of a Subject's Decision to Participate in Clinical Anesthesia Research

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背景：调查研究中最优先考虑的事是确保潜在的参于者得到充分的信息以做出有见识的决定。理解招募过程中的患者经历可能明确知情同意过程中的改进部分。我们调查哪些因素与做出参加临床调查研究决定有关。
方法：那些被安排行择期手术的患者在正要同意参加麻醉相关调查研究后立刻被要求完成一份关于知情同意过程的问卷。该问卷收集了社会人口特征、术前焦虑压抑水平、医学合并症、可能影响做出参加一项调查研究的决定的因素以及研究的设计特征。估计出一个多变量的逻辑回归模型以鉴别与取得同意有关的影响因素。使用受试者工作特征曲线评估预测模型的表现。用引导程序分析来评估内部有效性。
结果：总共有282名参试者完成了问卷。其中，有179名(63%)患者已同意参加研究，103名(37%)患者已拒绝参加。在多变量逻辑回归模型中，男性同意参加的比例高于女性(优势比[OR] [95%可信区间] = 2.49 [1.29–4.79])，舒适患者同意参加的比例也较高(OR = 1.84 [1.22–2.78])。对于需要附加测试的方案(OR = 0.15 [0.06–0.39])、对取血样关注度较高患者(OR = 0.70 [0.54–0.90])以及担忧研究风险的患者(OR = 0.72 [0.55–0.95])，同意参加的比例均较低。引导程序分析证实了这是个有较高内部有效性的稳定模型。
结论：取得知情同意的最强的两个预测因素是男性和舒适度，拒绝的预测因素包括需要附加测试的方案类型、对采血样和研究风险的较高关注以及参加研究可导致的较低的总体患者舒适度。这些患者和研究的特点可能提示需修改临床调查研究的知情同意过程和促进更精确的入选设想和策略的改进。
（方斌 译 马皓琳 李士通校）
BACKGROUND: A top priority for research studies is to ensure that potential participants receive adequate information to make a truly informed decision. Understanding patient experiences with the recruitment process may identify areas for improvement in the consent process. We examined which factors were associated with the decision to consent in a clinical research study.
METHODS: Patients scheduled for elective surgery were asked to complete a questionnaire about the consent process, immediately after being approached to participate in an anesthesia-related research study. Sociodemographic characteristics, preoperative levels of anxiety and depression, medical comorbidities, factors that may affect decision to participate in a research study, and study design features were collected. A multivariable logistic regression model was estimated to identify factors associated with providing consent. Performance of the prediction model was assessed using the receiver operating characteristic curve. Internal validity was assessed by a bootstrap analysis.
RESULTS: In all, 282 participants completed the questionnaire. Of those, 179 (63%) had consented to participate in research, and 103 (37%) had declined to participate. In the multivariable logistic regression model, the odds of providing consent were higher for males (odds ratio [OR] [95% confidence interval] = 2.49 [1.29–4.79]) and for patients with higher levels of patient comfort (OR = 1.84 [1.22–2.78]). The odds of providing consent were lower for protocols that require additional testing (OR = 0.15 [0.06–0.39]) and patients with higher levels of concern about blood sampling (OR = 0.70 [0.54–0.90]) or worry about study risks (OR = 0.72 [0.55–0.95]). Bootstrap analysis revealed a stable model with high internal validity.

CONCLUSIONS: The 2 strongest predictors of consent were male gender and comfort; predictors of refusal were protocol type that requires additional testing, greater concern about blood sampling and study risks, and lower overall patient comfort with the study. These patient and study characteristics may inform modification of the consent process for clinical research studies and facilitate the development of more accurate enrollment projections and strategies.

糖原合酶激酶-3β通过调节N-甲基-d-天冬氨酸受体运输促进瑞芬太尼诱导的术后痛觉过敏

Glycogen Synthase Kinase-3β Contributes to Remifentanil-Induced Postoperative Hyperalgesia via Regulating N-Methyl-d-Aspartate Receptor Trafficking

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背景：尽管瑞芬太尼有极佳的术中镇痛效果，但给予瑞芬太尼后的术后痛觉过敏对麻醉医师而言可能是个棘手的问题。N-甲基-d-天冬氨酸（NMDA）受体的运输和活化对瑞芬太尼诱导的术后痛觉过敏的发生和维持起关键作用。然而，关于痛觉过敏的基础机制尚未明确阐明。本研究旨在验证如下假说：糖原合酶激酶-3β（GSK-3β）可通过调节脊髓NMDA受体运输促进瑞芬太尼诱导的术后痛觉过敏。
方法：本研究使用大鼠瑞芬太尼诱导的术后痛觉过敏模型，首先测试了基线（切皮前24小时）以及瑞芬太尼输注后2、6、24和48小时时的热刺激和机械刺激痛觉过敏。随后，用实时聚合酶链反应和蛋白质印迹分析来检测脊髓L4到L6节段中的GSK-3β mRNA和蛋白表达水平，以及NMDA受体亚单位（NR1、NR2A和NR2B）的运输。此外，我们还研究了TDZD-8（一种选择性GSK-3β抑制剂）对瑞芬太尼诱导的术后痛觉过敏和NMDA受体亚单位运输的作用。
结果：瑞芬太尼导致了显著的术后痛觉过敏，表现为热刺激和机械刺激缩足反应潜伏期和阈值增加，TDZD-8预处理显著改善这一效应。此外，瑞芬太尼输注增加了脊髓中GSK-3β的活性及其mRNA和蛋白质的表达。更重要的是，术中输注瑞芬太尼增加了脊髓NMDA受体亚单位（NR1和NR2B）从细胞内池到细胞表面池的运输，TDZD-8明显减弱这一效应。
结论：以上结果提示，脊髓中GSK-3β的活化可通过调节NMDA受体亚单位（NR1和NR2B）运输来促进瑞芬太尼诱导的术后痛觉过敏。抑制GSK-3β可能成为治疗瑞芬太尼诱导的术后痛觉过敏的有效新选择。
（陈彬彬 译， 马皓琳、李士通 校）

BACKGROUND: Although remifentanil provides perfect analgesia during surgery, postoperative hyperalgesia after remifentanil administration might be a challenge to anesthesiologists. The trafficking and activation of N-methyl-d-aspartate (NMDA) receptors have a pivotal role in the development and maintenance of remifentanil-induced postoperative hyperalgesia. However, the underlying mechanisms of hyperalgesia are poorly elucidated. We designed the present study to examine the hypothesis that glycogen synthase kinase (GSK)-3β could contribute to remifentanil-induced postoperative hyperalgesia via regulating NMDA receptor trafficking in the spinal cord.

METHODS: Using a rat model of remifentanil-induced postoperative hyperalgesia, we first tested thermal and mechanical hyperalgesia at baseline (24 hours before incision) and 2, 6, 24, and 48 hours after remifentanil infusion. GSK-3β mRNA and protein expression and NMDA receptor subunits (NR1, NR2A, and NR2B) trafficking in the spinal cord L4-L6 segments were then measured using real-time polymerase chain reaction and Western blot analysis. Furthermore, we investigated the effects of TDZD-8, a selective GSK-3β inhibitor, on remifentanil-induced postoperative hyperalgesia and NMDA receptor subunits trafficking.
RESULTS: Remifentanil induced significant postoperative hyperalgesia, as indicated by increased paw withdrawal latencies and thresholds to thermal and mechanical stimulation, which were markedly improved by pretreatment with TDZD-8. Moreover, remifentanil infusion increased the expression of GSK-3β mRNA and protein as well as the GSK-3β activity in the spinal cord. More importantly, intraoperative infusion of remifentanil increased NMDA receptor subunits (NR1 and NR2B) trafficking from the intracellular pool to surface pool in the spinal cord, which was significantly attenuated by TDZD-8.
CONCLUSION: The above results suggest that activation of GSK-3β contributes to remifentanil-induced postoperative hyperalgesia via regulating NMDA receptor subunits (NR1 and NR2B) trafficking in the spinal cord. Inhibition of GSK-3β may be an effective novel option for the treatment of remifentanil-induced postoperative hyperalgesia.

