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核心综述：医师操作的超声检查：急性监护医学上常规使用的时代已经到来

Core Review: Physician-Performed Ultrasound: The Time Has Come for Routine Use in Acute Care Medicine

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超声在麻醉学、重症监护、急诊医学、外科等急诊监护专业上的运用已从独立的、以专科场所为实施地点的超声心动图检查发展为实时或者床边的临床评估和干预。“定向”经胸超声心动图限于（比如跟综合测试相比）超声心动图检查，由急性重症监护的专科医师进行操作，目的是解决具体的临床问题。将来，体表超声将作为超声辅助检查和超声引导操作而纳入日常临床实践中。这种发展会从医学专业类学生开始，并会在整个专科培训中加强。让每个医师掌握超声技术的关键是进行以通俗易懂，而非过于专业、令人望而生畏为设计目的课程教育。有证据表明超声辅助检查可提高诊断水平，但由此是否能管理和改善患者预后相关的数据有限，而后者是未来研究的重点领域。

（孙荔莉译 陈杰校）

The use of ultrasound in the acute care specialties of anesthesiology, intensive care, emergency medicine, and surgery has evolved from discrete, office-based echocardiographic examinations to the real-time or point-of-care clinical assessment and interventions. “Goal-focused” transthoracic echocardiography is a limited scope (as compared with comprehensive examination) echocardiographic examination, performed by the treating clinician in acute care medical practice, and is aimed at addressing specific clinical concerns. In the future, the practice of surface ultrasound will be integrated into the everyday clinical practice as *ultrasound-assisted examination* and *ultrasound-guided procedures*. This evolution should start at the medical student level and be reinforced throughout specialist training. The key to making ultrasound available to every physician is through education programs designed to facilitate uptake, rather than to prevent access to this technology and education by specialist craft groups. There is evidence that diagnosis is improved with ultrasound examination, yet data showing change in management and improvement in patient outcome are few and an important area for future research.

特稿：关于阻塞性睡眠呼吸暂停（OSA）成年患者门诊手术术前选择的门诊手术麻醉协会共识

Special Article: Society for Ambulatory Anesthesia Consensus Statement on Preoperative Selection of Adult Patients with Obstructive Sleep Apnea Scheduled for Ambulatory Surgery

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由于顾及日益增长的围术期并发症，包括出院后死亡，阻塞性睡眠呼吸暂停（OSA）患者是否适合日间手术存在争议。因此，门诊麻醉协会的实践指南工作组对择期行门诊手术的OSA患者的选择提出一份共识。根据系统综述和荟萃分析优先报告的条目（PRISMA）指南，对相关文献进行系统综述。尽管评估接受日间手术的OSA病人围手术期预后的研究数量稀少，质量有限，但它们提供了有用的信息便于指导临床实践。明确OSA诊断及合并症控制良好的患者，如术后可进行连续气道正压通气，则考虑接受日间手术。另外，经STOP-

Bang问卷等检查方法诊断的疑似OSA患者，如术前合并症控制良好且非阿片类药物主导治疗能缓解术后疼痛，也可考虑接受日间手术。反之，合并症未经控制的OSA患者不宜接受日间手术。相关领域有何其他指南？美国麻醉师协会（ASA）关于OSA患者的外科手术管理的实践指导于2006年出版。此项指南目的何在？许多近期研究提供的新信息，如OSA病人临床诊断的有效筛查工具，及日间OSA腹腔镜减肥手术的安全性，反映了ASA指南的过时。因此，对日间手术的OSA病人选择进行更新是必要的。此项指南有何独到之处？不同于ASA指南，这项共识建议使用STOP-

Bang标准来进行OSA术前筛查OSA，并将合并症情况纳入患者选择程序。另外，近期文献也不支持ASA推荐的上腹部手术不适合做日间手术。为何此项指南脱颖而出？此项共识不同于ASA指导方针是因为有新证据的支持。

（詹凯诞 译 陈杰 校）

The suitability of ambulatory surgery for a patient with obstructive sleep apnea (OSA) remains controversial because of concerns of increased perioperative complications including postdischarge death. Therefore, a Society for Ambulatory Anesthesia task force on practice guidelines developed a consensus statement for the selection of patients with OSA scheduled for ambulatory surgery. A systematic review of the literature was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. Although the studies evaluating perioperative outcome in OSA patients undergoing ambulatory surgery are sparse and of limited quality, they do provide useful information that can guide clinical practice. Patients with a known diagnosis of OSA and optimized comorbid medical conditions can be considered for ambulatory surgery, if they are able to use a continuous positive airway pressure device in the postoperative period. Patients with a presumed diagnosis of OSA, based on screening tools such as the STOP-Bang questionnaire, and with optimized comorbid conditions, can be considered for ambulatory surgery, if postoperative pain can be managed predominantly

with nonopioid analgesic techniques. On the other hand, OSA patients with nonoptimized comorbid medical conditions may not be good candidates for ambulatory surgery. What other guidelines are available on this topic? The American Society of Anesthesiologists (ASA) practice guidelines for management of surgical patients with OSA published in 2006. Why was this guideline developed? The ASA guidelines are outdated because several recent studies provide new information such as validated screening tools for clinical diagnosis of OSA and safety of ambulatory laparoscopic bariatric surgery in OSA patients. Therefore, an update on the selection of patients with OSA undergoing ambulatory surgery is warranted. How does this guideline differ from existing guidelines? Unlike the ASA guidelines, this consensus statement recommends the use of the STOP–Bang criteria for preoperative OSA screening and considers patients' comorbid conditions in the patient selection process. Also, current literature does not support the ASA recommendations that upper abdominal procedures are not appropriate for ambulatory surgery. Why does this guideline differ from existing guidelines? This consensus statement differs from existing ASA guidelines because of the availability of new evidence.

图形化用户界面简化了输液泵程序设定并增强了泵相关错误的识别

Graphical User Interface Simplifies Infusion Pump Programming and Enhances the Ability to Detect Pump-Related Faults

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背景：给药错误经常发生并往往与IV注射泵的错误使用有关。发生这些错误的可能来源之一是注射泵的用户界面。

方法：本研究使用失效模式与效果分析（MFEA）来分析程序设定错误并指导设计一个新的注射泵的用户界面。本研究设计了新的用户界面以清楚地在多个显示器上同时显示泵的操作状态。并评估住院麻醉师在实验室和模拟环境中分别在新用户界面与市场上可用的注射泵的用户界面下程序设定准确性和错误察觉情况。

结果：使用新用户界面，程序设定错误数量减少了81%，单个任务输入键数从 9.2 ± 5.0 减少到了 7.5 ± 5.5 （平均±标准差），单个任务需要的时间从 18.1 ± 14.1 秒减少到 10.9 ± 9.5 秒并显著减少了自觉工作量。尽管没有使用新用户界面的经验且对已有界面并非熟悉，住院麻醉师们仍然在新用户界面下发现了70件错误中的38件（54%），而在现有界面下只发现了70件错误中的37件（53%）。

结论：由于使用新用户界面对注射泵程序设定时减少了用时和输入键数，程序设定错误数量及工作量部分减少。尽管只接受了基本培训，住院麻醉医师们仍然在新用户界面下很快发现了先前存在的注射泵设定错误。直观并且易于编程的注射泵界面可以减少用药错误和注射泵相关的不良事件。

（孙晓琼 译 陈杰 校）

BACKGROUND: Drug administration errors are frequent and are often associated with the misuse of IV infusion pumps. One source of these errors may be the infusion pump's user interface.

METHODS: We used failure modes-and-effects analyses to identify programming errors and to guide the design of a new syringe pump user interface. We designed the new user interface to clearly show the pump's operating state simultaneously in more than 1 monitoring location. We evaluated anesthesia residents in laboratory and simulated environments on programming accuracy and error detection between the new user interface and the user interface of a commercially available infusion pump.

RESULTS: With the new user interface, we observed the number of programming errors reduced by 81%, the number of keystrokes per task reduced from 9.2 ± 5.0 to 7.5 ± 5.5 (mean \pm SD), the time required per task reduced from 18.1 ± 14.1 seconds to 10.9 ± 9.5 seconds and significantly less perceived workload. Residents detected 38 of 70 (54%) of the events with the new user interface and 37 of 70 (53%) with the existing user interface, despite no experience with the new user interface and extensive experience with the existing interface.

CONCLUSIONS: The number of programming errors and workload were reduced partly because it took less time and fewer keystrokes to program the pump when using the new user interface. Despite minimal training, residents quickly identified preexisting infusion pump problems with the new user interface. Intuitive and easy-to-program infusion pump interfaces may reduce drug administration errors and infusion pump-related adverse events.

健康医护工作者手部来源的静脉内细菌注射的预防：导管设计和操作的重要性

Prevention of Intravenous Bacterial Injection from Health Care Provider Hands: The Importance of Catheter Design and Handling

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Abstract

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背景：在多种卫生医疗环境中，设备相关的血行感染与患者的发病及死亡率的显著升高有关。近期，术中传统的开放性管道三通装置来源的细菌污染已被证实与病人死亡率升高有关。与传统开放性管腔设备相比，术中使用灭菌无针闭合导管装置(DNCCs)通过固有屏障减少细菌进入，并联合活瓣装置和/或表面灭菌技术，减少了细菌感染风险。然而在临床环境中，DNCC活瓣设计（固有屏障性能）相关的益处与表面消毒来抑制细菌感染相比，仍然未经测试且完全未知。本研究的主要目的是调查与传统的开放性静脉管腔通道设备相比，新型的灭菌三通Ultraport zero复合灭菌或未灭菌对抑制术中注射潜在的细菌病原体的相关效率进行比较。次要目的是为了确定细菌性注射的危险因素和评估导管操作时注射的细菌数量。

方法：468例手术室环境通过计算机随机生成3组设备-注射设计表格：(1) Ultraport zero螺旋塞在注射前灭菌，(2) Ultraport zero螺旋塞在注射前不进行灭菌，(3)根据平常的操作使用灭菌盖封闭的传统开放性管腔螺旋塞。在全麻诱导后，术中主要麻醉实施者被要求通过被安排的注射装置进行5次灭菌生理盐水注射，最终进入一个体外导管系统。主要结果是注射液细菌污染发生率。注射液污染的危险因素通过单变量分析来确定，并且通过一个受控的实验室试验来产生被污染的流出液样本细菌估计值。

结果：在注射前灭菌的Ultraport zero螺旋塞组流出液细菌污染率为0% (0/152)，注射前未灭菌的Ultraport zero螺旋塞组的流出液细菌污染率为4% (7/162)，传统开放性管腔螺旋塞组的流出液细菌污染率为3.2% (5/154)。与传统开放性管腔螺旋塞相比，注射前灭菌的Ultraport zero螺旋塞与细菌性注射危险的减少有显著相关性($RR = 8.15 \times 10^{-8}$, 95% CI, 3.39×10^{-8} to 1.96×10^{-7} , $P < 0.001$)，绝对危险度减少3.2% (95% CI, 0.5% to 7.4%)。麻醉时手套的使用也是流出液感染的危险因素($RR = 10.48$, 95% CI, 3.16 to 34.80, $P < 0.001$)。每一系列注射的细菌估计量达到了显著的临床阈值50,000菌落单位。

结论：与传统开放性管腔螺旋塞相比，注射前灭菌的Ultraport zero螺旋塞与无意的细菌性注射危险减少有显著相关。未来的研究应考察如何促进卫生人员行DNCC旋塞灭菌和设备操作的策略。

(瞿亦枫 译 陈杰 校)

BACKGROUND: Device-related bloodstream infections are associated with a significant increase in patient morbidity and mortality in multiple health care settings. Recently, intraoperative bacterial contamination of conventional open-lumen 3-way stopcock sets has been shown to be associated with increased patient mortality. Intraoperative use of disinfectable, needleless closed catheter devices (DNCCs) may reduce the risk of bacterial injection as compared to conventional open-lumen devices due to an intrinsic barrier to bacterial entry associated with valve design and/or the capacity for surface disinfection. However, the relative benefit of DNCC valve design (intrinsic barrier capacity) as compared to surface disinfection in attenuation of bacterial injection in the clinical environment is untested and entirely unknown. The primary aim of the current study was to investigate the relative efficacy of a novel disinfectable stopcock, the Ultraport zero, with and without disinfection in attenuating intraoperative injection of potential bacterial pathogens as compared to a conventional open-lumen stopcock intravascular device. The secondary aims were to identify risk factors for bacterial injection and to estimate the quantity of bacterial organisms injected during catheter handling.

