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综述：补体的活化与心脏手术：改善预后的一种新靶点

Review Article: Complement Activation and Cardiac Surgery: A Novel Target for Improving Outcomes

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补体活化和继发的炎症反应是心脏手术中多系统器官损伤的一种重要的潜在机制。采用补体抑制剂这种新的治疗策略，可能有希望通过抑制补体活化或其生物活性的效应分子来改善心脏手术患者的预后。最近有研究补体抑制剂的临床试验为进一步描述补体活化及其抑制作用对临床预后的影响提供了重要数据。此综述检视了补体活化和其抑制作用作为一种治疗手段在心脏手术中的地位。
（马霄雯　译　陈杰　校）
Complement activation and the resulting inflammatory response is an important potential mechanism for multisystem organ injury in cardiac surgery. Novel therapeutic strategies using complement inhibitors may hold promise for improving outcomes for cardiac surgical patients by attenuating complement activation or its biologically active effector molecules. Recent clinical trials evaluating complement inhibitors have provided important data to further delineate the impact of complement activation and its inhibition on clinical outcomes. In this review we examine the role of complement activation and its inhibition as a therapeutic approach in cardiac surgery.

在长期鞘内注射吗啡人群中吗啡及代谢产物在脑脊液和血浆的分布特征

Characteristics of Distribution of Morphine and Metabolites in Cerebrospinal Fluid and Plasma with Chronic Intrathecal Morphine Infusion in Humans

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Anesth Analg October 2012 115:797-804;

背景：尽管长期鞘内注射吗啡被广泛应用，但是很少有系统性工作评估长期鞘内注射吗啡后期稳态浓度或脑脊液的化学变化。因此本实验研究了长期接受吗啡鞘内注射的患者的上述问题。
方法：置管和埋泵（范围：127到2165天）并接受固定剂量（>1周）鞘内注射吗啡的疼痛患者被纳入实验。按以下顺序进行操作：（1）估计疼痛评分；（2）X光片确定导管尖端的位置；（3）在腰椎L4-L5或L5-

S1间隙穿刺取脑脊液样本。脑脊液和血浆样本用于化学检验，用液相色谱-质谱分析仪检测吗啡及其3/6葡萄糖苷酸代谢产物（M3G，M6G）。

结果：19例病人入组。其中获得16例病例的脑脊液样本。三例病人无法进行原始数据分析，因为一例置管于硬膜外，一例导管断裂，另一例导管尖端形成肉芽肿。剩余13例病人的每日剂量范围，泵速和浓度分别为1.6-25mg/d， 0.1-1ml/d， 5-50mg/ml。主要的观察报告如下：（1）血浆和脑脊液中的吗啡，M3G和M6G与每日剂量呈显著的（线性）回归斜率关系；（2）相反，脑脊液和血浆中吗啡比率：M3G：M6G与每日剂量相关的回归斜率值和0值相比无差异；（3）绘制出的标准化脑脊液吗啡浓度（例如每日鞘内注射吗啡的注射部位浓度）和取样位置与导管尖端相差几个节段的脑脊液中的吗啡浓度相比明显下降；但差异并非因距离导致的结合物产生（4）脑脊液蛋白，葡萄糖，红细胞白细胞计数相对每日吗啡剂量或采样点吗啡浓度提示无显著回归关系；（5）置管失败或形成肉芽肿的病人的脑脊液中吗啡浓度降低。

结论：长期注射吗啡导致其在脑脊液中呈高浓度聚集，浓度与输注剂量和采样点距输注点距离相关，但对脑脊液生化无影响。

（王苑　译　陈杰　校）

BACKGROUND: Despite widespread use of chronic intrathecal (IT) infusions of morphine, there is little systematic human work evaluating the steady state morphine concentrations or cerebrospinal (CSF) chemistry after long-term IT morphine delivery. We sought to address these issues in patients receiving chronic IT morphine infusion.