左布比卡因对伤口愈合的影响

Effects of Levobupivacaine on Wound Healing

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背景：沿手术切口注射局麻药可用于提供外科手术麻醉或者术后镇痛。然而，局麻药对于伤口愈合的影响仍存在争议。在此项研究中，我们评估了左布比卡因对于伤口愈合的影响。
方法：我们将60只体重在230±20g的Wistar白化雌性大鼠进行分组，每组10只：早期C（早期对照）组：3ml等渗盐水；早期L1.25（早期左布比卡因1.25）组：3ml中含1.25 mg/kg左布比卡因；早期L2.5（早期左布比卡因2.5）组：3ml中含2.5 mg/kg左布比卡因；晚期C（晚期对照）组：3ml等渗盐水；晚期L1.25（晚期左布比卡因1.25）

组：3ml中含1.25 mg/kg 左布比卡因；晚期L2.5（晚期左布比卡因2.5）组：3ml中含2.5 mg/kg
左布比卡因。早期C组至早期L2.5组的大鼠在第八天处以安乐死。晚期C组至晚期L2.5组的大鼠在第21天被处以安乐死。我们分别检测了伤口张力强度、组织羟基脯氨酸以及组织样本中的纤维化指数水平，早期C至早期L2.5组在第8天时、晚期C组至晚期L2.5组在第21天时检测。
结果：左布比卡因在第8天时降低了伤口张力强度，尤以剂量在2.5mg/kg为著（P < 0.001)，而在第21天时会使得其增加(P < 0.001)。无论是在第8天还是第21天，它也都会增加炎症反应(P < 0.001)以及胶原合成（第8天，P = 0.109; 第21天, P = 0.103)。
结论：虽然左布比卡因在伤口愈合的早期具有正面效应，但此后被观察到有负面效应。要确定这些明显相反效应发生的原因需要在分子水平上的进一步研究。
（余亦南 译 马皓琳 李士通 校）

BACKGROUND: Local anesthetic infiltration along the incision may be used to provide surgical anesthesia or postoperative analgesia. However, the effect of local anesthetics on wound healing remains controversial. In this investigation, we evaluated the effects of levobupivacaine on wound healing.
METHODS: Sixty Wistar albino female rats weighing 230 ± 20 g were included, with 10 rats in each group: group early c (early control): 3 mL isotonic saline; group early $l_{1.25}$ (early levobupivacaine 1.25): 1.25 mg/kg per 3 mL levobupivacaine; group early $l_{2.5}$ (early levobupivacaine 2.5): 2.5 mg/kg per 3 mL levobupivacaine; group late c (late control): 3 mL isotonic saline; group late $l_{1.25}$ (late levobupivacaine 1.25): 1.25 mg/kg per 3 mL levobupivacaine; and group late $l_{2.5}$ (late levobupivacaine 2.5): 2.5 mg/kg per 3 mL levobupivacaine. Rats in groups early c to early $l_{2.5}$ were euthanized on the 8th day. Rats in groups late c to late $l_{2.5}$ were euthanized on the 21st day. Wound tension strength, tissue hydroxyproline, and fibrotic index levels of the tissue samples from the early c and early $l_{2.5}$ and late c and late $l_{2.5}$ groups, respectively, on the 8th and 21st days were examined.
RESULTS: Levobupivacaine decreased wound tension strength on the 8th day, especially a 2.5 mg/kg dose (P < 0.001), and increased it on the 21st day (P < 0.001). It also increased the inflammatory response (P < 0.001) and collagen synthesis (8th day, P = 0.109; 21st day, P = 0.103) on both the 8th and 21st days.
CONCLUSIONS: While levobupivacaine had a positive effect on wound healing during the early period, negative effects were observed thereafter. Additional studies at the molecular level are necessary to determine the cause of these apparently opposite effects.

等长测力计在预测腰麻下日间手术病人的术后活动恢复情况优于Bromage评分

Isometric Force Dynamometer Is Superior to Bromage Score in Prediction of Patients' Ambulation After Spinal Anesthesia in Ambulatory Surgeries

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背景：本文研究目的是用一个肌力定量测量方法来确定病人是否可以在鞘内麻醉后进行安全独立活动。
方法：20名ASA I和II级、接受腰麻下择期会阴部手术或下腹部手术的病人被选作研究对象。选用重比重布比卡因10mg进行腰麻。每隔15min分别使用Bromage评分和膝、髋、踝屈肌等长收缩测量来定性和定量评估运动阻滞的恢复情况，直至患者能够独立活动。
结果：在所有测试的关节中，Bromage评分的恢复速度较等长收缩力的恢复速度更快。当Bromage评分中位数达到0（没有运动阻滞时），膝、髋、踝肌力恢复的平均值±标准差分别为28.2% ± 16%、 45.5% ± 24%和 56.3% ± 28 %，只有6名患者（30%，95%可信区间10%-53%）能够独立行走。75min后，90%患者（95%可信区间56%-99%）能够独立行走，此时膝、髋、踝肌力恢复值分别是63.6% ± 20%、82.1% ± 27%和90.2% ± 24%。在不同关节水平，等长收缩得出的受试者工作特性曲线下面积较Bromage评分得出的更高（P<0.001）。另一方面，在蛛网膜下腔阻滞后通过不同关节等长收缩的测量来预测病人独立行走方面是有效的，膝、髋、踝的预测概率分别是0.901,0.948和0.958，而相比之下，Bromage评分的预测概率只有0.752（P<0.001）
结论：作为腰麻后预测病人安全活动能力的方法，定量测量膝、髋、踝屈肌肌力的恢复程度比定性测量的Bromage评分更精确、更优。此方法应被推荐用于小剂量麻醉剂使用后对运动阻滞的评估。
（詹恺诞　译　陈杰　校）
BACKGROUND: The aim of our study was to use a quantitative measure of muscle strength to identify the muscle power at which the patient can safely ambulate unassisted after spinal anesthesia.
METHODS: Twenty ASA physical status I and II patients undergoing elective perineal or lower abdominal surgery under spinal anesthesia were enrolled in the study. Spinal anesthesia was conducted using 10 mg heavy bupivacaine. The regression of motor block was assessed both qualitatively using the Bromage score and quantitatively by measuring the isometric contraction of the knee, hip, and ankle flexors every 15 minutes until the patient was able to ambulate unassisted.
RESULTS: The rate of regression of the Bromage score was faster than regression of the isometric forces at all tested joints. As the median Bromage score reached 0 (no motor blockade), the mean ± SD motor power recoveries at the knee, hip, and ankle were 28.2% ± 16%, 45.5% ± 24%, and 56.3% ± 28 %, respectively, and only 6 of 20 patients (30%, 95% confidence interval 10%–53%) were able to walk unassisted. After 75 minutes passed, 90% of the patients (95% confidence interval 56%–99%) were able to walk unassisted with mean motor power recovery of 63.6% ± 20%, 82.1% ± 27%, and 90.2% ± 24% at the knee, hip, and ankle, respectively. The area under the receiver operating characteristic curves was significantly higher with isometric contraction at different joints than the Bromage score ($P < 0.001$). In addition, isometric contraction at different joints was effective in predicting the patients' ability to walk unassisted after subarachnoid block with prediction probabilities of 0.901, 0.948, and 0.958 for the knee, hip, and ankle, respectively, as compared with 0.752 for the Bromage score ($P < 0.001$).

CONCLUSION: Quantitative measurement of the degree of recovery of the motor power of the knee, hip, or ankle flexors is more accurate and superior to the qualitative Bromage score, as a predictor of the patient's ability to safely ambulate after spinal anesthesia. This may be recommended when assessing motor block when small-dose anesthetic solutions are used.

急诊室中使用一种无创血红蛋白监测进行容量动力学分析

The Use of a Noninvasive Hemoglobin Monitor for Volume Kinetic Analysis in an Emergency Room Setting

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背景：单次快速注射液体的分布和清除可以通过基于容量动力学方程的重复采样观察血红蛋白（tHb）变化来研究。Pulse CO-oximetry，一项新的监测手段，即连续无创监测血红蛋白浓度（SpHb），将极大地促进容量动力学参数在科学研究和临床上的应用。本研究考察在急诊室设置中SpHb的连续测量是否可以用来计算单次快速注射液体的分布容积（V）和清除率（CL）。
方法：本文对因各种病因收治于一家三级医疗中心急诊室，含2个年龄组的患者进行的一项前瞻性、观察性的研究。在患者双臂置入静脉导管分别用于通过一个缓冲的晶体葡萄糖液输注诱导血浆容量扩张，及在输注开始后第0, 5, 10, 15, 30, 45, 60, 75,90min抽取静脉血标本进行tHb分析。在进行这些干预措施同时，采用 Pulse CO-oximetry 监测仪观察SpHb（Masimo Radical-7, Rev E ReSposable传感器）。使用Bland-Altman图来计算偏倚、精度和一致性界限，比较SpHb和有创tHb测量的准确性差异。使用容量动力学（液体药代动力学）方程，测定分布容积和清除率。
结果：30名患者（14名来自平均年龄30岁的青年组患者和16名来自平均年龄84岁的老年组患者）纳入此次研究。当所有的数据汇总在一起，产生242个数据对且SpHb和tHb间偏倚为-0.47（95%置信区间，-0.62到-0.32）。然而，其中5名患者因为信号质量过低而被忽略，将剩下的193个血红蛋白数据对做进一步分析。此时偏倚为-0.24（95%置信区间，-0.39到-0.09）。偏倚表明该监测仪对tHb值略有低估。当低信号质量指示出现时，提示SpHb精确度下降。对27名对象进行了分布容积和清除率计算。使用tHb或SpHb值来估计分布容积，两者没有显著差异。对清除率常数也进行了估计，但精确度比较低。
结论：本研究数据表明，在急诊室使用pulse CO-oximetry监测仪测量的SpHb可用来计算液体的容量分布。
（孙莉荔　译　陈杰　校）