METHODS: Four hundred sixty-eight operating room environments were randomized by a computer generated list to 1 of 3 device-injection schemes: (1) injection of the Ultraport zero stopcock with hub disinfection before injection, (2) injection of the Ultraport zero stopcock without prior hub disinfection, and (3) injection of the conventional open-lumen stopcock closed with sterile caps according to usual practice. After induction of general anesthesia, the primary anesthesia provider caring for patients in each operating room environment was asked to perform a series of 5 injections of sterile saline through the assigned device into an ex vivo catheter system. The primary outcome was the incidence of bacterial contamination of the injected fluid column (effluent). Risk factors for effluent contamination were identified in univariate analysis,

and a controlled laboratory experiment was used to generate an estimate of the bacterial load injected for contaminated effluent samples.

RESULTS: The incidence of effluent bacterial contamination was 0% (0/152) for the Ultraport zero stopcock with hub disinfection before injection, 4% (7/162) for the Ultraport zero stopcock without hub disinfection before injection, and 3.2% (5/154) for the conventional open-lumen stopcock. The Ultraport zero stopcock with hub disinfection before injection was associated with a significant reduction in the risk of bacterial injection as compared to the conventional open-lumen stopcock (RR = 8.15×10^{-8} , 95% CI, 3.39×10^{-8} to 1.96×10^{-7} , $P = <0.001$), with an absolute risk reduction of 3.2% (95% CI, 0.5% to 7.4%). Provider glove use was a risk factor for effluent contamination (RR = 10.48, 95% CI, 3.16 to 34.80, $P < 0.001$). The estimated quantity of bacteria injected reached a clinically significant threshold of 50,000 colony-forming units per each injection series.

CONCLUSIONS: The Ultraport zero stopcock with hub disinfection before injection was associated with a significant reduction in the risk of inadvertent bacterial injection as compared to the conventional open-lumen stopcock. Future studies should examine strategies designed to facilitate health care provider DNCC hub disinfection and proper device handling.

儿童镇静和麻醉中的没被临床试验认可药物的应用

Off-Label Use of Medications in Children Undergoing Sedation and Anesthesia

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背景: 很多儿童麻醉和镇痛的药物没被临床试验认可。本研究审核了小儿麻醉中的常用药,判定这些药物中哪些是被美国食品药品监督管理局(FDA)标示为小儿科使用,哪些是年龄限制使用,哪些是未被临床试验认可而用于儿科的。

方法: 本研究检查手术室药房中用于儿童病人麻醉的药物。通过Thomson Micromedex®临床循证医学数据库检测FDA的批准和指示的药物。对未经FDA批准使用的药物用数据库进一步检测其是否具有强有效证据并且强烈推荐用于儿童。在2010年1月1日到2011年8月31日期间,本研究调查了没被临床试验认可药物在小于18岁的年轻病人中的使用率。

结果: 共检测106种药物,其中36种(34%)未被FDA标示为可用于任何小儿的年龄组,40种(38%)被FDA标示可用于所有小儿的年龄组,其余30种(28%)被FDA标示仅可用于特别的年龄组。没被临床试验认可药物使用率占73.4%。在这些未被标记为可用于任何小儿的药物中,大部分是常用于小儿麻醉,包括新斯的明,氢吗啡酮和多巴胺。

结论: 许多已用于小儿麻醉的药物是缺少FDA标记的。标示外药物被使用是因为其优于它们的替代物。为了这些易感人群,有必要继续研究这些标示外使用药物的安全性和有效性。

(王苑 译 陈杰 校)

BACKGROUND: Many drugs used for anesthesia and analgesia in children are administered “off-label.” We undertook an audit of drugs commonly used for pediatric anesthesia to determine which drugs have United States Food and Drug Administration (FDA) labeling for pediatric use, which drugs are age-restricted, and which have no labeling for pediatric use.

METHODS: We identified drugs administered during anesthesia to pediatric patients from the operating room pharmacy. FDA approval and indications were determined by using the Thomson Micromedex® online database. Drugs without FDA approval for pediatric use were further examined for strength of evidence and strength of recommendation for their listed indications in the database. We then examined the rate of off-label drug administration to patients younger than the age of 18 years between July 1, 2010, and August 31, 2011.

RESULTS: One hundred six drugs were identified. Thirty-six (34%) were not FDA-labeled for use in any pediatric age group, 40 (38%) were FDA-labeled for use in all pediatric age groups, and 30 (28%) were FDA-labeled for use in only specific age groups. Drugs were administered off-label in 73.4% of cases. Of those not labeled for any pediatric age group, some were among the most commonly used drugs in pediatric anesthesia, including neostigmine, hydromorphone, and dopamine.

CONCLUSIONS: Many drugs used for children during anesthesia continue to lack FDA labeling for pediatric use. Off-label use of these drugs is an accepted practice that is considered superior to the alternative of withholding needed medications. Studies are still needed to determine the safety and efficacy of drugs that lack FDA labeling for this vulnerable patient population.

动画可缓解儿童麻醉诱导期焦虑

Cartoon Distraction Alleviates Anxiety in Children During Induction of Anesthesia

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背景：本研究通过让3~7岁的小儿在手术室麻醉诱导前看一部动画片和玩喜爱的玩具，来观察这种做法是否能有效缓解术前焦虑。

方法：本实验入选130名3~7岁ASA1~2级的小儿。随机分为3组：第1组（对照组），第2组（玩具组），第3组（动画组）。第2组的儿童被要求带着他们最喜欢的玩具并玩耍直到麻醉诱导前。第3组的儿童在麻醉诱导前可观看他们选的动画片。在术前晚上，在麻醉准备室，以及麻醉诱导前通过改良的耶鲁术前焦虑量表（mYPAS）和由父母记录的焦虑视觉评分量表对孩子们的术前焦虑程度进行评分。

结果：在麻醉准备室内，第2组的mYPAS和父母记录的焦虑视觉评分都明显比1组和2组的低（mYPAS: $P = 0.007$; 父母记录的焦虑视觉评分: $P = 0.02$ ）。在手术室内，第3组的这两个评分在三组中是最低的。第3组分别有3个和5个小儿，在手术室内的这两个焦虑评分要高于麻醉前准备室的。但是第1组中分别有32个和34个的儿童数；第2组中分别有25个和32个的儿童两项焦虑评分是高于的($P < 0.001$)，第1组，第2组和第3组在手术室内不焦虑(mYPAS评分 < 30)的儿童人数分别为3人(7%)，9人(23%)，and 18人(43%) ($P < 0.001$)。

结论：在小儿术前允许其观看动画片可以有效地改善其术前焦虑状态。本研究认为这项措施对于改善小儿术前焦虑是一项低成本，易操作的综合性方法。

(马霄雯 译 陈杰 校)

BACKGROUND: We performed this study to determine the beneficial effects of viewing an animated cartoon and playing with a favorite toy on preoperative anxiety in children aged 3 to 7 years in the operating room before anesthesia induction.

METHODS: One hundred thirty children aged 3 to 7 years with ASA physical status I or II were enrolled. Subjects were randomly assigned to 1 of 3 groups: group 1 (control), group 2 (toy), and group 3 (animated cartoon). The children in group 2 were asked to bring their favorite toy and were allowed to play with it until anesthesia induction. The children in group 3 watched their selected animated cartoon until anesthesia induction. Children's preoperative anxiety was determined by the modified Yale Preoperative Anxiety Scale (mYPAS) and parent-recorded anxiety Visual Analog Scale (VAS) the night before surgery, in the preanesthetic holding room, and just before anesthesia induction.

RESULTS: In the preanesthetic holding room, the group 2 mYPAS and parent-recorded anxiety VAS scores were significantly lower than those of groups 1 and 3 (mYPAS: $P = 0.007$; parent-recorded anxiety VAS: $P = 0.02$). In the operating room, the children in group 3 had the lowest mYPAS and parent-recorded anxiety VAS scores among the 3 groups (mYPAS: $P < 0.001$; parent-recorded anxiety VAS: $P < 0.001$). In group 3, the mYPAS and parent-recorded anxiety VAS scores of only 3 and 5 children were increased in the operating room compared with their scores in the preanesthetic holding room, whereas the anxiety scores of 32 and 34 children in group 1 and 25 and 32 children in group 2 had increased ($P < 0.001$). The number of children whose scores indicated no anxiety (mYPAS score < 30) in the operating room was 3 (7%), 9 (23%), and 18 (43%) in groups 1, 2, and 3, respectively ($P < 0.001$).

CONCLUSIONS: Allowing the viewing of animated cartoons by pediatric surgical patients is a very effective method to alleviate preoperative anxiety. Our study suggests that this intervention is an inexpensive, easy to administer, and comprehensive method for anxiety reduction in the pediatric surgical population.

日间手术1周内的日程安排及取消的描述性研究

Descriptive Study of Case Scheduling and Cancellations Within 1 Week of the Day of Surgery

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背景：本研究对手术室的1周内日间手术日程安排进行描述性分析。

方法：所使用的数据来自医院的麻醉科和手术室的信息管理系统中的日间手术日程表和事务处理表。手术室信息系统中安排好的手术情况的每次更改都会事务处理表记录下来，包括更改的日期和时间。时间标记可允许在每个手术日之前(如2个工作日前)对手术室的择期日程表进行重建。样本量 $n=17$ ，连续4周。手术室使用的时间分配，手术间衔接和安排周几手术是依手术室时间使用低效率最小化，并加权评估手术室使用不足时间和过度使用时间。以平均值 \pm 标准差形式描述数据。

结果：更改预订手术日期并至少增加一例手术占 $24.1\% \pm 0.3\%$ 。最近一次增加手术发生在手术前一天为 $22.3\% \pm 0.4\%$ 。至少有一半($51.5\% \pm 0.5\%$)的手术室在手术日前2日内有手术时序的改变。此外，当手术室分配时间已完成且科室开始规划额外手术时，每个规划的中位时间为提前 2.2 ± 0.2 个工作日。因此，管理人员可以高效地专注于手术前2个工作日之内的手术日。一旦分配时间满了，净额外手术数量比总手术数为 $1.2\% \pm 0.6\%$ 。然而，总数的 $11.1\% \pm 1.7\%$ 是额外手术。因此安排者们应以分配好的时间为基础来预测手术当天可能会发生的实际工作负荷。因此，同一工作日预订病例的额外工作时对基于先前预订手术时是不均匀的。

结论：计划的麻醉任务、手术指标等应该在手术前2个工作日内有效地完成。最后2天手术室日程安排会有很多的变化，所以麻醉团队应在这一阶段与日程安排团队很好的合作。主要预测计划外额外工作时数是指定手术时间与当时预订时间的差异。

(郑华容 译 陈杰 校)

BACKGROUND: We performed a descriptive study of operating room (OR) case scheduling within 1 week of the day of surgery.

METHODS: The data used were from the case scheduling and transaction audit tables of a hospital's anesthesia and OR information management systems. Each change to a scheduled case in the OR information system was captured in an audit table, including the date and time when the change was made. The timestamps allowed reconstruction of the elective OR schedule for each date of surgery at preceding dates (e.g., 2 workdays ahead). The sample size was $n = 17$ consecutive 4-week periods. The allocated OR time, for each combination of service and day of the week, was the number of hours that minimized the inefficiency of use of OR time, a weighted combination of the hours of underutilized OR time and the more expensive hours of overutilized OR time. Data are reported as mean \pm SE.