METHODS: Pain patients with implanted catheters and pumps (range: 127 to 2165 days), receiving a stable dosing (>1 week) of IT morphine by infusion, were entered into the study. The following sequence was performed: (1) estimation of pain score; (2) radiograph localization of catheter tip; (3) percutaneous sampling of lumbar CSF at the L4 to 5 or L5–S1 space. CSF/plasma samples were assayed for chemistry, and morphine and its 3/6 glucuronide metabolites (M3G, M6G) by liquid chromatography mass spectrometry.

RESULTS: Nineteen patients were enrolled. CSF samples were obtained from 16 subjects. Three patients were not included in the primary analysis because 1 catheter was epidural, 1 catheter was fractured, and 1 had a granuloma at the catheter tip. Of the 13 sampled patients, the range of daily doses, rates, and concentrations were 1.6 to 25 mg/d and 0.1 to 1 mL/d, 5 to 50 mg/mL, respectively. The principal observations were as follows: (i) morphine, M3G, and M6G were present in the CSF and plasma and showed a significant regression slope when plotted versus daily dose; (ii) in contrast, the regression slope of the group ratio morphine:M3G:M6G plotted versus daily dose in CSF or plasma was not different from zero; (iii) plotting "normalized" CSF analyte concentration (e.g., concentration at site/daily IT morphine dose) against the segmental distance of the sampling site from the catheter tip revealed a significant decline in concentration of morphine, but not of conjugates as a function of distance from the catheter tip; (iv) plotting CSF protein, glucose, and red and white cell counts versus daily morphine dose or morphine concentration at the sampling site revealed no significant regression; and (v) patients with a catheter failure or a granuloma showed reduced concentrations of morphine in their CSF.

CONCLUSION: Chronic infusion of morphine shows high concentrations, which correlate with the infusion dose and the proximity of the sampling site to the infusion site with no effects on CSF chemistry.

在病态肥胖患者中使用两种药代模型以总体重计算的诱导及插管所需丙泊酚的效应有效浓度

The Effective Effect-Site Propofol Concentration for Induction and Intubation with Two Pharmacokinetic Models in Morbidly Obese Patients Using Total Body Weight

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背景：大部分丙泊酚输注的药代动力学（PK）模型是基于正常体重患者研究之上的。这些模型推广使用于病态肥胖患者存在争议。利用两个药代动力学模型和靶控输注系统，作者拟确定在病态肥胖者中以总体重计算的麻醉诱导所需要的预计丙泊酚效应部位浓度（Ce）
方法：66名从18到50岁的病态肥胖受试者随机接受基于Marsh或Schnider药代模型的丙泊酚输注，以达到并维持预定丙泊酚效应部位浓度。对所有受试者进行脑电双频指数监测。输注丙泊酚前使用芬太尼3μg/kg。意识丧失后注射维库溴铵便于气管插管。每组6名患者为接受不同预定效应浓度的丙泊酚。
丙泊酚"有效浓度"（ECe）定义为整个诱导期（从达到预测目标浓度45秒后，至气管插管后5分钟）维持足够催眠状态（双频指数<60）。研究期间每分钟测量心率和动脉血压。使用Probit回归分析来计算使50%、95%患者进入催眠状态的有效丙泊酚效应浓度（ECe_{50}和ECe_{95}）和95%置信区间（CIs）。
结果：各模型组及不同丙泊酚效应浓度组之间患者特征具有可比性。Marsh模型和Schnider模型计算得到的ECe_{50}
分别为3.4μg/mL（95%CI：2.9，3.7μg/mL），4.5μg/mL（95%CI：3.8，6.2μg/mL）。而两者计算得到的ECe_{95}分别为4.2μg/mL（95%CI：3.8，6.2μg/mL）和5.5μg/mL（95%CI：5.0，7.2μg/mL）。达到ECe_{95}时两PK模型的血流动力学相似。
结论：使用总体重计算病态肥胖患者诱导所需丙泊酚剂量时，应考虑到各PK模型目标浓度的差异。
（孙莉荔　译　陈杰　校）