BACKGROUND: Distribution and clearance of an infused bolus can be studied by repetitive sampling of invasive total hemoglobin (tHb) using volume kinetic equations. Pulse CO-oximetry, a recent advancement in patient monitoring that allows for the continuous and noninvasive estimation of hemoglobin concentration (SpHb), would greatly facilitate the

scientific and clinical use of the volume kinetic parameters. In the present study, we examined whether serial measurements of SpHb in an emergency room setting can be used to calculate distribution volume (V) and clearance (Cl) rate of an infused bolus.
METHODS: This was a prospective, observational study of patients in 2 age groups admitted for various reasons to the emergency room of a tertiary care center. IV catheters were placed in both arms of the subjects to induce plasma volume expansion by infusion of a buffered crystalloid glucose solution and for withdrawing venous blood samples for analysis of tHb at 0, 5, 10, 15, 30, 45, 60, 75, and 90 minutes after start of infusion. During these interventions, subjects were simultaneously monitored by pulse CO-oximetry for measurement of SpHb (Masimo Radical-7, Rev E ReSposable Sensor). Bias, precision, and limits of agreement were calculated in Bland-Altman plots to compare the accuracy of SpHb with invasive tHb measurements. Using volume kinetic (pharmacokinetics for fluids) equations, V and Cl were determined.
RESULTS: Thirty patients (14 from the young group with a mean age of 30 years, and 16 from the geriatric group with mean age of 84 years) were enrolled in the study. When all data were included, this yielded 242 data pairs with a bias of −0.47 (95% confidence interval, −0.62 to −0.32) between SpHb and tHb. However, 5 patients were omitted because of low quality signals, leaving 193 hemoglobin data pairs for further analysis. Bias was then −0.24 (95% confidence interval, −0.39 to −0.09). The biases show that the device on average slightly underestimates tHb values. The precision of SpHb decreases when the low signal quality indicator is present. For the 27 subjects for whom the V and Cl were calculated, there were no significant differences in the estimation of the distribution volumes using either tHb or SpHb values. Clearance constants were also estimated, but with less accuracy.
CONCLUSIONS: Our data show that SpHb by pulse CO-oximetry may be used to calculate volume of distribution in an emergency room setting.

胃镜检查验证一项用于超声评估胃容积的数学模型

Validation of a Mathematical Model for Ultrasound Assessment of Gastric Volume by Gastroscopic Examination

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背景：胃内容物返流误吸是一种严重的围术期并发症。先前超声评估胃容积的模型只是些雏形，且未被
“金标准”所验证。基于108位接受床边胃超声和上消化道内窥镜检查（UGE）患者的回顾性数据，本研究提出了一项更精确的模型。
方法：接受择期UGE患者在禁食8小时后随机从6个预定量的苹果汁中摄取一种。在标准扫描协议指导下，一位对研究不知情的超声医师对右侧卧位患者进行胃窦部横截面积（右

侧CSA位）测量。随后，一位对研究不知情的胃肠病专家在UGE操作中在胃镜直视下吸引胃内液体，并测量其体积，精确至毫升。
结果：108例患者数据表明以前报道的实验模型过高估计胃容积，特别在低胃容量情况下。基于右侧CSA体位的测量，提出了一项预计胃液量的最佳数学模型。这种新模型建立在更准确的金标准上，可以用于估计体重指数<40kg/m^{2}非妊娠成人0到500ml的胃容量。
结论：本研究通过标准二维床边超声检查，提出了一个评估胃液量体积的新型数学模型，与以前的模型相比此模型有一些优势。
（王苑　译　陈杰　校）
INTRODUCTION: Pulmonary aspiration of gastric contents is a serious perioperative complication. Previous models of ultrasound gastric volume assessment are preliminary and have not been validated by an external "gold standard." In the present study we propose a more accurate model based on prospective data obtained from 108 patients undergoing bedside gastric sonography and upper gastrointestinal endoscopy (UGE).
METHODS: Patients undergoing elective UGE were randomized to ingest one of 6 predetermined volumes of apple juice after an 8-hour fasting period. A cross-sectional area of the antrum in the right lateral decubitus position (Right lat CSA) was measured by a blinded sonographer following a standardized scanning protocol. Gastric fluid was subsequently suctioned under gastroscopic vision during UGE performed by a blinded gastroenterologist and measured to the nearest milliliter.
RESULTS: Data from 108 patients suggest that a previously reported model tends to overestimate gastric volume particularly at low volume states. A new best fit mathematical model to predict gastric fluid volume based on measurements of Right lat CSA is presented. This new model built on a more accurate gold standard can be used to estimate gastric volumes from 0 to 500 mL, in nonpregnant adults with body mass index < 40 kg/m^2.
CONCLUSIONS: We report a new prediction model to assess gastric fluid volume using standard 2-dimentional bedside ultrasound that has several advantages over previously reported models.

妊娠期的马凡氏综合征：连续16例马凡氏综合征分娩的麻醉管理

Marfan's Syndrome During Pregnancy: Anesthetic Management of Delivery in 16 Consecutive Patients

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背景：马凡氏综合征的特点是主动脉根部进行性的扩张。而妊娠则会加速主动脉扩张进程，从而增加病人患主动脉夹层的风险。而关于马凡氏综合征患者分娩的麻醉管理方面的文献只有一些病例报道。因此本研究着立于在一个国立转诊中心对马凡氏综合征患者在分娩过程中麻醉管理的医疗记录进行一项回顾性综述
方法：对该机构所有马凡氏综合征孕妇随访6年的医疗记录进行回顾。

结果：分析15名病人的16次妊娠过程，9名病人的主动脉根部最初的直径大于40mm,而1名是超过45mm,而有2名病人由于耐受性差而在孕期没有服用β受体阻滞剂，有1名主动脉根部直径47mm的病人因为转送较晚而在怀孕33周后才服用的β受体阻滞剂。这名女患者在怀孕37周时发展为急性I型主动脉夹层，被要求在全麻下接受急诊剖宫产手术，之后同时接受主动脉修复手术。其他13名剖宫产的患者中，有1名接受鞘内麻醉，而其余12名则是全麻。全麻管理包括密切的主动脉压监测，避免高血压，在分娩前给予阿片类药物，和尼卡地平滴定给药。有两名患者（其中一名胎儿宫内死亡）在硬膜外镇痛下进行阴道分娩。没有孕产妇死亡。

结论:马凡氏综合征的孕妇如果在多学科三级医疗机构接受包括围术期麻醉医生积极参与下的治疗，则预后较好。

（马霄雯　译　陈杰　校）

BACKGROUND: Marfan's syndrome is characterized by progressive dilatation of the aortic root. This dilatation is accelerated by pregnancy, exposing patients to an increased risk of aortic dissection. Literature on the anesthetic management of delivery in patients with Marfan's syndrome consists only of case reports. We therefore conducted a retrospective review of medical records focusing on anesthetic management of delivery in patients with Marfan's syndrome in a national referral center.

METHODS: We reviewed the medical records of all pregnant women with Marfan's syndrome who were followed at their institution over a 6-year period.

RESULTS: Sixteen pregnancies in 15 patients were analyzed. The initial aortic root diameter was larger than 40 mm in 9 patients and larger than 45 mm in 1 patient. Two patients did not receive β-blockers throughout pregnancy because of poor tolerance. One patient with an aortic root diameter of 47 mm did not receive β-blocker before 33 weeks' gestation because of late referral. This woman developed acute type 1 aortic dissection at 37 weeks, requiring emergency cesarean delivery under general anesthesia followed by aortic repair. Thirteen other patients underwent cesarean delivery, 1 under spinal anesthesia and 12 under general anesthesia. General anesthesia management included close arterial blood pressure monitoring, avoidance of high blood pressure, administration of opioids before delivery, and titrated nicardipine administration. Two patients (including one with intrauterine fetal death) underwent vaginal delivery under epidural analgesia. There were no maternal deaths.

CONCLUSIONS: Pregnant women with Marfan's syndrome who received care in a multidisciplinary tertiary care setting that included active peripartum involvement of anesthesiologists had good clinical outcomes.