RESULTS: (1) The percentage of OR date combinations with at least 1 add-on case was $24.1\% \pm 0.3\%$. The most recent addition of a case to an OR occurred 1 working day before surgery for $22.3\% \pm 0.4\%$ of OR date combinations. At least half ($51.5\% \pm 0.5\%$) of ORs had its last case scheduled or changed within 2 working days of surgery. In addition, when allocated OR time was filled and the service scheduled additional case(s), the median time ahead when each such case was scheduled was 2.2 ± 0.2 workdays. Thus, managers can productively focus on the day of surgery starting 2 working days before surgery. (2) Once allocated time was full, the ratio of the net additional cases scheduled to the total number performed was $1.2\% \pm 0.6\%$. However, $11.1\% \pm 1.7\%$ of the total were additional cases. Thus, schedulers should rely on the allocated time to be predictive of the actual (net) workload that will occur in the future, on the day of surgery. (3) For service and day combinations for which 2 working days ahead the scheduled hours exceeded the allocated hours, there was no significant net increase in minutes of cases scheduled ($P = 0.79$), unlike when the scheduled hours were less than allocated ($P < 0.0001$).

Thus, additional hours of cases scheduled within the same number of workdays are heterogeneous both within and among services based on the prior hours of cases scheduled. **CONCLUSIONS:** Planning anesthesia assignments, ORs to target, etc., can be done productively starting 2 working days ahead of surgery. There are so many changes to the OR schedule those last 2 workdays that anesthesia groups should be engaged with the scheduling office during that period. The primary predictor of additional net hours of cases to be scheduled is the difference between the allocated (i.e., forecasted) OR time and the hours scheduled so far. (Anesth Analg 2012;115:-95)

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A Novel Injectable Formulation of Diclofenac Compared with Intravenous Ketorolac or Placebo for Acute Moderate-to-Severe Pain After Abdominal or Pelvic Surgery: A Multicenter, Double-Blind, Randomized, Multiple-Dose Study

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背景：欧洲及其他国使用双氯芬酸注射剂的历史悠久，常规用法是在30~120min内静脉滴注或一次性肌肉注射75mg双氯芬酸。而新型的注射剂Dyloject® 将双氯芬酸钠溶解于羟丙基β-

环糊精（HPβCD），以便于小剂量静脉注射或肌肉注射。这项多中心、多剂量、多日、随机、双盲的研究分为3个平行组，调查低剂量的Dyloject® 以小剂量注射是否能有效减轻腹部或盆腔手术术后的急性疼痛。

方法：术后6小时内出现中重度疼痛的成人患者(定义：视觉模拟量表（VAS）[0~100mm] 50mm)按1:1:1:1随机分组，分别接受Dyloject®（18.75或37.5mg）静脉注射；酮咯酸30mg静脉注射，或安慰剂。所有治疗组的病人每6小时接受一次静脉注射直至出院。至少观察病人48小时，但最长至5天。可以随时静脉注射吗啡来进行解救镇痛，3小时内总量不超过7.5mg。主要有效指标是实验药物给予后48小时内疼痛强度差异之和（SPID）。

结果：331名患者接受了大于等于一次剂量的药物研究。在第一个48小时内，与安慰剂相比，两种剂量组Dyloject® 和酮咯酸都明显减轻了术后疼痛的程度（P<0.05），也使需要吗啡解救镇痛的病人数锐减。两种剂量组的Dyloject® 和酮咯酸与安慰剂相比明显减少了吗啡的需要剂量（P<0.0001），在使用Dyloject® 18.75mg剂量组和酮咯酸组中，吗啡解救镇痛的时间间隔也得到显著延长。所有的治疗相关的副作用发生率为20.2%。Dyloject® 剂量组均无治疗相关严重副作用，酮咯酸组则有1例。

结论：对于腹部或盆腔手术术后出现急性中重度疼痛的患者，在接受剂量为18.75 mg和37.5

mg的Dyloject® 治疗后，与安慰剂组相比有明显的镇痛作用。同时Dyloject® 和酮咯酸都明显减少了患者对阿片类药物的需要量。

(诸琳婕 译 陈杰 校)

BACKGROUND: Injectable formulations of diclofenac have long been available in Europe and other countries. These formulations use a default dose of 75 mg of diclofenac delivered IV over 30 to 120 minutes or as an IM injection. A novel formulation of injectable diclofenac sodium, Dyloject®, is solubilized with hydroxypropyl β -cyclodextrin (HP β CD) so that it can be given IV or IM in a small volume bolus. In this multicenter, multiple-dose, multiple-day, randomized, double-blind, parallel-group phase 3 study, we investigated whether lower doses of HP β CD diclofenac delivered as a small volume bolus would be effective for the management of acute pain after abdominal or pelvic surgery.

METHODS: Adults with moderate and severe pain, defined as ≥ 50 mm on a 0 to 100 mm visual analog scale, within 6 hours after surgery were randomly assigned (1:1:1:1 ratio) to receive HP β CD diclofenac, 18.75 mg or 37.5 mg; ketorolac tromethamine 30 mg; or placebo. Patients in all treatment arms received a bolus IV injection every 6 hours until discharged. They were observed for at least 48 h, and for up to 5 days. Rescue IV morphine was available any time, up to a total of 7.5 mg over a 3-hour period. The primary efficacy measure was the sum of pain intensity differences from 0 to 48 hours after study drug initiation.

RESULTS: Three hundred thirty-one patients received ≥ 1 dose of study drug. Over the first 48 hours, both IV HP β CD diclofenac doses, as well as ketorolac, produced significant reductions in pain intensity over placebo (all $P < 0.05$), as well as significant reductions in the need for rescue morphine administration. Both doses of HP β CD diclofenac, as well as ketorolac, significantly reduced rescue morphine dosages, as compared to placebo ($P < 0.0001$), and time to rescue morphine administration was significantly increased by treatment with 18.75 mg diclofenac and ketorolac. The overall incidence of treatment-related adverse events was 20.2%. No treatment-related serious adverse events were reported in either diclofenac dose group, whereas only 1 was reported in the ketorolac group.

CONCLUSIONS: For patients with acute moderate and severe pain after abdominal or pelvic surgery, repeated 18.75 mg and 37.5 mg doses of HP β CD diclofenac provided significant analgesic efficacy, as compared to placebo. Significant analgesic efficacy was also provided by the active comparator ketorolac. Both HP β CD diclofenac and ketorolac significantly reduced the need for opioids.

布比卡因和罗哌卡因环糊精复合物的局部神经毒性和肌细胞毒性评估

Local Neurotoxicity and Myotoxicity Evaluation of Cyclodextrin Complexes of Bupivacaine and Ropivacaine

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背景：布比卡因（BVC）和罗哌卡因（RVC）是广泛应用于临床的局麻药。以往研究显示，比起单纯的BVC或RVC，它们的羟丙基-β-环糊精（HP-β-CD）制剂增加了神经阻滞作用。本研究评估了0.5%BVC或RVC环糊精制剂(BVC_{HP-β-CD}和RVC_{HP-β-CD})对局部神经和肌肉的细胞毒性。

方法：通过线粒体脱氢酶活性判定Schwann细胞的生存率，并且通过对大鼠坐骨神经的组织病理学检验确定局部神经毒性（处理后48小时和7天）。同时进行大鼠腓肠肌（治疗后48小时）的肌酸激酶水平和组织病理学的测定。

结果：评估提示复合制剂和单纯局麻药对Schwann细胞神经毒性无显著差异。然而，比起单纯局麻药，复合制剂降低血清肌酸激酶5.5倍。差异具有显著性 $P < 0.05$ (BVC)和 $P < 0.01$ (RVC)。比较BVC组和RVC组，复合制剂组中的肌肉组织病理学测定存在显著差异 ($P < 0.05$)。

结论：比起单纯的局麻药，新配方具有更低的肌细胞毒性和近似的细胞毒性。
（黄萍 译 陈杰 校）

BACKGROUND: Bupivacaine (BVC) and ropivacaine (RVC) are local anesthetics widely used in surgical procedures. In previous studies, inclusion complexes of BVC or RVC in hydroxypropyl-β-cyclodextrin (HP-β-CD) increased differential nervous blockade, compared to the plain anesthetic solutions. In this study we evaluated the local neural and muscular toxicity of these new formulations containing 0.5% BVC or RVC complexed with HP-β-CD (BVC_{HP-β-CD} and RVC_{HP-β-CD}).

METHODS: Schwann cell viability was assessed by determination of mitochondrial dehydrogenase activity, and histopathological evaluation of the rat sciatic nerve was used to identify local neurotoxic effects (48 hours and 7 days after the treatments). Evaluations of serum creatine kinase levels and the histopathology of rat gastrocnemius muscle (48 hours after treatment) were also performed.

RESULTS: Schwann cell toxicity evaluations revealed no significant differences between complexed and plain local anesthetic formulations. However, use of the complexed local anesthetics reduced serum creatine kinase levels 5.5-fold, relative to the plain formulations. The differences were significant at $P < 0.05$ (BVC) and $P < 0.01$ (RVC). The histopathological muscle evaluation showed that differences between groups treated with local anesthetics (BVC or RVC) and their respective complexed formulations (BVC_{HP-β-CD} or RVC_{HP-β-CD}) were significant ($P < 0.05$).

CONCLUSIONS: We concluded that the new formulations presented a lower myotoxicity and a similar cytotoxic effect when compared to plain local anesthetic solutions.

模拟经胸超声心动图是用于训练麻醉医生经胸超声心动图基本技能的有效方法

Transthoracic echocardiography simulation is an efficient method to train anesthesiologists in basic transthoracic echocardiography skills.

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背景：围术期临床使用经胸超声心动图（TTE）正在被越来越多的人所认识及关注。然而由于麻醉医生缺乏相关训练，这项操作的使用受到局限。最为有效的训练方式至今尚未确定。我们假定模拟TTE训练相对于传统的讲课方式教授TTE基本操作技巧对于麻醉住院医师来说更为有效。

方法：在这项前瞻性的随机对照研究中，我们将61位麻醉住院医师（经过麻醉临床训练1-3年）随机分为对照组（n=30）和模拟组（n=31）进行TTE训练，每个TTE训练阶段的前45分钟会有一个标准化的预备考试。在第一阶段中，对照组使用讲课模式的视屏教学，模拟组使用模拟TTE。课程结束后，用笔试及对志愿者行TTE检查来了解两组人对于课程的理解。通过TTE检查是否获得正确的图像、图像质量、解剖标志以及获得适合的图像所需的时间这几项，由两位盲评的专家进行TTE检查能力分级评分。在第二个阶段中，我们取了之前分组中的21位医生（11位对照，10位模拟）来进行与志愿者合作的“实践”训练。模拟组的医生有额外的模拟TTE训练。第二阶段结束后，再进行一次对志愿受试者行TTE检查的考试。

结果：预备考试揭示了住院医师在干预前具有相同的医学知识（对照组与模拟组分别为： $56.0\% \pm 11.9\%$ vs $59.3\% \pm 11.0\%$, $P =$

0.25 ）。模拟组在第一阶段训练后的测试中各项分数均较高：笔试（ $57.9\% \pm 8.8\%$ vs $68.2\% \pm 10.1\%$; $P < 0.001$ ）、志愿者操作测试图像质量分数（分级区间0至25级）（ 6.4 ± 3.5 vs 12.4 ± 4.2 ; $P = 0.003$ ）、解剖学识别（分级区间0至25级）（ 8.3 ± 6.6 vs 17.8 ± 6.6 ; $P =$

0.003 ）以及正确图像百分比（ 50 ± 19 vs 78 ± 21 ; $P < 0.001$ ）。第二阶段后，模拟组的得分进一步提高。图像质量分数（ 9.6 ± 3.3 vs 15.6 ± 2.8 ; $P = 0.002$ ）、解剖学识别（ 17.6 ± 3.8 vs 22.8 ± 2.4 ; $P = 0.003$ ）、正确图像百分比（ 80 ± 16 vs 96 ± 8 ; $P = 0.007$ ）。

结论：这项前瞻性随机研究表明：对于接受模拟TTE训练的麻醉学住院医师，在志愿受试者上进行TTE图像采集以及解剖标志识别有更好的技巧。即使引入了志愿受试者协助实践教学，两组中模拟组的教育效益依然较高。而将这一在短期教学上的明显作用运用于长期教学以及实际临床应用的价值仍值得进一步研究。

（郭晨跃译 薛张纲校）

BACKGROUND: The clinical utility of focused transthoracic echocardiography (TTE) is increasingly recognized in perioperative medicine. However its use is limited among anesthesiologists because of a lack of training. The most efficient training methods have not been determined. We hypothesized that simulation-based TTE training would be more effective than traditional lecture-based methods for teaching basic TTE skills to the anesthesiology residents.