BACKGROUND: Most pharmacokinetic (PK) models used for propofol administration are based on studies in normal-weight patients. Extrapolation of these models for morbidly obese patients is controversial. Using 2 PK models and a target-controlled infusion system, we determined the predicted propofol effect-site concentration (Ce) needed for induction of anesthesia in morbidly obese subjects using total body weight.
METHODS: Sixty-six morbidly obese subjects from 18 to 50 years of age were randomized to receive propofol to reach and maintain a predetermined propofol Ce, based on the PK models of either Marsh or Schnider. All patients were monitored with a Bispectral Index electroencephalographic monitor. Fentanyl 3 μg/kg total body weight was administered before starting the propofol infusion. After loss of consciousness, vecuronium was administered to facilitate endotracheal intubation. Groups of 6 patients each received propofol at a different, predetermined target propofol Ce. An "effective Ce" (ECe) was defined as the propofol Ce that provided adequate hypnosis (Bispectral Index <60) during the complete induction period (45 seconds after reaching the predetermined target Ce until 5 minutes after tracheal intubation).

Heart rate and arterial blood pressure were measured every 1 minute throughout the study period. Probit regression analysis was performed to calculate the effective propofol Ce values to induce hypnosis in 50% (ECe_{50}) and 95% (ECe_{95}) of patients with 95% confidence intervals (CIs).
RESULTS: Patient characteristics were similar between models and across the propofol target concentration groups. The ECe_{50} of propofol was 3.4 μg/mL (95% CI: 2.9, 3.7 μg/mL) with the Marsh model and 4.5 μg/mL (95% CI: 4.1, 4.8 μg/mL) with the Schnider model ($P < 0.001$). The ECe_{95} values were 4.2 μg/mL (95% CI: 3.8, 6.2 μg/mL) and 5.5 μg/mL (95% CI: 5.0, 7.2 μg/mL) with Marsh and Schnider models, respectively. At the ECe_{95}, hemodynamic effects were similar with the 2 PK models.
CONCLUSION: Different propofol target concentrations for each PK model must be used for induction when using total body weight in morbidly obese patients.

技术交流　一项新的肾脏生理参数：分钟尿流率变异度

Technical Communication: Minute-to-Minute Urine Flow Rate Variability: A New Renal Physiology Variable

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背景：尿量代表组织灌注，通常以1小时为间隔进行测量。由于少量尿在集尿袋中难以测量，且高估或低估情况较常见。为了克服这些缺点，出现了电子尿流率仪。因为这些仪器每隔1分钟测尿量，实现了对尿流率（UFR）的分钟测量。在前期研究中观察到UFR的分钟变异度在低血容量时消失。本研究的目的在于阐述分钟尿流率（UFR)的变异度可作为一项新的肾脏生理参数，同时研究其与血容量减少的关系。
方法：本研究的实验动物为7只成年猪。测量容量正常及逐渐失血（占总血容量的10%，20%，30%）时的尿流率，分钟尿流率，平均动脉压，心率及碱剩余。利用方差及小波频谱分析测量分钟尿流率变异度的消失。
结果：当失血量占总血容量10%时，尿流率从2.2 ± 0.2mL/min 下降至1.0 ± 0.1 mL/min(标准误±1, $n = 7$, $P = 0.0348$)。分钟尿流率的变化从1.4 ± 0.3 mL/min 下降至0.4 ± 0.1 mL/min(±1 SE, $n = 7$, $P = 0.046$)。
结论：尿流率及分钟尿流率的变异度在出血时降低，尿流率的变异度在协助诊断血容量减少时可能有一定帮助。
（诸琳婕　译　陈杰　校）
BACKGROUND: Urine output is a surrogate for tissue perfusion and is typically measured at 1-hour intervals. Because small urine volumes are difficult to measure in urine collection bags, considerable over- or underestimation is common. To overcome these shortcomings, digital urine