颅面重建手术患儿中心静脉压监测的评估

Evaluation of Central Venous Pressure Monitoring in Children Undergoing Craniofacial Reconstruction Surgery

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背景：颅面外科手术中大出血是常见的，往往导致血容量不足和低血压。这项研究评估增加中心静脉压（CVP）的常规监测对术中低血压发生率的影响并评价此人群中CVP和低血压的关系。
方法：把从作者单位的前瞻性颅面围术期登记表中所获得的关于6至24个月，接受颅面重建并接受CVP监测的儿童数据与从一个历史性队列并未接受CVP监测获得的数据进行比较。比较两队列中的低血压的发生率和持续时间。观察接受CVP监测队列中发生过低血压的患者，把其在低血压发生时的CVP（T0）、发生低血压5分钟前CVP（T–5）和5分钟后CVP（t + 5）与基线CVP进行比较。对低于基线值的不同CVP水平的持续时间和相关低血压发生率同时进行考察。
结果：57名登记表受试者的数据与来自115名历史队列研究受试者的数据进行比较。CVP队列中经历低血压患者的低血压平均总持续时间为278秒而历史队列为165秒；平均差异为98秒（95%的可信区间，–45到345秒）。低血压的发生率在CVP队列中为18%而历史队列为21%；低血压发生率的差异有-3%（95%的可信区间，-10%~15%）。采用线性混合效应模型分析显示从T-5到T0，CVP明显降低（95% 的可信区间，-0.9至-2.2mmHg）；从T0到T+5，CVP显着升高（95% 的可信区间，1-2.4mmHg）, 而T–5和T + 5两点间的CVP无显著差异（95% 的可信区间，–0.9-0.9mmHg）；从基线到T0，CVP显著降低(95%的可信区间，-3.4~-2.1mmHg)。在发生低血压的案例中有97%是T0时CVP低于基线CVP。研究所有情况，CVP低于基线水平≥3 mm Hg占了研究总时间的16％，具有关联性低血压的发生率为2％。
结论：常规CVP监测的实施并不降低大量出血人群低血压发生率和低血压持续时间。低血压与CVP降低相关，低血压的解决与升高CVP到低血压前的水平有关。然而，CVP显著低于基线以下是常见的，并且通常不伴有低血压。在这些儿童中把常规使用CVP监测作为一种降低低血压发生率和减少低血压持续时间的手段，其作用是可疑的。
（郑华容　译　陈杰　校）
BACKGROUND: Massive hemorrhage during craniofacial surgery is common and often results in hypovolemia and hypotension. We conducted this study to assess the effect of the addition of routine central venous pressure (CVP) monitoring on the incidence of intraoperative hypotension and to evaluate the relationship between CVP and hypotension in this population.
METHODS: Data from our prospective craniofacial perioperative registry for children 6 to 24 months of age undergoing cranial vault reconstruction with CVP monitoring were compared with data from a historical cohort without CVP monitoring. The incidence and duration of hypotension in the 2 cohorts were compared. In the cohort of subjects with CVP monitoring who experienced hypotension, CVP at the onset of hypotension (T0) was compared with CVP 5 minutes before (T – 5) and 5 minutes after (T + 5) the onset of hypotension and with the baseline CVP. The amount of time spent at various CVP levels below the baseline, and the associated incidence of hypotension were also determined.
RESULTS: Data from 57 registry subjects were compared with data from 115 historical cohort subjects. The median total duration of hypotension in subjects experiencing hypotension was 278 seconds in the CVP cohort versus 165 seconds in the historical cohort; the median difference was 98 seconds (95% confidence interval [CI], –45 to 345 seconds). The incidence of hypotension was 18% in the CVP cohort versus 21% in the historical cohort; the difference in the incidence

of hypotension was –3% (95% CI, –10% to 15%). Analysis using a linear mixed effects model showed a significant decrease in CVP from T – 5 to T0 (95% CI, –0.9 to –2.2 mm Hg), a significant increase in CVP from T0 to T + 5 (95% CI, 1.0–2.4 mm Hg), no significant difference in CVP between T – 5 and T + 5 (95% CI, –0.9 to 0.9 mm Hg), and a significant decrease in CVP from baseline to T0 (95% CI, –3.4 to –2.1 mm Hg). CVP at T0 was less than the baseline CVP in 97% of hypotensive episodes. When all cases were examined, CVP was ≥3 mm Hg below the baseline for 16% of the total time studied, with an associated incidence of hypotension of 2%.
CONCLUSIONS: The implementation of routine CVP monitoring was not associated with a decreased incidence and likely was not associated with a decreased duration of hypotension in this population experiencing massive hemorrhage. Hypotension was associated with a decrease in CVP, and resolution of hypotension was associated with an increase in CVP to prehypotensive levels. However, significant decreases in CVP below the baseline were common and usually not associated with hypotension. The routine use of CVP monitoring in these children is of questionable utility as a means to decrease the incidence and duration of hypotension.

需手术治疗的颅内出血病人酮咯酸的应用：一项队列研究（2001-2010）内的病例对照研究

Intracranial Hemorrhage Requiring Surgery in Neurosurgical Patients Given Ketorolac: A Case-Control Study Within a Cohort (2001–2010)

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背景：酮咯酸氨丁三醇（酮咯酸）是一种具有强力镇痛和中等消炎作用的非镇静类药物，且该效果不会提高镇静程度。针对其可能造成颅内出血的风险，酮咯酸的安全性已经由相当大数量经历普外科手术的患者所验证，但是缺乏对于神经外科病人的安全性可比数据。对正接受择期神经外科治疗并且使用酮咯酸作为镇痛治疗的此类患者，本文研究其出现需手术治疗出血症状的风险。
方法：本研究将从2001年1月至2010年8月接受择期颅内手术患者（剔除紧急手术，凝血疾病，有使用抗凝血剂或者非甾体类消炎药历史的患者）纳入队列分析，同时核实使用或未使用酮咯酸患者开颅术后颅内出血（ICH，由计算机断层摄影术发现并且需要进行手术）的发生率。然后为了控制潜在的混杂因素，在队列研究中再进行一项"嵌套"的病例对照研究：研究病例为定义为ICH的患者；对照设为以2:1比率匹配的非ICH患者。
结果：该队列包含4086名开颅手术患者（平均年龄52.4 ± 14.3 岁, 2124 名男性, 占52%）。在1571名使用酮咯酸的患者中（平均剂量50 ± 15 mg/d），8名（0.5%）患者发生ICH；在2515名没有使用酮咯酸的患者中，35（1.3%）名患者发生ICH（相对风险，0.37；95%置信区间为0.17-0.79; *P* = 0.007）.在嵌套的病例对照研究中，组间酮咯酸给药的校正比值比为1.09（95%置信区间0.35-3.44：*P* = 0.88）。

结论：尽管对需手术治疗的症状性出血风险的校正估计和酮咯酸的使用几乎没有关系，但此研究结果可能无法重复，且置信区间的宽度也不能成为择期神经外科治疗后酮咯酸安全性的有力证据。
（孙晓琼　译　陈杰　校）

BACKGROUND: Ketorolac tromethamine (ketorolac) is a nonsedating drug with potent analgesic and moderate anti-inflammatory activity, which does not increase the sedation level. The safety of ketorolac with respect to risk of bleeding has been demonstrated in large numbers of patients undergoing general surgery, yet comparable safety data for neurosurgical patients are lacking. We studied the risk of symptomatic bleeding requiring surgery in patients undergoing elective neurosurgical procedures who received ketorolac as analgesic therapy.
METHODS: We established a cohort of patients who had elective intracranial procedures from January 2001 to August 2010 (excluding patients with urgent surgery, coagulopathy, history of anticoagulant or nonsteroidal, anti-inflammatory drug therapy) and verified the occurrence of postcraniotomy intracranial hemorrhage (ICH; detected by computed tomography and requiring surgery) in patients who received or did not receive ketorolac. Then, to control for potential confounders, we conducted a "nested" case-control study within the cohort: cases were defined as patients with ICH; controls were patients without ICH matched in a 2:1 ratio.
RESULTS: The cohort included 4086 craniotomy patients (mean age, 52.4 ± 14.3 years, 2124 male, 52%). Of the 1571 patients who received ketorolac (mean dosage, 50 ± 15 mg/d), 8 (0.5%) suffered ICH; of the 2515 patients who did not receive ketorolac, 35 (1.3%) had ICH (relative risk, 0.37; 95% confidence interval, 0.17–0.79; $P = 0.007$). In the nested case-control study, the adjusted odds ratio for ketorolac administration between the 2 groups was 1.09 (95% confidence interval, 0.35–3.44; $P = 0.88$).
CONCLUSION: Although the adjusted estimate for risk of symptomatic bleeding requiring surgery and ketorolac use is very close to the null effect, it may be not reproducible, and the width of the confidence interval is not conclusive evidence of the safety of ketorolac after elective neurosurgical procedures.