METHODS: In this prospective randomized study, 61 anesthesiology residents (in anesthesia clinical training years 1 to 3) were randomized to either control (n = 30) or simulation groups (n = 31) for TTE training. A standardized pretest was administered before TTE training sessions of 45 minutes each. The first training session used a lecture-based video didactic in the control

group or a TTE simulator in the simulation group. Comprehension in both groups was then assessed using a written posttest and by performing a TTE examination on a volunteer subject. TTE examinations were graded on the ability to acquire the correct image, image quality, anatomy identification, and time required to attain proper imaging by 2 blinded experts. A second training session incorporating "hands-on" training with a volunteer subject was conducted in a subset of 21 residents (n = 11 control, n = 10 simulation). The simulation group included additional simulator training. After the second session, another posttest on a volunteer subject was administered.

RESULTS: Pretest scores revealed similar preintervention knowledge among residents ($56.0\% \pm 11.9\%$ vs $59.3\% \pm 11.0\%$, $P = 0.25$; control versus simulator group, respectively). The simulation group scored higher on all criteria after the first training session: written posttest ($57.9\% \pm 8.8\%$ vs $68.2\% \pm 10.1\%$; $P < 0.001$), volunteer subject posttest image quality scores (0 to 25 scale) (6.4 ± 3.5 vs 12.4 ± 4.2 ; $P = 0.003$), anatomy identification scores (0 to 25 scale) (8.3 ± 6.6 vs 17.8 ± 6.6 ; $P = 0.003$), and percentage correct views (50 ± 19 vs 78 ± 21 ; $P < 0.001$). After the second session, all scores were again improved in the simulation group: volunteer subject posttest image quality scores (9.6 ± 3.3 vs 15.6 ± 2.8 ; $P = 0.002$), anatomy identification scores: (17.6 ± 3.8 vs 22.8 ± 2.4 ; $P = 0.003$), and percentage correct views (80 ± 16 vs 96 ± 8 ; $P = 0.007$).

DISCUSSION: This prospective randomized study demonstrated that anesthesiology residents trained with simulation acquired better skills in TTE image acquisition and anatomy identification on volunteer subjects. The educational benefit of simulation persisted even with introduction of hands-on instruction with volunteer subjects in both groups. The impact of these short-term educational approaches on longer-term retention and actual clinical application warrants further investigation.

健康志愿者吸入芬太尼喷雾剂：药效动力学及药代动力学研究

Inhaled Fentanyl Aerosol in Healthy Volunteers: Pharmacokinetics and Pharmacodynamics

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背景：快速全身给予阿片类药物可以有效治疗急性或慢性疼痛。不同的阿片类药物经肺脏代谢不相同，从而导致较低的生物利用度。Staccato®

Fentanyl是一种吸入的芬太尼制剂。吸入特定尺寸

(1到3.5微米)的高纯度($\geq 98\%$)芬太尼能使药物在肺内很好吸收。

方法：我们对志愿者分两阶段研究。在交叉研究阶段，10名志愿者分别随机静脉给予25ug芬太尼或吸入25ug芬太尼。在扩大研究阶段，大剂量、随机、双盲、安慰剂对照、单周期吸入芬太尼50至300ug。在给药后8小时抽取静脉血测定药代动力学参数，并评估药效。

结果：在交叉研究阶段，静脉或吸入芬太尼后，动脉血芬太尼峰浓度及曲线下面积相似。相比于静脉给药，吸入芬太尼达到峰浓度时间较短，分别为20.5和31.5秒。在扩大研究阶段，芬太尼血清浓度呈现可预见的剂量依赖性增高。

结论：研究表明，单次吸入芬太尼和静脉给予芬太尼在药代动力学方面是可比的。

（韩叙译 薛张纲校）

BACKGROUND: Rapid delivery of potent opioid to the systemic circulation is an important feature for the effective treatment of acute and acute-on-chronic breakthrough pain. The delivery of different opioids by the pulmonary route has been inconsistent, usually resulting in low bioavailability of the drug. Staccato® Fentanyl for Inhalation is a handheld inhaler producing a single metered dose of aerosolized fentanyl during a single inspiration. The aerosol is of high purity ($\geq 98\%$) at a particle size (1 to 3.5 microns) shown to be best for pulmonary absorption.

METHODS: We conducted the study in healthy volunteers in 2 stages. In the crossover stage, 10 subjects received IV fentanyl 25 μg and inhaled fentanyl 25 μg on separate occasions. The dose escalation stage was a multidose, randomized, double-blind, placebo-controlled, single-period dose escalation study of inhaled fentanyl (50 to 300 μg). Serial blood sampling was performed over an 8-hour period after drug administration to determine the pharmacokinetic profile, and serial pupillometry was performed as a measure of pharmacodynamic effect.

RESULTS: In the crossover stage the pharmacokinetic profiles of the inhaled and IV fentanyl showed similar peak arterial concentrations and areas under the curve. The time to maximum concentration was slightly shorter for the inhaled than IV fentanyl, 20.5 and 31.5 seconds, respectively. In the dose escalation stage the administration of repeated doses resulted in predictable, dose-dependent serum concentrations.

CONCLUSIONS: This study has demonstrated that the pharmacokinetic profile of single doses of inhaled fentanyl is comparable to IV administration.

在模拟麻醉诱导时发言与更好的团队绩效有关:一项观察性研究

Speaking up is related to better team performance in simulated anesthesia inductions: an observational study.

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背景：在这项研究中，我们的目标是测试在麻醉中发言，即，质疑,纠正或阐明当前程序和技术团队绩效的关系。假设1:团队成员更高水平的发言与更高水平的技术团队绩效有关。假设2:团队成员将发言，阐明自己的程序或一个启动程序的变化。假设3:在团队合作的早期阶段更高水平的发言将和以后的阶段更高水平的发言有关。

方法：这种前瞻性观察研究涉及2人专案麻醉团队在一个大型教学医院中模拟全麻诱导中小的非常规事件(如,心动过缓)。受试者注册麻醉护士和居民。每组由一个护士和一个居民组成。记录同步视频和重要参数。在12个不同的类别中,两个训练有素的观察员忽略了假设编码和进一步的团队沟通和协调的行为。在团队各自的类别中,所有的团队测量被量化

为占总时间的百分比。两位经验丰富的工作人员使用一个Delphi验证评级检查表，在麻醉医师不知情的情况下评估团队的技术绩效。采用线性回归与居民和护理水平的发言，对假设1和假设3使用两个单独的预测变量进行了测试。假设2使用滞后序列分析 Z值变化，在有条件和无条件转换中观测值有显著不同。

结果:共有31个护士和31居民参与。技术团队的绩效可以通过预测护士的发言($R(2) = 0.18, P = 0.017$),而不是居民的($R(2) = 0.19, P =$

0.053);这个结果支持护士的假设1。支持假设2，通过提供信息($Z = 18.08, P < 0.001$)

进行澄清,居民对发言有反应，通过启动程序上改变给指令($Z = 4.74, P <$

0.001)和团队成员监控($Z = 3, P =$

0.0013)。同样，护士与澄清的过程，通过提供或评估信息 ($Z = 16.09, P < 0.001; Z =$

$3.72, P < 0.001$) 和启动程序的变化提供援助 ($Z =$

$0.57, P < 0.001$)。假设3表明一种趋势，护士在插管前的发言水平预测插管时的发言水平

($R(2) = 0.15, P = 0.034$)，虽然这并不能达到的Bonferroni校正的显著性水平 $P =$

0.025 。在居民中没有这种关系($R(2) = 0.15, P = 0.096$)。

结论:这个研究表明经验证据和显示机制在发言行为和技术团队绩效中有正面的关联。

(贺盼译 薛张纲校)

BACKGROUND:Our goal in this study was to test the relationship between speaking up-i.e., questioning, correcting, or clarifying a current procedure-and

technical team performance in anesthesia. Hypothesis 1: team members' higher levels

of speaking up are related to higher levels of technical team performance. Hypothesis

2: team members will react to speaking up by either clarifying their procedure or initiating a

procedural change. Hypothesis 3: higher levels of speaking up during an earlier phase of

teamwork will be related to higher levels of speaking up during a later phase.

METHODS:This prospective observational study involved 2-person ad hoc anesthesia teams

performing simulated inductions of general anesthesia with minor nonroutine events (e.g.,

bradycardia) in a large teaching hospital. Subjects were registered anesthesia nurses and

residents. Each team consisted of 1 nurse and 1 resident. Synchronized video and vital parameter

recordings were obtained. Two trained observers blinded to the hypotheses

coded speaking up and further team communication and coordination behavior on the basis of 12

distinct categories. All teamwork measures were quantified as percentage of total time spent on

the respective teamwork category. Two experienced staff anesthesiologists blinded to the

hypotheses evaluated technical team performance using a Delphi-validated rating checklist.

Hypotheses 1 and 3 were tested using linear regression with residents' and nurses' levels

of speaking up as 2 separate predictor variables. Hypothesis 2 was analyzed using lag sequential

analysis, resulting in Z values representing the extent to which the observed value for a

conditional transition significantly differs from its unconditional value.

RESULTS:Thirty-one nurses and 31 residents participated. Technical team performance could

be predicted by the level of speaking up from nurses ($R(2) = 0.18, P = 0.017$) but not from

residents ($R(2) = 0.19, P = 0.053$); this result supports Hypothesis 1 for nurses. Supporting

Hypothesis 2, residents reacted to speaking up with clarifying the procedure by providing

information ($Z = 18.08, P < 0.001$), initiating procedural change by giving instructions ($Z = 4.74,$

$P < 0.001$) and team member monitoring ($Z = 3, P = 0.0013$). Likewise, nurses reacted with

clarifying the procedure by providing or evaluating information ($Z = 16.09, P < 0.001; Z = 3.72,$

$P < 0.001$) and initiating procedural change by providing assistance ($Z = 0.57, P < 0.001$).

Indicating a trend for Hypothesis 3, nurses' level of speaking up before intubation predicted their level of speaking up during intubation ($R(2) = 0.15$, $P = 0.034$), although this did not reach the Bonferroni-corrected significance level of $P = 0.025$. No respective relationship was found for residents ($R(2) = 0.15$, $P = 0.096$).

CONCLUSIONS: This study provides empirical evidence and shows mechanisms for the positive relationship between speaking-up behavior and technical team performance.

模拟案例显示心肺复苏在产科急救危机中的不足：来自以色列麻醉医师

Deficits in the provision of cardiopulmonary resuscitation during simulated obstetric crises: results from the israeli board of anesthesiologists.

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背景：在临产妇出现心脏骤停是致命的，但是在这种情况下进行适当的心肺复苏可以拯救孕妇和胎儿的生命。应用适当的技术对这类患者进行心肺复苏是有效的。以色列的麻醉医师通过仿真测试评估医生的这项技术。

方法：25名高年资麻醉科医生对模拟先兆子痫患者硫酸镁治疗后中毒出现心脏骤停患者进行心肺复苏。通过问卷回答相应问题并打分。

结果：通过试验发现，对于普通孕妇心肺复苏完成较好（包括胸外按压、面罩通气和除颤），但是对于临产妇完成不太理想。子宫左倾，面罩通气过程中按压环状软骨，在5分钟内中止妊娠的完成率分别为68%，

48%和40%。面罩通气过程中按压环状软骨的比例为48%

，但仍低于要求80%（要求达到53%）。5分钟内中止妊娠的比例也低于要求的80%（要求达到53%）。

结论：高年资医生对于孕产妇进行心肺复苏的知识仍比较缺乏。该结果提示，尚需经进一步研究。

（胡晓晴译 薛张纲校）

BACKGROUND: Cardiac arrest in the parturient is often fatal, but appropriate resuscitation in this special situation may save the lives of the mother and/or unborn baby. Concern has arisen as to application of recommended techniques for resuscitation in the obstetric patient. The Israel Board of Anesthesiology has incorporated simulation assessment into accreditation examinations. The candidates represent a unique national cohort in which we were able to assess competence in the simulated scenario of cardiorespiratory arrest in the parturient.