meters were developed. Because these monitors measure urine volume in 1-minute intervals, they provide minute-to-minute measurements of the urine flow rate (UFR). In a previous study, we observed that the minute-to-minute variability in the UFR disappeared during hypovolemia. The aim of this study was to describe the minute-to-minute variability in the UFR as a new physiological variable and to show its relationship to blood volume depletion.
METHODS: Seven adult pigs were used in this study. The UFR, minute-to-minute UFR, mean arterial blood pressure, heart rate, and base excess were measured at euvolemia and during gradual hemorrhaging (10%, 20%, and 30% of estimated blood volume). Variance and wavelet spectral analysis were used to measure the disappearance of the minute-to-minute UFR variability.
RESULTS: The UFR decreased from 2.2 ± 0.2 to 1.0 ± 0.1 mL/min after a 10% estimated blood volume loss (±1 SE, $n = 7$, $P = 0.0348$). The variance in the minute-to-minute UFR decreased from 1.4 ± 0.3 to 0.4 ± 0.1 mL/min (±1 SE, $n = 7$, $P = 0.046$).
CONCLUSIONS: The UFR and its minute-to-minute variability decrease during hemorrhaging. The variability in the UFR may be useful as an aid for the diagnosis of hypovolemia.

琥珀胆碱在危重病人中使用的局限性

The Limits of Succinylcholine for Critically Ill Patients

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背景：紧急插管在重症监护室较常见，这种情况下，琥珀胆碱是神经肌肉阻滞药中首选之一。因为存在一个或多个烟碱受体上调因素，危重病人在给予琥珀胆碱后有很大的高钾血症的风险，但真实风险的数据很少。本研究目的是研究与动脉血钾升高(ΔK)有关的因素和评估在ICU中因紧急插管而注射琥珀胆碱后引起急性高钾血症≧6.5mmol/l的发生率。
方法：在此项前瞻性观察研究中，筛选出所有用琥珀胆碱来进行气管插管的危重病人。只对琥珀胆碱注射前后有动脉血气和血钾监测的气管插管案例进行研究。
结果：18个月中，总共153个插管案例中，有131个危重病人在给予琥珀胆碱进行气管插管前后有动脉血钾监测(K_{after})。经多因素分析，与ΔK相关的唯一因素是插管前ICU停留时间（ρ=0.561，p＜0.01），与Kafter≧6.5mmol/l（n=11）相关的因素是ICU停留时间（p＜0.01）和合并急性脑病（p=0.047）。研究发现16天是预测急性高钾血症≥6.5mmol/l发生的临界值，16天内注射琥珀胆碱发生率为1%（95%的可信区间:0%-4%）而16天后的发生率为37%（95%的可信区间：19%-58%）。
结论：此研究揭示了注射琥珀胆碱后动脉血钾增高风险与ICU停留时间有密切关系。在ICU中停留超过16天，急性高钾血症≥6.5mmol/l发生的风险显著增加。
（郑华容　译　陈杰　校）

BACKGROUND: Urgent tracheal intubations are common in intensive care units (ICU), and succinylcholine is one of the first-line neuromuscular blocking drugs used in these situations. Critically ill patients could be at high risk of hyperkalemia after receiving succinylcholine because one or more etiologic factors of nicotinic receptor upregulation can be present, but there

are few data on its real risk. Our objectives in this study were to determine the factors associated with arterial potassium increase (ΔK) and to assess the occurrence of acute hyperkalemia ≥6.5 mmol/L after succinylcholine injection for intubation in the ICU.
METHODS: In a prospective, observational study, all critically ill patients intubated with succinylcholine in an ICU were screened. Only intubations with arterial blood gases and potassium measurements before and after (K_{after}) a succinylcholine injection were studied.
RESULTS: During 18 months, 131 critically ill patients were intubated after receiving succinylcholine with arterial potassium before and after intubation (K_{after}) for a total of 153 intubations. After multivariate analysis, the only factor associated with ΔK was the length of ICU stay before intubation ($\rho = 0.561$, $P < 0.001$). The factors associated with K_{after} ≥6.5 mmol/L ($n = 11$) were the length of ICU stay ($P < 0.001$) and the presence of acute cerebral pathology ($P = 0.047$). The threshold of 16 days was found highly predictive of acute hyperkalemia ≥6.5 with 37% (95% confidence interval: 19%–58%) of K_{after} ≥6.5 after the 16th day compared with only 1% (95% confidence interval: 0%–4%) of K_{after} ≥6.5 when succinylcholine was injected during the first 16 days.
CONCLUSIONS: This study shows that the risk of ΔK after succinylcholine injection is strongly associated with the length of ICU stay. The risk of acute hyperkalemia ≥6.5 mmol/L is highly significant after 16 days.