CB_1和 CB_2大麻素受体激动剂通过激活内源性去甲肾上腺素能系统诱导产生外周镇痛作用

CB_1 and CB_2 Cannabinoid Receptor Agonists Induce Peripheral Antinociception by Activation of the Endogenous Noradrenergic System

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背景：大麻素受体激动剂引起去甲肾上腺素在中枢、脊髓及外周部位的释放。前期研究表明大麻素和肾上腺素能反应系统在镇痛方面存在相互作用。此项研究试图验证CB_1、CB_2大麻素受体激动剂和N-棕榈酰乙醇胺（PEA），是否可以分别地通过肾上腺素能机制产生外周镇痛作用。
方法：在雄性Wistar大鼠的右后爪局部给药。大鼠爪压力试验通过足垫注射2ug前列腺素E2产生痛觉增敏来实现。
结果：大麻素剂量在12.5ng/爪,
25ng/爪和50ng/爪产生的局部外周镇痛作用可分别被20μg/爪,40μg/爪和80μg/爪的CB_1受体

拮抗剂AM251拮抗，但即使100
μg/爪的CB_2受体拮抗剂AM630也无法拮抗大麻素的镇痛作用。而PEA剂量在5μg/爪,10μg/爪和20μg/爪产生的镇痛作用可被25 μg/爪，50 μg/爪和100
μg/爪的CB_2受体拮抗剂AM630拮抗，但80
μg/爪的AM251却无法拮抗。上述剂量的大麻素或PEA产生的镇痛作用可分别被5μg/爪,
10μg/爪和20μg/爪的非选择性α_2肾上腺素能受体拮抗剂育亨宾和10μg/爪,
15μg/爪和20μg/爪的选择性α_{2C}受体拮抗剂萝芙藤拮抗，但却不能被20μg/爪的选择性α_{2A},α_{2B}和α_{2D}
受体亚型拮抗剂拮抗。同时相同剂量的大麻素的镇痛作用也可以被0.5μg/爪，1μg/爪和2μg/爪的非选择性α_1受体拮抗剂哌唑嗪及150ng/爪, 300ng/爪和
600ng/爪的非选择性β受体拮抗剂普萘洛尔拮抗。胍乙啶可使外周拟交感神经递质耗竭（每只大鼠30
mg/kg，一天一次，持续3天），还原约70%的大麻素和PEA的外周镇痛作用。此外，快速注射30
μg/爪的去甲肾上腺素再吸收抑制剂瑞波西汀，可增强小剂量大麻素（12.5ng/爪）和PEA（5μg/paw）的镇痛作用。
结论：这项研究为大麻素和PEA通过分别激活CB_1和CB_2大麻素受体，刺激内源性去甲肾上腺素的释放，激活外周肾上腺素能受体产生镇痛作用提供依据。
（诸琳婕　译　陈杰　校）

BACKGROUND: Cannabinoid agonists induce norepinephrine release in central, spinal, and peripheral sites. Previous studies suggest an interaction between the cannabinoid and adrenergic systems on antinociception. In this study, we sought to verify whether the CB_1 and CB_2 cannabinoid receptor agonists anandamide and N-palmitoyl-ethanolamine (PEA), respectively, are able to induce peripheral antinociception via an adrenergic mechanism.
METHODS: All drugs were administered locally into the right hindpaw of male Wistar rats. The rat paw pressure test was used, with hyperalgesia induced by intraplantar injection of prostaglandin E_2 (2 μg).
RESULTS: Anandamide, 12.5 ng/paw, 25 ng/paw, and 50 ng/paw elicited a local peripheral antinociceptive effect that was antagonized by CB_1 cannabinoid receptor antagonist AM251, 20 μg/paw, 40 μg/paw, and 80 μg/paw, but not by CB_2 cannabinoid receptor antagonist AM630, 100 μg/paw. PEA, 5 μg/paw, 10 μg/paw, and 20 μg/paw, elicited a local peripheral antinociceptive effect that was antagonized by AM630, 25 μg/paw, 50 μg/paw, and 100 μg/paw, but not by AM251, 80 μg/paw.
Antinociception induced by anandamide or PEA was antagonized by the nonselective α_2 adrenoceptor antagonist yohimbine, 05 μg/paw, 10 μg/paw, and 20 μg/paw, and by the selective α_{2C} adrenoceptor antagonist rauwolscine, 10 μg/paw, 15 μg/paw, and 20 μg/paw, but not by the selective antagonists for α_{2A}, α_{2B}, and α_{2D} adrenoceptor subtypes, 20 μg/paw. The antinociceptive effect of the cannabinoids was also antagonized by the nonselective α_1 adrenoceptor antagonist prazosin, 0.5 μg/paw, 1 μg/paw, and 2 μg/paw, and by the nonselective β adrenoceptor antagonist propranolol, 150 ng/paw, 300 ng/paw, and 600 ng/paw. Guanethidine, which depletes peripheral sympathomimetic amines (30 mg/kg/animal, once a day for 3 days), restored approximately 70% the anandamide-induced and PEA-induced peripheral antinociception. Furthermore, acute injection of the norepinephrine reuptake inhibitor reboxetine, 30 μg/paw,

intensified the antinociceptive effects of low-dose anandamide, 12.5 ng/paw, and PEA, 5 μg/paw.
CONCLUSIONS: This study provides evidence that anandamide and PEA induce peripheral antinociception activating CB_1 and CB_2 cannabinoid receptors, respectively, stimulating an endogenous norepinephrine release that activates peripheral adrenoceptors inducing antinociception. (Anesth Analg 2013;116:–72)

技术交流：人体首次使用麦哲伦系统行机器人超声引导下神经阻滞

Technical Communication: First Robotic Ultrasound-Guided Nerve Blocks in Humans Using the Magellan System

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背景：超声引导下神经阻滞正成为现代麻醉的一个标准。本文作者研发了一款机器人系统-麦哲伦，利用一个远程控制中心来进行神经阻滞。
方法：13例病人纳入此项飞行试验。麦哲伦系统有3个主要部件构成：操纵杆，一个机械臂和一个软件控制系统。操纵杆可以模拟操作人员的手腕或手臂活动。在定位坐骨神经后，注射0.25%布比卡因35ml。记录坐骨神经阻滞成功率以及操作时间（操作时间=超声开始搜索坐骨神经到注药结束的时间间隔；机器人时间=确定坐骨神经到注药结束的时间间隔）。数据以中位数(25th,75th百分位数；最小值，最大值)和分类数据表示。
结果：年龄为34岁的8例男性和5例女性纳入本研究。神经阻滞在所有病人均取得成功。成功的定义为针尖进入神经鞘；并未使用运动或感觉阻滞来决定成功率。神经阻滞时间为189秒（150,233；90,305），而机器人时间为164秒（121,210；73,271）。
结论：本文首次介绍了机器人超声引导下神经阻滞。成功率为100%，总操作时间大约为3到4min。
（瞿亦枫　译　陈杰　校）
BACKGROUND: Ultrasound-guided nerve blocks are becoming a standard of modern anesthesia. We developed a robotic system, Magellan, to perform nerve blocks using a remote control center.
METHODS: Thirteen patients were enrolled in this pilot study. The Magellan system consists of 3 main components: a joystick, a robotic arm, and a software control system. The joystick allows simulation of wrist or arm movements of the proceduralist. After localization of the sciatic nerve, 35 mL of bupivacaine 0.25% was injected. The success rate of sciatic nerve blocks and block performance times (performance time = interval of time from the start of the ultrasound search for the nerve to the end of the injection of the drug; robotic time = interval of time from the identification of the nerve to the end of the injection of the drug) were determined. Data are presented as median (25th, 75th; minimal, maximal) and categorical data.
RESULTS: Eight men and 5 women aged 34 years were included in this study. Nerve blocks were successful in all patients. A successful attempt was defined as the introduction of the needle into the nerve sheath; motor or sensory block was not used to determine the success rate. The

nerve performance time was 189 seconds (150, 233; 90, 305), whereas the robotic time was 164 seconds (121, 210; 73, 271).
CONCLUSIONS: We present the first human testing of a robotic ultrasound-guided nerve block system. The success rate was 100%. The total performance time was approximately 3 minutes to 4 minutes.

经食道实时三维超声心动图：可改善术中二尖瓣成像

Real-Time Three-Dimensional Transesophageal Echocardiography: Improvements in Intraoperative Mitral Valve Imaging

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背景：二尖瓣反流修复手术的成功依赖对其复杂解剖的综合评。在二尖瓣手术中对经食道实时三维心动图技术应用的可行性及准确性循证有限，但全世界应用却增加。我们设计这个前瞻性观察性研究， 在二尖瓣反流的病人中
应用实时三维食道超声心动图初步检测其二尖瓣的脱垂及腱索断裂情况
并与二维食道超声比较来评估实时三维食道超声对瓣膜的解剖定位。
方法：取得食道超声资格证书的麻醉医生对62个行二尖瓣手术的病人进行监测
并获得其二维食道超声的标准图像片段和三维超声结果记录，事后，这些二维及三维的图像单独及随机的分配给2名专家解析，并应用外科探查情况作为金标准
结果：通过外科手术探查确定了52例二尖瓣脱垂，与二维食道超声相比
，实时三维食道超声在诊断和定位二尖瓣脱垂方面（差异比例为33.9
%,P＜0.001）及腱索断裂方面（差异比例为25.8%，P＜0.001）与外科探查结果更相关。
经食道实时三维超声心动图在监测二尖瓣脱垂患者的二尖瓣前叶A2部分，后叶P1及P2部分，及腱索断裂监测患者的前叶A2及后叶P2部分更优越。在22个病人中，瓣膜行外科修补，三维食道超声在评价更灵敏（κ＝
0.65,可行区间[0.44,0.81]）在22个病人中，同时行瓣膜外科修补，三维食道超声在评价更灵敏（κ＝0.65,可行区间[0.44,0.81]）
结论：虽然在二尖瓣手术术中成像二维食道超声是作为目前的一个标准工具，实时三维食道超声促进二尖瓣病理学的可视性和通过改善空间定位增加介入治疗的准确性，特别是哪些致力于其效价比调查的结果。
（邓利兵译 薛张纲校）