METHODS : A simulated scenario of preeclampsia with magnesium toxicity leading to cardiac arrest in a pregnant patient was performed by 25 senior anesthesiology residents. A unique two-

stage simulation examination consisting of high fidelity simulation followed immediately by oral debriefing was conducted. The assessment was scored using a predetermined checklist of key actions and answers to clarifying questions. Simulation performance was compared to debriefing performance.

RESULTS : During the board examination, resuscitation not specific to the pregnant patient was performed well (commencing chest compressions, bag-mask ventilation, cardiac defibrillation); however actions specific to the parturient were performed poorly. Left uterine displacement, cricoid pressure during bag-mask ventilation, and instructing preparations to be made for perimortem cesarean delivery within 5 minutes were performed by 68%, 48%, and 40% of candidates respectively (lower 99% confidence limit 42%, 25%, and 19%, respectively). Cricoid pressure during bag-mask ventilation was performed by 48% (25%) but described in debriefing by 80% of candidates (53%) ($P = 0.08$), and time setting for perimortem cesarean delivery was performed by 40% (29%) but described by 80% (53%) ($P = 0.05$) of examinees.

CONCLUSIONS Senior anesthesiology residents have poor knowledge of resuscitation of the pregnant patient. The results suggest 2-stage simulation including an oral component may reveal disparities in knowledge not assessed by simulation alone, but definitive conclusions require further study.

美国2008年儿科住院病人对镇痛、麻醉和镇静药物的应用

Use of Analgesic, Anesthetic, and Sedative Medications During Pediatric Hospitalizations in the United States 2008

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背景：由于儿童对镇痛、麻醉剂、镇静药的大量需要及儿科药品核准标示缺乏导致在儿童中由于疼痛及镇静而使得核准标示外药品大量使用。任何企图解决标示缺乏的问题都将需要国家对使用每种药物的数量的儿童人数，他们的年龄及其他因素进行评估以了解这些药物的使用情况。我们描述了镇痛、麻醉剂、镇静药物在儿科住院病人中的应用，从>800,000例美国儿科住院者的调查获得了药物统计分析数据。目的是为国家评估接受特殊镇痛、麻醉和镇静住院儿童百分比及他们的年龄段提供证据。

方法：数据来自美国最大的医院，最主要的数据库。在2008年住院儿童中我们统计了所有使用特定药物的孩子，每一个孩子用的第一种药并且计算了特殊药物的使用偏好，在这些住院儿童中每100个病人中就有一个应用这些药物。在这些分析中没有考虑药物的剂量及数量。

结果：该数据集包含了877201住院治疗的在使用药物时年龄不超过18岁的儿童。在这一人群中使用了33种药物和其他11种混合药物，包括非甾体类抗炎药，局部阻滞药物，阿片类药物，苯二氮卓类药物，镇静催眠药，巴比妥类，及其它药物。其中10种最常用的镇痛、麻醉或镇静药物有对乙酰氨基酚（14.7%），利多卡因（11.0%），芬太尼（6.6%），布洛芬（6.3%），吗啡（6.2%），咪达唑仑（4.5

%)，丙泊酚(4.1%)，利多卡因/丙胺卡因(2.5%)，氢可酮/对乙酰氨基酚(2.1%)，对乙酰氨基酚/可待因(2.0%)。年龄的变化，改变方向(增加或减少)及变化的类型(线性，u形，或其他)表现出药物特征性。

结论：在住院儿童中药物种类及个性化药物的变化被用来镇痛及镇静。使用模式的变化反映了数据库的异质性，包括一个年龄上的广范围和条件需要的变化，其中镇痛，麻醉和镇静可能是必须的。除了要注意在年龄组中没有儿童标签外，我们无法评估一个特定的药物在临床的使用是否适当。

(李丽红译 薛张纲校)

Background: The wide need for analgesia, anesthesia, and sedation in children and the lack of pediatric labeling leads to widespread off-label use of medications for pain and sedation in children. Any attempt to address the lack of labeling will require national estimates of the numbers of children using each medication, their ages, and other factors, to understand the overall use of these medications. We describe use of analgesics, anesthetics, and sedatives in pediatric inpatients by result of conducting a statistical analysis of medication data from >800,000 pediatric hospitalizations in the United States. The purpose was to provide national estimates for the percentage of hospitalized children receiving specific analgesics, anesthetics, and sedatives and their use by age group.

Methods: Data from the Premier Database, the largest hospital-based, service-level comparative database in the country, were used. We identified all uses of a given medication, selected the first use for each child, and calculated the prevalence of use of specific medications among hospitalized children in 2008 as the number of hospitalizations in which the drug was used per 100 hospitalizations. Dose and number of doses were not considered in these analyses.

Results: The dataset contained records for 877,201 hospitalizations of children younger than 18 years of age at the time of admission. Thirty-three medications and an additional 11 combinations were administered in this population, including nonsteroidal antiinflammatory drugs, local and regional anesthetics, opioids, benzodiazepines, sedative-hypnotics, barbiturates, and others. The 10 most frequently administered analgesic, anesthetic, or sedative medications used in this population were acetaminophen (14.7%), lidocaine (11.0%), fentanyl (6.6%), ibuprofen (6.3%), morphine (6.2%), midazolam (4.5%), propofol (4.1%), lidocaine/prilocaine (2.5%), hydrocodone/acetaminophen (2.1%), and acetaminophen/codeine (2.0%). Use changed with age, and the direction of change (increases and decreases) and the type of change (linear, u-shaped, or other) appeared to be specific to each drug.

Conclusions: A variety of drug classes and individual medications were used to manage pain and sedation in hospitalized children. The variation in patterns of use reflects the heterogeneity of the dataset, comprising a wide range of ages and conditions in which analgesia, anesthesia, and sedation might be required. It was not possible to assess whether use of a specific medication was clinically appropriate, except to note use of medications in age subgroups without pediatric labeling.

全身麻醉：调节突触的形成和神经可塑性的方法

General Anesthesia: A Gateway to Modulate Synapse Formation and Neural Plasticity?

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保持兴奋和抑制神经活动模式的平衡是维持神经内稳态极重要的。通常麻醉诱导药物不仅在临时的意识丧失干扰这种平衡结果而且也同样可以长期改变大脑功能。最初这些改变被认为是有害的，但最近的研究表明，至少在某些特定的条件下，他们可能最终改善神经功能。这篇综述的目的是提供洞察这些双重效应的潜在机制。基础科学问题在关键时期的重要作用将在神经回路大会上更好的讨论，了解到甚至短暂接触全身麻醉药时可以启动在文中提到的持久的神经元结构和功能的改变。最近的一系列观察表明这些发展阶段的依赖性药物在突触发生中总结了目前已知的分子机制一起潜在的影响。重点将放在麻醉药在成人大脑中如何调节神经可塑性和在一些病理状态下如何改善神经功能。这些新的观察强烈表明麻醉药物不应该仅仅被视作毒性药品也应该被公认为上下文相关的强劲的神神经可塑性调节器。

(孙莉萍译 薛张纲校)

Appropriate balance between excitatory and inhibitory neural activity patterns is of utmost importance in the maintenance of neuronal homeostasis. General anesthetic-induced pharmacological interference with this equilibrium results not only in a temporary loss of consciousness but can also initiate long-term changes in brain function. Although these alterations were initially considered deleterious, recent observations suggest that at least under some specific conditions, they may eventually improve neural function. The goal of this review is to provide insights into the mechanisms underlying these dual effects. Basic science issues on the important role of critical periods during neural circuitry assembly will be discussed to better understand how even brief exposures to general anesthetics could initiate context-dependent lasting changes in neuronal structure and function. Recent series of observations suggesting a developmental stage-dependent impact of these drugs on synaptogenesis will then be summarized together with currently known molecular mechanisms underlying these effects. Particular emphasis will be placed on how anesthetic drugs modulate neural plasticity in the adult brain and how this may improve neural function under some pathological states. The ensemble of these new observations strongly suggests that general anesthetics should not merely be considered toxic drugs but rather acknowledged as robust, context-dependent modulators of neural plasticity.

创伤手术麻醉与非创伤手术麻醉的所曾担的责任相似：一项公开索赔案例分析

Similar liability for trauma and nontrauma surgical anesthesia: a closed claims analysis.

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背景：创伤治疗面临众多挑战，包括麻醉科以外的医生认为创伤治疗增加医疗责任的风险。我们利用美国麻醉医师协会终审投诉项目数据库和全国住院患者抽样来比较创伤麻醉

治疗的索赔率和全国创伤手术的数据。我们也通过美国麻醉医师协会终审投诉项目数据库来评估创伤麻醉医疗事故索赔和非创伤手术麻醉索赔的损害和责任的特征。

方法：本研究分析了1980年至2005年间美国麻醉医师协会终审投诉项目数据库中的8954例手术麻醉伤害索赔。我们根据全国创伤登记中的损伤评定标准来限定创伤，包括出院病例。为了评估全国创伤麻醉的比例，我们应用全国住院患者取样中界定创伤出院的伤害代码除以手术程序代码。比较自1990至2001年创伤麻醉损伤的发生率与美国麻醉医师协会终审投诉的发生率，根据创伤结局以及系统的结果行多元回归分析，计算其年度调整的比值比及P值。分别采用卡方检验、Fisher精确检验以及K-S检验比较解决索赔的赔偿率、赔偿比例以及赔偿额。

结果：

本研究期间共6215例手术麻醉索赔中，创伤手术引起的索赔占6%。从1990年至2001年期间，住院创伤手术索赔率一直低于非创伤手术的索赔率。根据年度调整的比值比与创伤手术与非创伤手术索赔比例的比值为0.62（95%置信区间，0.53—0.72； $P < 0.001$,似然比检验）。在治疗是否恰当，是否赔偿原告损失以及赔偿额上，创伤手术与非创伤手术的索赔并无差异。

结论：

尽管有报道认为创伤治疗的医疗责任风险较大，但是本研究中，对创伤手术的住院病人实施麻醉并未明显增加责任风险。与非创伤手术麻醉相比，创伤手术麻醉并不增加医疗过失索赔的比例。从法医学上的责任来讲，本结果支持麻醉从业者参与多发性创伤的救治组织系统。

（郁玲玲译 薛张纲校）

BACKGROUND: Trauma care has many challenges, including the perception by nonanesthesia physicians of increased medical malpractice liability. We used the American Society of Anesthesiologists' Closed Claims Project database and the National Inpatient Sample (NIS) to compare the rate of claims for trauma anesthesia care to national trauma surgery data. We also used the American Society of Anesthesiologists' Closed Claims Project database to evaluate injury and liability profiles of trauma anesthesia malpractice claims compared to nontrauma surgical anesthesia claims.

METHODS: Surgical anesthesia claims for injuries that occurred between 1980 and 2005 in the American Society of Anesthesiologists' Closed Claims Project database of 8954 claims were included in this analysis. Trauma was defined using cause of injury criteria in state trauma registries, including out-of-hospital falls. To estimate national trauma anesthesia rates, we used injury codes in NIS reports to define trauma discharges and NIS discharges with surgical procedure codes for the denominator. The year-adjusted odds ratio and P value comparing the national trauma anesthesia injury rates and American Society of Anesthesiologists' Closed Claims Project inpatient claim rates in the 1990 to 2001 time period were calculated by a multivariate logistic regression of the injury/trauma outcome on year and the NIS/Closed Claims Project indicator. Payments in claim resolution between trauma claims and nontraumatic surgical anesthesia claims were compared by χ^2 analysis, Fisher exact test for proportions, and Kolmogorov-Smirnov test for payment amounts.

RESULTS: Trauma claims represented 6% of the total 6215 surgical anesthesia claims in the study period. The inpatient trauma claims rates were consistently lower than the NIS injury rates for 1990 to 2001. The year-adjusted odds ratio comparing the trauma claims rates to the NIS

injury rates was 0.62 (95% confidence interval [CI], 0.53 to 0.72; $P < 0.001$, likelihood ratio test). Trauma claims and nontrauma surgical anesthesia claims did not differ in appropriateness of care, whether or not a payment was made to the plaintiff, or size of payments.