综述：肥胖产妇的分娩镇痛

Focused Review: Labor Analgesia for the Obese Parturient

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肥胖产妇的产科麻醉面临多重挑战，包括妊娠期合并症、分娩期并发症发生率的增加及椎管内分娩镇痛的潜在困难和失败。此综述讨论这些挑战并提出在这些人群中，增加分娩期镇痛成功率的可能方法。
（孙晓琼　译　陈杰　校）

Obese parturients present obstetric anesthesia providers with multiple challenges, including increased incidence of maternal coexisting disease, labor complications, and potential for difficult initiation and failure of neuraxial labor analgesia. This focused review discusses these challenges, and suggests potential methods to increase labor analgesia success in this population.

地塞米松与甲强龙对预防住院患儿扁桃体切除术后预防呕吐疗效的比较：一项随机试验

A Comparison Between Dexamethasone and Methylprednisolone for Vomiting Prophylaxis After Tonsillectomy in Inpatient Children: A Randomized Trial

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背景：患儿行扁桃体切除术后呕吐发生率很高，且伴有严重疼痛的发生，可延缓术后经口摄食并导致脱水风险增加。因此，需对此类高危患者行预防性治疗。糖皮质激素，如地塞米松和甲强龙，具有抗炎和止吐的特点，而地塞米松被使用得更多。本研究假设甲强龙对预防患儿扁桃体切除术后呕吐的疗效并不劣于地塞米松。
方法：设计一项随机双盲实验来比较0.5 mg/kg地塞米松和2.5 mg/kg甲强龙的单次剂量对于预防行全麻下扁桃体全切或部分切除的患儿术后24小时内呕吐发生的疗效（主要结果），将最低范围设为9%。160名在全麻下行扁桃体全切或部分切的患儿在诱导后被随机分为接受0.5 mg/kg地塞米松静脉注射(n = 79)或2.5 mg/kg甲强龙静脉注射 (n = 81)。根据手术类型，又对所有的研究结果进行深入分析。
结果：一项意向性治疗分析显示，总的呕吐发生率在地塞米松组为30%，在甲强龙组为22%（差异：8%，95%可信区间[CI]：−5% to 21%）。一项流程分析显示呕吐发生率分别为32%和23%，（差异：9%，95%可信区间[CI]：−5% to 23%，P_{sup} = 0.28）。经口摄食时间和质量以及静脉补液时间，疼痛、满意度评分及镇痛药需要量在两组间相似。呕吐发生率在扁桃体全切与部分切的患儿间也相似；然而相对扁桃体全切患者，部分切除患者的首次经口摄食时间、静脉补液时间以及镇痛药需要更少，满意度更高。
结论：根据意向性治疗分析和流程分析，甲强龙在最差情况下比地塞米松的药效差5%。因此，甲强龙对于预防患儿扁桃体切除术后呕吐非劣于地塞米松。
（瞿亦枫　译　陈杰　校）

BACKGROUND: The frequent incidence of postoperative vomiting in children undergoing tonsillectomy, in addition to the occurrence of severe pain, may delay postoperative oral intake and lead to increased risk of dehydration. Thus, prophylactic therapy is indicated in this high-risk group. Glucocorticoids, such as dexamethasone and methylprednisolone, have anti-inflammatory and antiemetic properties with dexamethasone being frequently used. We hypothesized that methylprednisolone should be noninferior to dexamethasone for the prevention of vomiting in children after tonsillectomy.
METHODS: We designed a randomized double-blind trial to compare the efficacy of a single prophylactic dose of 0.5 mg/kg dexamethasone with a dose of 2.5 mg/kg methylprednisolone on the incidence of postoperative vomiting during the first 24 hours (primary outcome) in children undergoing total or partial tonsillectomy with a noninferiority margin set at 9%. One hundred sixty children undergoing total or partial tonsillectomy under general anesthesia were randomly assigned to receive either IV dexamethasone 0.5 mg/kg (n = 79) or methylprednisolone 2.5 mg/kg (n = 81) after induction of anesthesia. Secondary analysis of all studied outcomes was also performed according to the type of surgery.
RESULTS: An intention-to-treat analysis showed an overall incidence of vomiting of 30% in the dexamethasone group and of 22% in the methylprednisolone group (difference: 8%, 95% confidence interval [CI]: −5% to 21%). A per protocol analysis showed an incidence of vomiting of 32% and 23%, respectively (difference: 9%, and 95% CI of the difference: −5 to 23%, P_{sup} = 0.28). The time and quality of oral intake and the duration of IV hydration, as well as pain and satisfaction scores and the need for analgesics, were similar between the 2 groups. The incidence of vomiting was also similar in patients who had total versus partial tonsillectomy; however,