Background: Successful surgical repair of a regurgitant mitral valve (MV) is dependent on a comprehensive assessment of its complex anatomy. Although there is limited evidence of the feasibility and accuracy of intraoperative real-time 3-dimensional transesophageal echocardiography (RT3DTEE) in MV surgery, its use is increasing worldwide. We designed this prospective observational study of patients with mitral regurgitation to test initial findings on the

accuracy of RT3DTEE images in the diagnosis of MV prolapse and chordal rupture relative to 2D imaging and to assess the potential of RT3DTEE for visualizing leaflet clefts.
Methods: TEE-certified anesthesiologists examined 62 consecutive patients undergoing MV surgery by acquiring a full standard set of 2D TEE sections and 3D zoom recordings. Offline, 2D and 3D images were presented independently and in randomized order to 2 expert interpreters. Accuracy was determined using the surgical findings as the "gold standard."
Results: Surgical inspection identified 52 cases of MV prolapse (MVP). RT3DTEE correlated stronger with the surgical findings than 2D TEE for detection and localization of MVP (difference in proportions = 33.9%, $P < 0.001$) and chordal rupture (difference in proportions = 25.8%, $P < 0.001$). The superiority of RT3DTEE was significant for scallops A2, P1, P2 in MVP and A2, P2 in chordal rupture (all $P < 0.05$). In 22 patients, leaflet clefts were also surgically repaired, and RT3DTEE was feasible in accessing them ($\kappa = 0.65$, confidence interval [0.44, 0.81]).
Conclusion: Although 2D TEE is currently the standard tool for intraoperative imaging in MV surgery, RT3DTEE improves the visualization of MV pathology and increases the accuracy of interpretation by facilitating spatial orientation. Further investigations, particularly those aimed at establishing its cost effectiveness, are indicated.

异氟醚介导的活性氧自由基抑制核因子κB激活脂多糖诱导的急性肺感染

Reactive Oxygen Species by Isoflurane Mediates Inhibition of Nuclear Factor κB Activation in Lipopolysaccharide-Induced Acute Inflammation of the Lung

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背景:
虽然麻醉诱导抑制脂多糖（LPS）诱导的急性肺损伤已被大家公认，但其基本机制是不清楚的。有些研究提出异氟醚的活性氧自由基（ROS）在麻醉诱导对大脑和心脏的保护作用扮演了一个至关重要的角色；然而，它仍是有争议的。在这个研究中，我们检验了异氟醚衍生的ROS在异氟醚诱导抑制肺损伤及核因子κB（NFκB）激活LPS刺激鼠肺。
方法: 雄性大白鼠吸入1.0最低肺泡有效浓度异氟醚60分钟，60分钟后气管内注射LPS 0.1mg。某些情况下，在异氟醚前30分钟给予ROS清除剂，2-巯基丙酰基甘氨酸或N-乙酰半胱氨酸。在LPS刺激前和4小时后分别用荧光测定ROS生成量。在支气管肺泡灌洗液和肺组织用组织学检查，蛋白质含量，中性粒细胞集落，并测定肿瘤坏死因子(TNF)-α，白细胞介素(IL)-1β和IL-6水平来评估异氟醚预处理效果。Western印迹法测得磷酸化的抑制性κB α (ser 32/36), NFκB p65,和诱导型一氧化氮合酶（iNOS）。同时评估TNF-α ，IL-6 mRNA的表达和iNOS免疫荧光染色。

结果：异氟醚预处理减少肺内的炎症性肺损伤和TNF-α, IL-1β, and IL-6的释放。异氟醚在LPS前增加ROS生成量但是在LPS刺激后抑制ROS爆发。在异氟醚前给予ROS清除剂能消除在急性LPS刺激肺时异氟醚预处理影响及异氟醚诱导的磷酸化的抑制性κBα, NFκB p65, iNOS活化性和TNF-α and IL-6 mRNA的表达。
结论：这项研究表明在急性肺感染中为了异氟醚预处理改变炎性通路，异氟醚增加ROS生成量扮演了一个至关重要的角色。
（方昕译 薛张纲校）

BACKGROUND: Although anesthetic-induced inhibition of lipopolysaccharide (LPS)-induced lung injury has been recognized, the underlying mechanism is obscure. Some studies suggest that reactive oxygen species (ROS) by isoflurane play a crucial role for anesthetic-induced protective effects on the brain or the heart; however, it still remains controversial. In this study, we examined the role of isoflurane-derived ROS in isoflurane-induced inhibition of lung injury and nuclear factor κB (NFκB) activation in LPS-challenged rat lungs.
METHODS: Male Sprague-Dawley rats were subjected to inhalation of 1.0 minimum alveolar concentration of isoflurane for 60 minutes, and intratracheal LPS 0.1 mg was administered 60 minutes later. In some cases, ROS scavenger, 2-mercaptopropinyl glycine or N-acetylcysteine was given 30 minutes before isoflurane. ROS generation was measured by fluorometer before LPS challenge and 4 hours after. Isoflurane's preconditioning effect was assessed by histologic examination, protein content, neutrophil recruitment, and determination of tumor necrosis factor (TNF)-α, interleukin (IL)-1β, and IL-6 levels in bronchoalveolar lavage fluid and lung tissue. Western blotting measured phosphorylation of inhibitory κB α (ser 32/36), NFκB p65, and inducible nitric oxide synthase (iNOS). TNF-α and IL-6 mRNA expression and immunofluorescence staining for iNOS were also assessed.
RESULTS: Isoflurane preconditioning reduced inflammatory lung injury and TNF-α, IL-1β, and IL-6 release in the lung. Isoflurane upregulated ROS generation before LPS but inhibited a ROS burst after LPS challenge. ROS scavenger administration before isoflurane abolished the isoflurane preconditioning effect as well as isoflurane-induced inhibition of phosphorylation of inhibitory κBα, NFκB p65, iNOS activation, and mRNA expression of TNF-α and IL-6 in acute LPS-challenged lungs.
CONCLUSIONS: This study suggests a crucial role of upregulated ROS generation by isoflurane for modification of inflammatory pathways by isoflurane preconditioning in acute inflammation of the lung.

外周动脉灌注指数可作为早期预测中心低血容量的指标在清醒健康志愿者中的研究

Peripheral perfusion index as an early predictor for central hypovolemia in awake healthy volunteers.

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背景：在健康志愿者中，我们调查脉搏血氧饱和度衍生的周边动脉灌注指数（PPI）来检测中心血液量的逐步减少。
方法：使25个清醒的，自主呼吸的，健康男性志愿者经历中央的血液量逐步减少，通过感受逐步下体负压（LBNP）每5分钟增加20毫米汞柱，从0至-20，-40，-60，恢复到0毫米汞柱。在整个过程中，每搏输出量（SV），心脏心率（HR），平均动脉血压被体积描记法记录下来。通过脉搏血氧饱和度评估PPI。此外，还测量了前臂的指尖皮肤温度梯度式改变。数据以平均值±SE表示。
PPI经历了数转换，以中位数呈现出来（25th – 75th）。
结果：25例研究，有一例因为心血管功能衰竭而没能够完成。 LBNP后的第一个步骤（-20毫米汞柱），PPI 从2.2（1.6-3.3）下降至1.2（0.8-1.6）（P = 0.007），SV 从116±3.0毫下降至104±2.6毫升（P = 0.02 ）。观察SV（9％±1.3％）和HR（3％±1.9％），PPI下降的幅度（41％±6.0％）差异有统计学意义。在LBNP期间，随着增加施加的负压，SV下降且HR上升，然而PPI始终保持低平，当LBNP被释放时返回基线水平。在-60毫米汞柱LBNP，SV下降和HR增加分别为36％±0.9％和33％±2.4％。平均动脉压在整个实验过程中保持在相同的范围内。
结论：这些结果表明，在健康志愿者中，脉搏血氧饱和度衍生的PPI可能成为一个有价值的辅助诊断工具来检测早期临床的中心血容量不足，在发展成为心血管功能失代偿之前。
(胡晓清译 薛张纲校)
BACKGROUND: In healthy volunteers, we investigated the ability of the pulse oximeter-derived peripheral perfusion index (PPI) to detect progressive reductions in central blood volume.
METHODS: Twenty-five awake, spontaneously breathing, healthy male volunteers were subjected to progressive reductions in central blood volume by inducing stepwise lower body negative pressure (LBNP) with 20 mm Hg for 5 minutes per step, from 0 to -20, -40, -60, and back to 0 mm Hg. Throughout the procedure, stroke volume (SV), heart rate (HR), and mean arterial blood pressure were recorded using volume-clamp finger plethysmography. Assessment of the PPI was done by pulse oximetry. Additionally, the forearm-to-fingertip skin-temperature gradient was measured. Data are presented as mean ± SE. PPI underwent log transformation and is presented as median (25th-75th).
RESULTS: Of the 25 subjects, one did not complete the study because of cardiovascular collapse. After the first LBNP step (-20 mm Hg), PPI decreased from 2.2 (1.6-3.3) to 1.2 (0.8-1.6) (P = 0.007) and SV decreased from 116 ± 3.0 mL to 104 ± 2.6 mL (P = 0.02). The magnitude of the PPI decrease (41% ± 6.0%) was statistically different from that observed for SV (9% ± 1.3%) and HR (3% ± 1.9%). During progression of LBNP, SV decreased and HR increased progressively with the increased applied negative pressure, whereas the PPI remained low throughout the remainder of the protocol and returned to baseline values when LBNP was released. At -60 mm Hg LBNP, SV decreased and HR increased by 36% ± 0.9 % and 33% ± 2.4% from baseline, respectively. Mean arterial blood pressure remained in the same range throughout the experiment.
CONCLUSIONS: These results indicate that the pulse oximeter-derived PPI may be a valuable adjunct diagnostic tool to detect early clinically significant central hypovolemia, before the onset of cardiovascular decompensation in healthy volunteers.