CONCLUSION: Despite reported perceptions that trauma care involves a high risk of medical liability, there was no apparent increased risk of liability among inpatients presenting for trauma anesthesia care. The proportion in malpractice claims in trauma anesthesia care was not increased compared to nontraumatic surgical anesthesia care. With respect to medicolegal liability, these results support participation of anesthesia providers in multidisciplinary trauma care and organized systems.

外周丝裂原活化蛋白激酶对卡拉胶诱导的大鼠关节痛和关节炎的不同作用

Different roles of peripheral mitogen-activated protein kinases in carrageenan-induced arthritic pain and arthritis in rats.

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背景: 越来越多的证据表明, 细胞外信号调节蛋白激酶 (ERK), p38和c-Jun N-末端激酶 (JNK) 可能参与各种疼痛。然而, 目前缺乏直接证据证明, 外周的ERK, p38和JNK实际可诱发和延续关节疼痛和关节炎的发展。

方法: 预先和治疗性地关节内给予选择性p38抑制剂 (SB203580) 和JNK (SP600125), 以及通过激活ERK (例如, MEK, 有丝分裂原活化的蛋白激酶ERK[MAPK]/ERK激酶) 的激酶阻断剂 (PD98059), 间接抑制ERK, 评估用药对后关节疼痛相关行为的影响, 例如减少重量负荷和炎症反应, 如中性粒细胞浸润到滑膜和大鼠膝关节直径。此外, 还对关节炎诱发膝关节滑膜中ERK, p38和JNK的磷酸化进行了研究。

结果: 预先给予PD98059, SB203580, SP600125不能避免注入膝关节腔内的卡拉胶引起的重量负荷, 但其影响表现出不同时程。治疗性给予PD98059和SB203580能部分逆转卡拉胶引起的重量负荷, 其影响表现出类似的时程。但是, 治疗性给予SP600125并不能减少重量负荷。苏木精和伊红染色结果显示, 预先给予SB203580或SP600125能抑制卡拉胶所致的中性粒细胞浸润滑膜, 但PD98059不能。Western blot检测结果表明, 在卡拉胶注射后不同时间点上滑膜上表达不同的磷酸化ERK, p38和JNK。

结论: 这些结果表明, 在膝关节疼痛和关节炎方面, 外周水平的ERK, p38和JNK信号通路扮演了不同的角色。

(周玲译 薛张纲校)

BACKGROUND: Accumulating evidence suggests that extracellular signal-regulated protein kinase (ERK), p38, and c-Jun N-terminal kinase (JNK) might be involved in hypersensitivity of various pain models. However, there is a lack of direct evidence for actual involvement of

peripheral ERK, p38, and JNK in induction and maintenance of arthritic pain and the development of arthritis.

METHODS: We evaluated the effects of preemptive and therapeutic intra-articular administration of selective inhibitors of p38 (SB203580) and JNK (SP600125), and indirect inhibition of ERK with a blocker (PD98059) of the kinase that activates ERK (i.e., MEK, the mitogen-activated protein kinase [MAPK]/ERK kinase), on arthritic pain-related behavior such as reduction of weight load and the inflammatory responses such as neutrophil infiltration into the synovium and knee joint diameter in rats. In addition, arthritis-induced phosphorylation of ERK, p38, and JNK in synovium of knee joint was examined.

RESULTS: Pretreatments with PD98059, SB203580, and SP600125 prevented the reduction of weight load induced by the carrageenan injected into the knee joint cavity, but their effects showed different time course patterns. Therapeutic administration of PD98059 and SB203580 partially reversed carrageenan-induced reduction of weight load, and their effects showed a similar time course pattern. However, therapeutic administration of SP600125 had no effect on the reduction of weight load. Hematoxylin and eosin staining revealed that carrageenan-induced neutrophil infiltration into the synovium was inhibited by pretreatment with SB203580 or SP600125, but not PD98059. Western blot measurements showed distinct expression of phosphorylated ERK, p38, and JNK in the synovium at different time points after carrageenan injection.

CONCLUSION: These results suggest that ERK, p38, and JNK signaling pathways at the peripheral level may play different roles in arthritic pain and arthritis of the knee joint.

简报：喉上神经超声可视下注射的方法：志愿者研究及尸体模拟

Brief report: a method for ultrasonographic visualization and injection of the superior laryngeal nerve: volunteer study and cadaver simulation.

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喉上神经阻滞是上呼吸道麻醉有效的技术。对20名志愿者进行双侧神经扫描后我们发明了一种超声技术，使用曲棍球棒样8-

15MHz传感器（HST15至8/20线性探头，Ultrasonix，Richmond，BC，加拿大）可视化喉上神经以及主要的解剖结构。随后，我们对2具尸体模拟了喉上神经扫描并对双侧喉上神经注射。在超声引导下我们对4具尸体朝向喉上神经的方向抬高穿刺针的角度并注射1ml绿色染料均获得成功，随之的解剖可证实。我们得出结论，超声引导下对喉上神经进行阻滞是可行的。

（杨琰译 薛张纲校）

Superior laryngeal nerve block is a valuable technique for provision of upper airway anesthesia. In bilateral scans of 20 volunteers, we developed a technique for ultrasonographic visualization of the superior laryngeal nerve and key anatomical structures using a hockey stick-shaped 8 to 15 MHz transducer (HST15 to 8/20 linear probe, Ultrasonix, Richmond, BC, Canada).

Subsequently, we simulated superior laryngeal nerve scanning and injection in bilateral injections in 2 cadavers. Ultrasound-guided in-plane advancement of a needle toward the superior laryngeal nerve and injection of 1 mL of green dye was achieved in all 4 attempts and confirmed by a postprocedural dissection performed by an anatomist. We conclude that ultrasound-guided superior laryngeal nerve block in humans may be feasible.

椎旁阻滞在日间隆胸术的应用：一项随机临床试验

Paravertebral Blockade for Day-Case Breast Augmentation: A Randomized Clinical Trial

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背景：双侧隆胸术是越来越流行的一项日间手术。相对于更复杂、潜在危险性更大的椎旁阻滞（PVB），镇静状态下予以局部浸润麻醉由于操作的简单性而被常规应用于此项手术中。我们假设罗哌卡因，经由有经验的麻醉医生注射到椎旁间隙作为PVB，相较于经由手术医生（整形外科医生）直接注射到手术解剖区域将提供更好的麻醉效果。

方法：40名

ASA分级I—II级、进行双侧胸大肌下美容隆胸手术的女性患者被招募进入此项前瞻性、随机、单盲研究。患者被随机分入两组：罗哌卡因PVB途径组和罗哌卡因术区局部浸润组。手术医生在两组患者的术区都将进行局部浸润，使用生理盐水（PVB组）或者罗哌卡因（局部浸润组）。两组患者都使用丙泊酚维持镇静状态，滴定达到作用。整形外科医生对注射的溶液种类不知情。收集的数据包括人口特征、术中合作评分、复苏室内术后恶心呕吐、镇痛药使用情况以及视觉模拟标尺疼痛评分。要求所有患者完成术前焦虑和恢复质量的问卷，并记录在出院时她们的疼痛评分以及镇痛药需求。观察指标为（i）由整形外科医生对患者术中合作情况评分，（ii）丙泊酚用量，（iii）术后疼痛，以及（iv）恢复质量。

结果：40名患者完成了本次研究。PVB提高了术中合作情况（差异的显著性 P

<0.001 ， $WMWodds =$

6.69，单面95%可信区间 $CI \geq 2.85$ ），减少了丙泊酚用量（差异显著性 $P =$

0.005， $WMWodds = 0.35$ ， CI

<0.69 ），并且减少了家庭环境下的平均术后疼痛（差异显著性 $P = 0.007$ ， $WMWodds =$

0.38， $CI < 0.73$ ）。未发生PVB并发症。仅有来自术区局部浸润组的患者有镇痛药需求（30%，差异显著性 = 0.01）。

结论：在有限数量的患者中，我们发现对于在同一天进行的双侧隆胸术，罗哌卡因PVB优于经由直接术区局部浸润。PVB的这些益处仍需与其潜在危险性进行权衡，特别是在办公环境中。

（余亦南 译 马皓琳 李士通 校）

BACKGROUND: Bilateral breast augmentation is an increasingly popular day-case procedure. Local infiltration with sedation is routinely used for its ease of application compared with the

more complex and potentially riskier paravertebral blockade (PVB). We hypothesized that ropivacaine injected by experienced anesthesia providers into the paravertebral space as a PVB was more effective than ropivacaine injected by the operating surgeon (plastic surgeon) directly into the zone of surgical dissection.

METHODS: Forty female patients who were ASA physical status I or II and undergoing bilateral subpectoral cosmetic breast augmentation were recruited for participation in a prospective, randomized, single-blind study. Patients were randomized to 1 of 2 groups: ropivacaine via PVB, or surgical infiltration of ropivacaine. In both groups, the surgeon was asked to infiltrate the appropriate area with either saline (PVB group) or ropivacaine (local infiltration group). Both groups were sedated with propofol, titrated to effect. The plastic surgeon was blinded to the solution injected. Data collected included demographic characteristics, intraoperative cooperation scores, recovery room postoperative nausea and vomiting, analgesia use, and visual analog scale pain scores. All patients were asked to complete a preoperative anxiety and quality of recovery questionnaire and to record their pain scores and analgesia requirements on discharge. The outcome measures were (i) intraoperative patient cooperation as assessed by the plastic surgeon, (ii) propofol requirement, (iii) postoperative pain, and (iv) quality of recovery.

RESULTS: Forty patients completed the study. PVB improved intraoperative cooperation (significance of difference $P < 0.001$, WMWodds = 6.69 with 95% 1-sided confidence interval $CI \geq 2.85$), reduced propofol requirement (significance of difference $P = 0.005$, WMWodds = 0.35, $CI < 0.69$), and decreased average postoperative pain in the home environment (significance of difference $P = 0.007$, WMWodds = 0.38, $CI < 0.73$). There were no PVB complications. Only patients from the surgical infiltration group required rescue analgesics (30%, significance of difference = 0.01).

CONCLUSIONS: In a limited number of patients, we found that PVB is superior to direct surgical infiltration of ropivacaine for bilateral breast augmentation in same-day surgery. These advantages need to be balanced against the potential risks of PVB, especially in an office setting.

围手术期静脉注射利多卡因和氯胺酮对于腹式子宫切除术后恢复的影响

The Effect of Perioperative Intravenous Lidocaine and Ketamine on Recovery After Abdominal Hysterectomy

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背景：围术期输注氯胺酮可以减轻术后疼痛，围术期输注利多卡因可以减少术后麻醉性镇痛药的使用，加快肠道功能恢复，改善术后疲乏，并缩短住院时间。然而，但是对于围术期静脉注射利多卡因和/或氯胺酮对于急性的功能恢复是否有影响仍然是未知的。因此，我们检验了这样的假设，即对于行开腹全子宫切除的病人，围术期静脉输注利多卡因和/或氯胺酮提高了患者康复速度，康复速度使用术后第二天早上的6分钟步行距离（6-MWD）来描述。

方法：行开腹全子宫切除手术的女性病人，七氟醚麻醉，随后使用病人自控吗啡泵。病人随即分到以下几组中的一组：（1）利多卡因和安慰剂组，（2）安慰剂和氯胺酮，（3）安慰剂和安慰剂，（4）利多卡因和氯胺酮。利多卡因先给予一次单次剂量（1.5mg/kg

)，然后开始的2小时按2 mg/kg/h的剂量静脉输注，随后术后24小时按照0.12 mg/kg/h的剂量输注。双盲的主要结果是术后第二天清晨的6-MWD；次要结果包括疼痛评分、阿片类药物用量、术后恶心呕吐情况以及疲劳评分。结果：当64名病人的中期分析显示利多卡因超过预期的疲劳边界时，就终止了研究。此时，利多卡因与安慰剂组分别为 202 ± 66 m和 202 ± 73 m，平均差（临时调整为97.5%可信区间）为0.93m (-52, 54) ($P = 0.96$)。氯胺酮的效果也超过了疲劳边界，与安慰剂组分别为 193 ± 77 m和 210 ± 61 m，平均差（临时调整为97.5%可信区间）为-11m (-65, 44) ($P = 0.54$)。2种干预效果之间没有交互影响 ($P = 0.96$)。两种干预措施都没有显著影响次要结果。结论：我们的研究结果不支持利多卡因或氯胺酮用于改善开腹全子宫切除术后第二天的6-MWD。

(安光惠 译 马皓琳 李士通 校)

BACKGROUND: Perioperative ketamine infusion reduces postoperative pain; perioperative lidocaine infusion reduces postoperative narcotic consumption, speeds recovery of intestinal function, improves postoperative fatigue, and shortens hospital stay. However, it is unknown whether perioperative IV lidocaine and/or ketamine enhances acute functional recovery. We therefore tested the primary hypothesis that perioperative IV lidocaine and/or ketamine in patients undergoing open abdominal hysterectomy improves rehabilitation as measured by a 6-minute walk distance (6-MWD) on the second postoperative morning.