time to first oral intake, duration of IV hydration, and the need for analgesics were less with better satisfaction scores in partial versus total tonsillectomy patients.
CONCLUSION: Methylprednisolone is at worst 5% less effective than dexamethasone by the intention-to-treat analysis, and by the per protocol analysis. Thus, it is noninferior to dexamethasone in preventing vomiting after tonsillectomy in children.

昂丹司琼诱导恶性高热易感个体的肌肉收缩

Ondansetron-Induced Muscular Contractures in Malignant Hyperthermia-Susceptible Individuals

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背景：5-HT_3受体拮抗剂昂丹司琼，通常用于治疗恶心呕吐。但当一名5岁男童接受昂丹司琼治疗剂量死亡后，昂丹司琼被疑可能诱发恶性高热（MH）。为了评估昂丹司琼触发MH的可能影响，对MH易感个体（MHS）和非MH易感个体（MHN）进行了肌肉标本的体外试验。
方法：将6例MHS患者和10例MHN患者的肌束标本放置于不断增加昂丹司琼浓度（从0.1递增至300ug/mL)的培养皿进行培养。同时连续监测肌束静息张力和颤搐高度。数据以中位数和四分位间距表示；组间差异进行Mann–Whitney *U* 检验($P < 0.05$)。
结果：肌束标本的重量，长度，初始静息张力和颤搐高度组间差异无统计学意义。在应用昂丹司琼后，两组均出现颤搐高度增加。然而，昂丹司琼浓度达到50ug/mL（MHS 2.5 [2.1 to 4.0] vs. MHN 0 [0 to 0] mN）和100ug/mL时 (18.0 [11.8 to 22.8] vs 0 [0 to 0] mN)，肌肉收缩只出现于MHS患者标本。达到300ug/mL时，肌束反应在MHN患者标本中同样可以观察到(23.3 [20.1 to 40.1] vs 1.8 [0.3 to 4.9] mN)。
结论：体外实验中昂丹司琼可引起骨骼肌肌束收缩，对MHS患者影响显著高于MHN患者。由于引发肌肉收缩的昂丹司琼必需浓度超过最低治疗血浆浓度500倍，在体内引起肌束收缩的可能性很小。
（黄萍　译　陈杰　校）

BACKGROUND: The 5-HT_3-receptor antagonist ondansetron, commonly used to treat nausea and vomiting, was suspected of triggering malignant hyperthermia (MH) when a 5-year-old boy died after receiving a therapeutic dose of ondansetron. To evaluate a possible influence of ondansetron on the onset of MH, we investigated its effect on muscle specimens of MH-susceptible (MHS) and MH-nonsusceptible (MHN) individuals in vitro.
METHODS: Muscle bundles of 6 MHS and 10 MHN patients were incubated in a tissue bath with ondansetron at increasing concentrations (0.1 to 300 μg/mL). Changes in resting tension and twitch height were monitored continuously. Data are reported as median and interquartile range; Mann–Whitney *U* test for differences between the groups ($P < 0.05$).
RESULTS: Weight, length, initial resting tension, and twitch height of the muscle bundles did not significantly differ between the investigated groups. An increasing twitch amplitude after ondansetron application was observed in both groups. However, contractures developed only in MHS but not in MHN muscle at ondansetron concentrations of 50 μg/mL (MHS 2.5 [2.1 to 4.0] vs. MHN 0 [0 to 0] mN) and 100 μg/mL (18.0 [11.8 to 22.8] vs 0 [0 to 0] mN). At 300 μg/mL

ondansetron, a muscular response was also observed in MHN (23.3 [20.1 to 40.1] vs 1.8 [0.3 to 4.9] mN).
CONCLUSIONS: Ondansetron induced contractures in skeletal muscle bundles in vitro. The effect was significantly higher in MHS than in MHN muscle. Because the necessary concentration of ondansetron exceeded the therapeutic plasma levels by a minimum of 500 times, a trigger potency in vivo seems unlikely.