OPRM1和COMT基因型在静脉注射芬太尼分娩镇痛中的作用

The Effect of OPRM1 and COMT Genotypes ontheAnalgesic Response to Intravenous FentanylLabor Analgesia

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背景:静脉注射芬太尼被用于分娩镇痛;
但是，很少有研究报道静脉注射芬太尼对早期分娩镇痛中的作用。在此我们通过在需要分娩镇痛的女性中静脉注射芬太尼对单核苷酸多态性μ-阿片受体基因（OPRM1）rs1799971 (c.118A/G, p. 40Asn/Asp)和儿茶酚-O-甲基转移酶基因(COMT)rs4680 (c.472G/A, p.158Val/Met) 的综合作用的比较评估了静脉注射芬太尼的镇痛效果。
方法：分娩镇痛在静脉注射1.5 μg/kg芬太尼后起效。注射一定剂量芬太尼15分钟后疼痛量表评分≤10/100定义为静脉镇痛成功。对于 OPRM1 和 COMT基因型的镇痛作用及副作用进行了比较。
结果：160位女性接受静脉注射芬太尼进行分娩镇痛测试。Asn/Asn-Met/Met混合基因型女性镇痛成功率为6% (n = 17)，其余非Asn/Asn-Met/Met混合基因型镇痛成功率为20% (not Asn/Asn-Met/Met; P = 0.30; difference = 14%; 95% confidence interval [CI], -10% to 26%)。118A/A (Asn/Asn)基因型女性静脉镇痛成功率为21%，与之比较的A/G and G/G of OPRM1基因 型镇痛成功率为10% (P = 0.82; difference = 2%; 95% CI, -17% to 19%)；472A (Met/Met)型女性静脉镇痛成功率为10%，与之比较A/G (Met/Val) and G/G (Val/Val) of COMT型静脉镇痛成功率为22% (P = 0.24; difference = 12%; 95% CI, -6% to 26%)。Met/Met158 基因型女性(n = 31)与 Met/Val or Val/Val of COMT基因型比较疼痛量表评分仅有轻度下降(24 ± 18 vs 37 ± 23; P = 0.005; mean difference = -13; 99% CI, -25 to -1)。
结论：本研究在 OPRM1和 COMT 基因型对静脉注射芬太尼在分娩镇痛中的影响上还不能得出确切结论。进一步开展更大规模的研究是必要的，以评估单独 COMT基因分型及COMT结合 OPRM1基因型在临床中是否有潜在的临床意义，如在分娩早期没有进行静脉注射芬太尼的女性中谁最有可能从中受益等。
(李丽红译 薛张纲校)

BACKGROUND:IV fentanyl is used as a labor analgesic; however, few studies have reported the effects of IV fentanyl for earlylabor analgesia. We evaluated the analgesic response to IV fentanyl according to the combined effect of the single-nucleotide polymorphisms rs1799971 (c.118A/G, p. 40Asn/Asp) of the μ-opioid receptor gene (OPRM1) and rs4680 (c.472G/A, p.158Val/Met) of the catechol-O-methyltransferase (COMT) gene in women requesting labor analgesia.

METHODS: Labor analgesia was initiated with IV fentanyl 1.5 μg/kg. The primary outcome was analgesic success, defined as Numerical Verbal Pain Scale score ≤ 10/100 15 minutes after the dose of fentanyl. Analgesic and side effect outcomes were compared according to OPRM1 and COMT genotypes.
RESULTS: One hundred six women were enrolled and received IV fentanyl. IV analgesic success was 6% in women with the combination Asn/Asn-Met/Met (n = 17) versus 20% in all other women combined (not Asn/Asn-Met/Met; P = 0.30; difference = 14%; 95% confidence interval [CI], -10% to 26%). IV analgesic success was 20% in women 118A/A (Asn/Asn) versus 21% for A/G and G/G of OPRM1 (P = 0.82; difference = 2%; 95% CI, -17% to 19%), and 10% in women 472A (Met/Met) versus 22% for A/G (Met/Val) and G/G (Val/Val) of COMT (P = 0.24; difference = 12%; 95% CI, -6% to 26%). Met/Met158 (n = 31) versus Met/Val or Val/Val of COMT was associated with a smaller decrease in Numerical Verbal Pain Scale (24 ± 18 vs 37 ± 23; P = 0.005; mean difference = -13; 99% CI, -25 to -1).
CONCLUSION: This study was underpowered to draw firm conclusions on the influence of OPRM1 and COMT genotypes onlabor analgesia with IV fentanyl. Further larger studies are needed to evaluate whether genotyping COMT alone or in combination with OPRM1 may have potentially useful clinical implications, such as not offering IV fentanyl in early labor to women who will most likely not benefit from it.

简报：脂肪乳剂在美国产科机构的应用

Brief report: availability of lipid emulsion in United States obstetric units.

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背景：脂肪乳剂被推荐用于局麻药全身中毒指南。这项研究中，我们试图确定脂肪乳剂在美国产科机构当前水平。
方法：一项调查用于开发解决脂肪乳剂的可用性并于2011年6月发送给美国麻醉主管。采用一元统计学
结果：反应率为69%。88%的机构可以获得脂肪乳剂（95%可靠区间，73%~94%）。至少95%的调查对象在<30分钟的时间里获得脂肪乳剂（100% of n = 68）。
结论：美国产科和麻醉机构都具备管理全身性局麻药中毒的脂肪乳剂。
（孙莉萍译 薛张纲校）
BACKGROUND: Lipid emulsion is recommended in the guidelines for the management of local anesthetic systemic toxicity. In this study, we sought to identify the current level of lipid emulsion availability in U.S. obstetric units.
METHODS: A survey was developed addressing lipid emulsion availability and sent to U.S. obstetric anesthesia directors in June 2011. Univariate statistics were used.

RESULTS: The response rate was 69%. Lipid emulsion was available in 88% of the units (95% confidence interval, 73%-94%). At least 95% of respondents had lipid emulsion available in <30 minutes (100% of n = 68).
CONCLUSIONS: U.S. academic obstetric anesthesia units are equipped to administer lipid emulsion in the setting of local anesthetic systemic toxicity.

心脏手术后认知功能恢复预测指标

Predictors of Cognitive Recovery After Cardiac Surgery.
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背景：术后神经认知功能降低经常发生。尽管认知损害的预测指标已得到了很好的研究，但调节恢复的因素研究尚不完全。我们试图确定心脏手术后认知恢复的预测指标。
方法：将心脏手术6周后有认知能力下降的281例患者纳入认知研究，进行回顾性研究。符合条件的患者分别在开始、术后6周和术后1年完成了一连串的神经认知功能的检测，以及生活质量的评估。通过因素分析进行认知指数（CI）计算，一个统一的认知功能的连续测定。认知恢复被定义为1年CI大于基础CI。认知功能恢复的潜在预测指标，包括病人的特点、生活质量的因素、合并症、药物治疗以及术中变化。这些通过多因素回归模型进行评估；P＜0.05被认为是具有显着差异。
结果：在我们最后收集的229例中，103（45%）在最初6周CI下降后表现出认知功能的恢复。多因素分析揭示教育程度高（比值比[OR] 1.332 [1.131-1.569], P < 0.001), 基础CI (OR 0.987 [0.976-0.998], P = 0.02) ，6周时CI下降少(OR 1.044 [1.014-1.075], P = 0.004)，6周日常活动度高(OR 0.891 [0.810-0.981], P = 0.02)，这些都是认知恢复的重要预测指标。
结论：约一半心脏外科手术的患者经历早期的认知功能下降后认知功能会得以恢复。6周时认知功能的恢复和日常生活活动评分工具之间的关系值得进一步研究，这是唯一可能修改的认知恢复的预测指标。
（郁玲玲译 薛张纲校）
BACKGROUND: Postoperative neurocognitive decline occurs frequently. Although predictors of cognitive injury have been well examined, factors that modulate recovery have not. We sought to determine the predictors of cognitive recovery after initial injury following cardiac surgery.
METHODS: Two hundred eighty-one patients previously enrolled in cognitive studies who experienced cognitive decline 6 weeks after cardiac surgery were retrospectively evaluated. Eligible patients completed a battery of neurocognitive measures and quality-of-life assessments at baseline, 6 weeks, and 1 year after surgery. Factor analysis was conducted to calculate the cognitive index (CI), a unified, continuous measure of cognitive function.Cognitive recovery was defined as 1-year CI greater than baseline CI. Potential predictors of cognitive recovery including patient characteristics, quality-of-life factors,