METHODS: Women having open hysterectomy were anesthetized with sevoflurane, followed by patient-controlled morphine. Patients were factorially randomized to one of the following groups: (1) lidocaine and placebo, (2) placebo and ketamine, (3) placebo and placebo, or (4) lidocaine and ketamine. Lidocaine was given as a bolus (1.5 mg/kg), followed by lidocaine infusion of 2 mg/kg/h for the first 2 hours, and then 1.2 mg/kg/h for 24 postoperative hours. Ketamine was given as a bolus (0.35 mg/kg), followed by ketamine infusion of 0.2 mg/kg/h for the first 2 hours, and then 0.12 mg/kg/h for 24 postoperative hours. The primary double-blind outcome was 6-MWD on the second postoperative morning; secondary outcomes included pain scores, opioid consumption, postoperative nausea and vomiting, and fatigue score.

RESULTS: The study was stopped after a planned interim analysis of 64 patients showed that lidocaine crossed the preplanned futility boundary, with mean \pm SD of 202 ± 66 m versus 202 ± 73 m for lidocaine versus placebo, respectively, and mean difference (interim adjusted 97.5% confidence interval) of 0.93 m (-52, 54) ($P = 0.96$); the ketamine effect also crossed the futility boundary, with mean \pm SD of 193 ± 77 m versus 210 ± 61 m for ketamine versus placebo, respectively, and mean difference (interim adjusted 97.5% confidence interval) of -11 m (-65, 44) ($P = 0.54$). No interaction between the 2 intervention effects was observed ($P = 0.96$). Neither intervention significantly influenced any of the secondary outcomes.

CONCLUSION: Our results do not support use of lidocaine or ketamine for improving 6-MWD on the second postoperative day after open hysterectomy.

产后出血的风险与母体种族性之间的相关性

The Association of Maternal Race and Ethnicity and the Risk of Postpartum Hemorrhage
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背景：在美国，产科预后与患者种族有很大相关性，但是我们对于产后出血(PPH)的风险与种族差异的关系知之甚少。我们探讨了因子宫收缩乏力导致的产后出血与种族差异的相关性，并连续对可能的相关因素进行了调整。

方法：本文分析样本基于2005至2008年间全国住院病人。我们计算出了宫缩乏力性产后出血及其导致的输血或子宫切除的概率。我们建立了多变量逻辑回归分析模型，通过连续添加潜在相关因素来计算这些意外事件在不同种族组别孕妇中发生的优势。

结果：虽然对潜在的相关因素（依白种人作为参考，西班牙裔调整后比值比：1.21,99%可信区间[1.18, 1.25]；亚太岛民裔为1.31 [1.25, 1.38]）做出了调整，但是相对于白种人，西班牙裔种族和亚太岛民裔种族在宫缩乏力性产后出血的发生概率上有明显的统计学增长。在宫缩乏力性产后出血导致的输血和子宫切除方面也有类的结果。

结论：西班牙裔和亚太岛民裔对于宫缩乏力性产后出血是独立于已测定的潜在相关因素的显著风险因素；生物学差异可能起作用。

（张怡 译 马皓琳 李士通校）

BACKGROUND: There are profound racial and ethnic disparities in obstetric outcomes in the United States, but little is known about disparities in risk of postpartum hemorrhage (PPH). We explored the association of race and ethnicity on the risk of PPH due to uterine atony with sequential adjustment for possible mediating factors.

METHODS: This analysis was based on the Nationwide Inpatient Sample, from between 2005 and 2008. The frequencies of atonic PPH and atonic PPH resulting in transfusion or hysterectomy were estimated. We developed multivariable logistic regression models to estimate the odds of these outcomes in maternal racial/ethnic groups by sequentially adding potential mediators.

RESULTS: Hispanic ethnicity and Asian/Pacific Islander race were associated with a statistically significant increased odds of atonic PPH in comparison with Caucasians, despite adjustment for potential mediators (adjusted odds ratio [OR] for Hispanics: 1.21, 99% confidence interval [1.18, 1.25]; for Asians/Pacific Islanders: 1.31 [1.25, 1.38], with Caucasians as reference). Similar results were observed for these racial/ethnic groups for atonic PPH resulting in transfusion or hysterectomy.

CONCLUSION: Hispanic ethnicity and Asian/Pacific Islander race are significant risk factors for atonic PPH independent of measured potential mediators; biological differences may play a role.

2011年产科麻醉新进展：降低产妇不良结局，提高产科麻醉医疗质量

What's New in Obstetric Anesthesia in 2011? Reducing Maternal Adverse Outcomes and Improving Obstetric Anesthesia Quality of Care

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本文对2012年5月产科麻醉及围生医学协会年会上发表的有关“产科麻醉新进展”的演讲做一简述。被邀请的演讲者回顾了2011年产科、产科麻醉、围生医学的发展及发表的重要医学文献。通过对2011年有关产科麻醉及产妇跨学科医疗的理论知识及临床实践的文献回顾，提出了重点论题及主题，具体包括影响妊娠妇女的保健政策内容、产妇死亡率及发病率的更新数据以及与剖腹产妇女麻醉实践有关的临床及实证研究。

(王赞 译 马皓琳 李士通 校)

This article accompanied the “What's New in Obstetric Anesthesia?” lecture presented at the Society for Obstetric Anesthesia and Perinatology Annual Meeting in May 2012. The invited lecturer reviewed the obstetric, obstetric anesthesiology, perinatology, and key medical literature published in 2011. This review identifies key topics and themes from the 2011 literature relevant to the science and clinical practice of obstetric anesthesiology and the interdisciplinary care of obstetric patients. Specific topics include health care policy issues that affect pregnant women, updated information on maternal mortality and morbidity, and clinical and outcomes-based research related to anesthetic practices for women undergoing cesarean delivery.

变化的视频剪辑可以减少儿童在吸入麻醉诱导时的焦虑

Streamed Video Clips to Reduce Anxiety in Children During Inhaled Induction of Anesthesia

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背景：儿童的麻醉诱导通常通过吸入氧化亚氮和七氟醚来完成。小儿麻醉医生通常使用干扰技术，如幽默或非手术程序谈话来减少焦虑并促进平稳过渡这关键阶段。有大量关于使用视频和电视等分散方法对于小诊疗和牙科手术的成功分心的研究。但关于这种方法用于日间手术的研究却极少。在这个随机对照试验研究中我们检测了视频分心是否能够有效地减少儿童在日间手术前吸入麻醉诱导时的焦虑。

方法：2-

10岁接受日间手术的孩子（对照=47，视频=42）被随机分配到视频分心组和对照组。在视频分心组中，诱导期间播放孩子偏好剪辑视频。在对照组中，在诱导期间给予传统的分心方法。用调整的耶鲁术前焦虑评分来评价儿童接受吸入麻醉药过程前和过程中的焦虑。

结果：在进入手术室之前，所有受试者的年龄和焦虑评分都相似。与对照组比较，在视频分心组中的孩子在诱导时的焦虑显著较少，并且从准备到诱导时的焦虑变化显著较小。

结论：接受日间手术的儿童吸入麻醉诱导期间，播放视频剪辑是一种有效的减少焦虑的方法。因此，小儿麻醉医生可能会考虑使用视频分心法作为一种有用的、有效的、可替代的策略，实现平稳过渡到麻醉状态。

（崔晓娜 译 马皓琳李士通 校）

BACKGROUND: Anesthesia induction in children is frequently achieved by inhalation of nitrous oxide and sevoflurane. Pediatric anesthesiologists commonly use distraction techniques such as humor or nonprocedural talk to reduce anxiety and facilitate a smooth transition at this critical phase. There is a large body of successful distraction research that explores the use of video and television distraction methods for minor medical and dental procedures, but little research on the use of this method for ambulatory surgery. In this randomized control trial study we examined whether video distraction is effective in reducing the anxiety of children undergoing inhaled induction before ambulatory surgery.

METHODS: Children (control = 47, video = 42) between 2 and 10 years old undergoing ambulatory surgery were randomly assigned to a video distraction or control group. In the video distraction group a video clip of the child's preference was played during induction, and the control group received traditional distraction methods during induction. The modified Yale Preoperative Anxiety Scale was used to assess the children's anxiety before and during the process of receiving inhalation anesthetics.

RESULTS: All subjects were similar in their age and anxiety scores before entering the operating rooms. Children in the video distraction group were significantly less anxious at induction and showed a significantly smaller change in anxiety from holding to induction than did children in the control group.

CONCLUSIONS: Playing video clips during the inhaled induction of children undergoing ambulatory surgery is an effective method of reducing anxiety. Therefore, pediatric anesthesiologists may consider using video distraction as a useful, valid, alternative strategy for achieving a smooth transition to the anesthetized state.

病人送至复苏室的多重交接现象

Multitasking During Patient Handover in the Recovery Room

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背景：患者移交至复苏室的过程中常发生的信息丢失影响到监护的连续性。因此。改善移交工作是保证患者安全的重要环节。术后，患者转移至麻醉后监护室（PACU），并移交给护士，包括监护设备的移交（连接心电图、校准动脉管线、输液泵等）和患者/手术

特殊情况交接。多重交接可能会增加交接过程中信息丢失的风险。在日常工作中设备和信息移交过程中同时或先后发生的缺失程度目前仍尚未知。

方法：一项关于患者从手术室（OR）到PACU交接工作的全国范围调查问卷由494名保健医生反馈。此外，对101个在2所高等医院（ $n=20$ ），3所教学医院（ $n=43$ ）和一所社区医院（ $n=38$ ）由OR到PACU的交接过程进行了录像。由两名独立的观察员分别记录同时或先后进行的设备和信息交接过程。

结果：这项全国性调查中同时交接设备和信息是少数受访者的偏好（11%，95%可信区间8%至14%）。自我报告同时交接的发生率为43%（39%至47%）。在录像到的交接中，同时交接的发生率为65%（56%至74%），这种现象在高等院校的医学中心发生率更高。同时交接比先后交接快的时间不超过0.2分钟（ $P=0.38$ ）。

结论：录像到的由OR到PACU的交接过程中同时交接设备和信息占大多数。尽管多数保健员没有意识到这点，然而在PACU患者交接过程中的这种多任务处理形式是很常见的。进一步的研究应该评估这种多任务处理是否也会导致危重患者信息的缺失和患者安全性的下降。

（许辛译，马皓琳 李士通校）

BACKGROUND: Loss of information occurs frequently during handover and affects the continuity of care. Improving handovers is therefore a key patient safety goal. After surgery, the patient is transferred to the postanesthesia care unit (PACU), and handover to the nurse includes both handover of monitoring equipment (connecting electrocardiogram, calibrating arterial lines, infusion pumps, etc.) and patient/procedure-specific information. Multitasking is likely to increase the risk of information loss during handover. It is unknown to what extent the transfer of equipment and information occurs simultaneously or sequentially in daily practice.

METHODS: A nationwide questionnaire on the subject of patient handover was returned by 494 health care practitioners concerned with handovers from operating room (OR) to PACU. In addition, 101 handovers from the OR to the PACU were videotaped in 2 academic hospitals ($n = 20$), 3 teaching hospitals ($n = 43$) and 1 community hospital ($n = 38$). The occurrence of simultaneous or sequential transfer of equipment and information was recorded by two independent observers.