comorbidities, medications, and intraoperative variables were assessed with multivariable regression modeling; P < 0.05 was considered significant.
RESULTS: Of the 229 patients in our final data set, 103 (45%) demonstrated cognitive recovery after initial decline in CI at 6 weeks. Multivariable analyses revealed that more education (odds ratio [OR] 1.332 [1.131-1.569], P < 0.001), baseline CI (OR 0.987 [0.976-0.998], P = 0.02), less decline in CI at 6 weeks (OR 1.044 [1.014-1.075], P = 0.004), and greater activities of daily living at 6 weeks (OR 0.891 [0.810-0.981], P = 0.02) were significant predictors of cognitive recovery.
CONCLUSION: Cognitive recovery occurred in approximately one half of the cardiac surgical patients experiencing early decline. The association between cognitive recovery and Instrumental Activities of Daily Living scores at 6 weeks merits further investigation as it is the only potentially modifiable predictor of recovery.

依那西普预防腹股沟疝修补术后疼痛：一项多中心、随机、对照研究

A Multicenter, Randomized, Controlled Study Evaluating Preventive Etanercept on Postoperative Pain After Inguinal Hernia Repair

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背景：慢性术后疼痛（CPSP）依据手术的不同，影响着5%至70%的手术病人。目前CPSP还没有可靠的治疗方法，因此更加强调预防。在这项研究中，我们试图确定，预防性应用依那西普是否可以减少术后疼痛程度和减少CPSP的发病率。
方法：我们在77名病人中进行了一项多中心、随机研究，在腹股沟疝手术前90分钟皮下注射依那西普50毫克和生理盐水。患者、外科医生、麻醉医生、注射医师、护理人员和评估者对用药情况均不知情。主要转归指标是24小时的数值评定疼痛评分量表。次要结果是术后监护室的疼痛评分、24小时阿片类药物的需求、第一次镇痛的时间以及1个月、3个月、6个月和12个月的疼痛评分记录。
结果：依那西普组平均24小时疼痛评分为3.3（95%自信区间[CI]，3.2-4.6），对照组为3.9（95%CI，2.6-4.0）（P = 0.22）。在治疗组中第一个24小时内使用镇痛药的平均次数为4.0（SD2.8），对照组为5.8（SD4.2）（P = 0.03）。1个月时，治疗组中10例（29%）仍有疼痛，而对照组有21例（49%）（P = 0.08）。 1个月时的疼痛比3个月时疼痛明显（危险比为0.74，99%CI，0.52-0.97，P= 0.03）。

结论：虽然在某些方面预防性应用依那西普与盐水相比，可减轻术后疼痛，但其影响小、短暂并且没有统计学上的显着差异。将来可在一个更大的试验人群中探索不同剂量的给药方案。
（周玲译 薛张纲校）

BACKGROUND: Chronic postsurgical pain (CPSP) affects between 5% and 70% of surgical patients, depending on the surgery. There is no reliable treatment for CPSP, which has led to an increased emphasis on prevention. In this study, we sought to determine whether preventive etanercept can decrease the magnitude of postoperative pain and reduce the incidence of CPSP.
METHODS: We performed a multicenter, randomized study in 77 patients comparing subcutaneous etanercept 50 mg administered 90 minutes before inguinal hernia surgery with saline. Patients, surgeons, anesthesiologists, the injecting physician, nursing staff, and evaluators were blinded. The primary outcome measure was a 24-hour numerical rating scale pain score. Secondary outcome measures were postanesthesia care unit pain scores, 24-hour opioid requirements, time to first analgesic, and pain scores recorded at 1 month, 3 months, 6 months, and 12 months.
RESULTS: Mean 24-hour pain scores were 3.3 (95% confidence interval [CI], 3.2-4.6) in the etanercept and 3.9 (95% CI, 2.6-4.0) in the control group (P = 0.22). The mean number of analgesic pills used in the first 24 hours was 4.0 (SD, 2.8) in the treatment versus 5.8 (SD, 4.2) in the control group (P = 0.03). At 1 month, 10 patients (29%) in the treatment group reported pain versus 21 (49%) control patients (P = 0.08). The presence of pain at 1 month was significantly associated with pain at 3 months (hazard ratio, 0.74; 99% CI, 0.52-0.97; P = 0.03).
CONCLUSION: Although preventive etanercept was superior to saline in reducing postoperative pain on some measures, the effect sizes were small, transient, and not statistically significant. Different dosing regimens in a larger population should be explored in future studies.

锻炼诱导热休克蛋白72的过量表达并延迟糖尿病神经病理性疼痛大鼠痛超敏的发展。

Physical exercise induces excess hsp72 expression and delays the development of hyperalgesia and allodynia in painful diabetic neuropathy rats.

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背景：锻炼与糖尿病相关性神经病理性疼痛发展的关系目前尚未明确，我们假定锻炼能调节链脲佐菌素（STZ）导致的糖尿病大鼠的功能恢复以及热休克蛋白72（Hsp72）、肿瘤坏死因子（TNF）-α和白介素（IL）-6的表达。
方法：雄性Wistar大鼠分4组：正常久坐不动大鼠，正常锻炼大鼠， STZ-糖尿病（SS）久坐不动大鼠，和STZ-糖尿病锻炼大鼠。注射STZ（65 mg/kg IV）诱导糖尿病的产生。训练大鼠每日于跑步机上锻炼30-60分钟-天，训练强度为20-

25米/分钟。观察热退缩潜伏期和机械痛阈值以及脊髓和外周神经Hsp72、TNF-α、和IL-6的表达。
结果：注射STZ两周后，久坐不动的大鼠对测痛仪和热刺激表现出显著和持续的高敏性。与之成对比的，是锻炼状态下的糖尿病大鼠延迟了对测痛仪和热刺激的高敏性。尽管与对照组相比其恢复水平尚不如前者，但锻炼显著抑制了糖尿病导致的血糖水平以及体重的增长。与正常久坐不动大鼠相比，SS大鼠脊髓和外周神经有更显著的TNF-α 和IL-6的释放。在STZ使用后14天，锻炼的STZ糖尿病大鼠与SS组大鼠相比，脊髓和外周神经有显著的Hsp72的表达，而TNF-α 和IL-6水平的表达基本相似。
结论：实验结果表明持续锻炼能显著降低糖尿病相关性神经病理性疼痛，包括温度觉超敏和机械性异常疼痛。在大鼠，该保护性效果与STZ诱导的糖尿病脊髓和外周神经Hsp72表达的增加有关，但与TNF-α 和IL-6的表达无关。
（杨琰译 薛张纲校）
BACKGROUND: The underlying mechanism of exercise on the development of diabetes-associated neuropathic pain is not well understood. We investigated in rats whether exercise regulates the functional recovery and heat shock protein 72 (Hsp72), tumor necrosis factor (TNF)-α, and interleukin (IL)-6 expression in streptozotocin (STZ)-induced diabetes.
METHODS: Male Wistar rats were divided into 4 groups: normal sedentary rats, normal rats with exercise, sedentary STZ-diabetic (SS) rats, and STZ-diabetic rats with exercise. Diabetes was induced with STZ (65 mg/kg IV). The trained rats ran daily on a treadmill 30 to 60 min/d with an intensity of 20 to 25 m/min. We monitored thermal withdrawal latency and mechanical withdrawal threshold as well as Hsp72, TNF-α, and IL-6 expression in the spinal cord and peripheral nerves.
RESULTS: Two weeks after STZ injection, sedentary rats exhibited a marked and sustained hypersensitivity to von Frey tactile and heat stimuli. In contrast, diabetic rats undergoing exercise demonstrated delayed progress of tactile and thermal hypersensitivity. Exercise significantly suppressed diabetes-induced blood glucose levels and body weight loss, although they were not restored to control levels. Compared with normal sedentary rats, SS rats displayed significantly higher TNF-α and IL-6 levels in the spinal cord and peripheral nerves. The STZ-diabetic rats with exercise group showed greater Hsp72 expression and similar TNF-α or IL-6 level compared with the SS group in the spinal cord and peripheral nerves on day 14 after STZ treatment.
CONCLUSIONS: These results suggest that progressive exercise training markedly decreases diabetes-associated neuropathic pain, including thermal hyperalgesia and mechanical allodynia. In rats, this protective effect is related to the increase of Hsp72, but not TNF-α and IL-6, expression in the spinal cord and peripheral nerves of STZ-induced diabetes.