RESULTS: Simultaneous handover of equipment and information was the preference for a minority of respondents to the national survey (11%, 95% confidence interval, 8% to 14%). Self-reported simultaneous handover was 43% (39% to 47%). In the videotaped handovers, simultaneous handover was used for 65% (56% to 74%), which was even higher in the academic centers. The simultaneous handovers were no more than 0.2 minute faster than sequential handovers ($P = 0.38$).

CONCLUSIONS: In most videotaped handovers from OR to the PACU, there was simultaneous transfer of equipment and information. Although most health care providers are unaware of it, this form of multitasking during patient handover in the PACU is common. Future studies should evaluate whether this multitasking also leads to loss of critical patient information and reduced patient safety.

开放性结肠手术中局部吹入温暖湿润的CO₂会增加开放性创伤和核心温度：一个随机临床试验

Local Insufflation of Warm Humidified CO₂ Increases Open Wound and Core Temperature During Open Colon Surgery: A Randomized Clinical Trial

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背景：开放性手术伤口暴露在寒冷干燥的周围空气中会导致热量以辐射、对流和蒸发的形式散失。同样，全身麻醉和椎管内麻醉也会降低患者的核心温度。尽管有常规的预防措施，但术中轻度低体温仍然是常见的并且是导致术后发病率和死亡率的原因之一。我们假设局部吹入温暖的足够湿润的CO₂会使开放性手术创伤和核心温度都增加。

方法：83名行开放性结肠手术的病人平均的、平行的随机接受标准保温措施（包括充气式保温法、温暖液体法和四肢头部隔绝法），或者额外在层流（10L/min）中通过气体扩散方式向局部伤口吹入温暖（37°C）湿润（100%相对湿度）的CO₂。用热敏红外摄像机和鼓膜温度计跟踪记录伤口表面和核心的温度。

结果：与对照组29.6°C相比较，温暖湿润CO₂组术中伤口区域平均温度是31.3°C（ $P < 0.001$ ，95%

可信区间[CI]，1.2°C至2.3°C）。同样的，相对于对照组28.5°C，术中伤口边缘平均温度是30.1°C（ $P < 0.001$ ，95%

CI，0.2°C至0.7°C）。手术开始前的平均核心温度温暖湿润CO₂组36.7°C ± 0.5°C与对照组的36.6°C ± 0.5°C相近（95%

CI，0.4至-0.1°C）。到手术结束时，两组有显著差异，温暖湿润CO₂组是36.9 ± 0.5°C比对照组的36.3 ± 0.5°C（ $P < 0.001$ ，95%

CI，0.38°C至0.82°C）。此外，温暖湿润CO₂组40名病人中只有8名病人的核心温度<36.5°C（20%，95%

CI，7至33%）。然而，在对照组39名病人中有24名是这样的情况（两组之间的差异百分比为42%，95% CI，22%至61%， $P <$

0.001）。以<36.0°C为分界点，在手术结束时相对于对照组7名病人（18%，95% CI，5%至31%， $P =$

0.005）低体温，温暖湿润CO₂组没有病人低体温（两组之间的差异百分比为18%，95% CI，6% to 30%， $P =$

0.005）。温暖湿润CO₂组手术时间的中位数（第25/75百分位）是181.5（147.5/288）分钟，对照组217（149/288）分钟（ $P = 0.312$ ）。两组间的临床变量没有显著差异。

结论：在开放性手术伤口吹入温暖的足够湿润的CO₂可增加手术创伤和核心的温度，并有助于维持正常体温。

（唐莹译 马皓琳 李士通 校）

BACKGROUND: The open surgical wound is exposed to cold and dry ambient air resulting in heat loss through radiation, evaporation, and convection. Also, general and neuraxial anesthesia decrease the patient's core temperature. Despite routine preventive measures mild intraoperative hypothermia is still common and contributes to postoperative morbidity and mortality. We

hypothesized that local insufflation of warm fully humidified CO₂ would increase both the open surgical wound and core temperature.

METHODS: Eighty-three patients undergoing open colon surgery were equally and parallelly randomized to either standard warming measures including forced-air warming, warm fluids, and insulation of limbs and head, or to additional local wound insufflation of warm (37°C) humidified (100% relative humidity) CO₂ at a laminar flow (10 L/min) via a gas diffuser. Wound surface and core temperatures were followed with a heat-sensitive infrared camera and a tympanic thermometer.

RESULTS: The mean wound area temperature during surgery was 31.3°C in the warm humidified CO₂ group compared with 29.6°C in the control group ($P < 0.001$, 95% confidence interval [CI], 1.2°C to 2.3°C). Also, the mean wound edge temperature during surgery was 30.1°C compared with 28.5°C in the control group ($P < 0.001$, 95% CI, 0.2°C to 0.7°C). Mean core temperature before start of surgery was similar with 36.7°C ± 0.5°C in the warm humidified CO₂ group versus 36.6°C ± 0.5°C in the control group (95% CI, 0.4 to -0.1°C). At end of surgery, the 2 groups differed significantly with 36.9 ± 0.5°C in the warm humidified CO₂ group versus 36.3 ± 0.5°C in the control group ($P < 0.001$, 95% CI, 0.38°C to 0.82°C). Moreover, only 8 patients of 40 in the warm humidified CO₂ group had a core temperature <36.5°C (20%, 95% CI, 7 to 33%), whereas in the control group this was the case in 24 of 39 (62%, 95% CI, 46% to 78%, $P = 0.001$) patients (difference of the percentages between the groups 42%, 95% CI, 22% to 61%, $P < 0.001$). With a cutoff at <36.0°C none of the patients in the warm humidified CO₂ group compared with 7 patients (18%, 95% CI, 5% to 31%, $P = 0.005$) in the control group was hypothermic at end of surgery (difference of the percentages between the groups 18%, 95% CI, 6% to 30%, $P = 0.005$). The median (25th/75th percentile) operating time was 181.5 (147.5/288) minutes in the warm humidified CO₂ group versus 217 (149/288) minutes in the control group ($P = 0.312$). Clinical variables did not show any significant differences between the groups.

CONCLUSIONS: Insufflation of warm fully humidified CO₂ in an open surgical wound cavity increases surgical wound and core temperatures and helps to maintain normothermia.

银杏叶提取物可减轻长春新碱致周围神经病变大鼠模型的疼痛过敏

Ginkgo biloba Extract Attenuates Hyperalgesia in a Rat Model of Vincristine-Induced Peripheral Neuropathy

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背景：化疗诱导的周围神经病变是抗肿瘤化疗药物的一个常见的且呈剂量限制性的副作用。疼痛超敏是神经病理性疼痛的常见现象。银杏叶提取物（GBE）是一种东方草本药物，具有多种药理学疗效。本研究旨在评价口服GBE对长春新碱诱导神经病变大鼠模型疼痛过敏的作用。

方法：雄性SD大鼠(200-250g)每天腹腔内注射长春新碱或生理盐水(0.1mg/kg/d)，共5天后，停止2天，然后重复循环一次。注射长春新碱前对大鼠进行机械性、冷刺激和热刺激疼痛过敏的所有行为学测试。长春新碱注射后14天发展到疼痛超敏的大鼠随机分为4组，分别给予蒸馏水和不同剂量(50、100和150 mg/kg)的GBE。口服前、口服后15、30、60、90、120、150和180min测定痛觉超敏。

结果：注射生理盐水对机械刺激、冷刺激和热刺激所致的痛觉过敏无任何显著作用。而注射长春新碱可以导致机械和冷刺激所致的痛觉超敏。GBE组大鼠，对于机械刺激所致的缩爪反应的阈值显著提高，对冷刺激的退缩频率显著降低($P < 0.05$)。

结论：这项研究提示在长春新碱致周围神经病变的大鼠模型中，口服GBE可以剂量依赖性地减轻机械刺激和冷刺激所致的痛觉超敏现象。

(邱郁薇 译 马皓琳 李士通 校)

BACKGROUND: Chemotherapy-induced peripheral neuropathy is a common, dose-limiting side effect of cancer chemotherapeutic drugs. Hyperalgesia is a common component of neuropathic pain. *Ginkgo biloba* extract (GBE) is an oriental herbal medicine that has various pharmacological actions. In this study, we evaluated the effects of oral GBE on hyperalgesia in a rat model of vincristine-induced neuropathy.

METHODS: Male Sprague-Dawley rats (200–250 g) were injected intraperitoneally with vincristine or saline (0.1 mg/kg/d) using a 5-day-on, 2-day-off schedule over 12 days. All the behavioral tests for mechanical, cold, and heat hyperalgesia were conducted before the daily injection during the course of vincristine treatment. Rats that developed hyperalgesia 14 days after vincristine injection were randomly assigned into 4 groups. Distilled water and GBE (50, 100, and 150 mg/kg) were administered, respectively, to the individual groups. We examined the hyperalgesia at preadministration and at 15, 30, 60, 90, 120, 150, and 180 minutes after oral drug administration.

RESULTS: Saline injection did not have any significant effect on mechanical, cold, and heat hyperalgesia. Vincristine injection produced mechanical and cold hyperalgesia. For the GBE groups, the paw withdrawal threshold to mechanical stimuli was significantly increased and withdrawal frequency to cold stimuli was significantly reduced versus the control group dose-dependently ($P < 0.05$).

CONCLUSIONS: This study demonstrates that oral administration of GBE is associated with a dose-dependent antihyperalgesic effect on mechanical and cold stimuli in a rat model of vincristine-induced neuropathy.

胸椎旁阻滞相关解剖结构的体三维超声成像

Volumetric Three-Dimensional Ultrasound Imaging of the Anatomy Relevant for Thoracic Paravertebral Block

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背景：胸椎旁间隙的二维超声成像可以在横断面和矢状面上检查椎旁解剖结构，而体三维超声成像在一些正交（垂直）面提供了多维的图像，可能会提供更多的解剖结构信息。在本次成像研究中我们评估了胸椎旁阻滞相关解剖结构的三维超声成像的可行性。

方法：招募了四位健康年轻志愿者。志愿者取坐位，识别颈7椎体棘突和胸椎1-5的棘突。用带有高频体三维、四维线阵探头（13-5兆赫兹）的飞利浦iU22超声系统获得所有图像。把右胸椎旁区域的矢状面作为数据采集平面，完成其体三维超声扫描。

结果：通过三维多平面超声扫描，在所有受试者可以同时看到椎旁的矢状面、横断面和冠状面解剖结构。不像二维图像，肋骨颈和脊椎横突之间的关节接合处在多平面扫描超声成像上的矢状面和冠状面显示较清楚。这种所描绘的体三维技术使得所有侧面（例如顶部、底部、前面、背部、左面、右面）的椎旁间隙结构成像都更加清晰。

结论：胸椎旁间隙的体三维超声成像是可行的，其比二维超声成像提供了更详细的空间解剖的信息。

（方斌 译 马皓琳 李士通校）

BACKGROUND: While ultrasound imaging of the thoracic paravertebral space in 2-dimensional (D) mode allows examination of the paravertebral anatomy in the transverse or sagittal axis, volumetric 3D ultrasound imaging provides multiplanar images in several orthogonal (perpendicular) planes and may provide additional anatomical information. In this imaging study we assessed the feasibility of 3D ultrasound imaging of the anatomical area relevant to the thoracic paravertebral block.

METHODS: Four healthy young adult volunteers were recruited. With the volunteer in the sitting position, the C7 spinous process and the spinous processes of the T1 to 5 vertebra were identified. All images were obtained using a Philips iU22 ultrasound system with a high-frequency 3D 4D volume linear array transducer (13 to 5 MHz). A 3D volumetric scan of the right thoracic paravertebral region was performed with the sagittal plane as the data acquisition plane.

RESULTS: With 3D multiplanar scanning, the sagittal, transverse, and coronal views of the paravertebral anatomy were simultaneously visualized in all subjects. Unlike 2D images, the articulation between the neck of the rib and the transverse process was well delineated in the sagittal and coronal images of the multiplanar scans. The rendered 3D volume allowed an in-depth view of the paravertebral anatomy from all sides (i.e., top, bottom, front, back, left, and right).

CONCLUSIONS: Volumetric 3D ultrasound imaging of the thoracic paravertebral space is feasible and provides more detailed spatial anatomical information than 2D ultrasound imaging.