右美托咪定混合罗哌卡因可延长胫后神经感觉阻滞时间

Posterior Tibial Nerve Sensory Blockade Duration Prolonged by Adding Dexmedetomidine to Ropivacaine

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背景：右美托咪定，一种α_2受体激动剂，用于椎管内和静脉麻醉可延长镇痛时间。本研究评估右美托咪定加入罗哌卡因行胫神经阻滞时对感觉阻滞时间的影响。
方法：在这项前瞻性、随机、双盲、交叉对照研究中，14名健康志愿者分为2组。所有志愿者接受超声引导下离内踝近端4-5cm处的胫神经阻滞。在R组中，注射0.5%罗哌卡因10ml用于阻滞，RD组中，给予0.5%罗哌卡因10ml和右美托咪定1ug/kg的混合溶液。注射后，监测生命体征，评估感觉阻滞起效与消失，以及镇静水平（警觉/镇静评分）。三周后，重复相同的过程，但是研究的对象交换入组。主要终点是感觉阻滞的持续时间。同时评估时间和滞后效应。次要终点是起效时间和副作用发生如低血压，心动过缓，缺氧和镇静。
结果：神经阻滞持续时间RD组比R组更长（21.5h vs 16.2h；平均成对差异5.3小时，【95%可信区间为3.9-6.7小时】；P<0,0001）。两组作用起效时间相似。在整个研究期间，R组中的平均收缩压和舒张压水平始终稳定。RD组中，观察到用药后60-480min之间收缩压和舒张压有显著下降（P<0.05）；RD组中两名志愿者的收缩压较基准值下降30%，而R组则没有发生。组间除了在60min时间点心率有差异（P<0.01）外，两组中心率相似。
结论：右美托咪定加入罗哌卡因用于胫神经阻滞，在起效时间不变的情况下，可延长感觉阻滞时间。然而，应当对患者进行监测以避免潜在的不良事件如低血压，心动过缓和镇静。
（詹凯诞　译　陈杰　校）

BACKGROUND: Dexmedetomidine, an α_2-receptor agonist, prolongs analgesia when used in neuraxial and IV blocks. We evaluated the effect of dexmedetomidine added to ropivacaine for tibial nerve block on the duration of the sensory blockade.
METHODS: For this prospective, randomized, controlled, double-blind, crossover trial, 14 healthy volunteers were allocated to 2 groups. All volunteers received an ultrasound-guided tibial nerve block 4 to 5 cm proximally to the medial malleolus. In group R, 10 mL of 0.5% ropivacaine was injected for the block; in group RD, 10 mL of a solution containing 0.5% ropivacaine with 1 μg/kg of dexmedetomidine was administered. After the injection, monitoring

of vital signs, evaluation of onset and resolution of sensory block, and level of sedation (Observer's Assessment of Alertness/Sedation scale) were performed. Three weeks later, the same procedure was repeated, but the study subjects were allocated to the other group in a crossover fashion. The primary end point was the duration of sensory blockade. The time and carryover effects were also evaluated. Secondary outcomes were the onset time and the presence of adverse effects such as hypotension, bradycardia, hypoxia, and sedation.

RESULTS: Sensory blocks lasted longer in group RD than in group R (21.5 vs 16.2 hours; mean pairwise difference 5.3 hours [95% confidence interval: 3.9–6.7 hours]; $P < 0.0001$). Onset times were similar between groups. The mean systolic and diastolic blood pressure levels were stable throughout the study period in group R. In group RD, a noticeable decrease in systolic and diastolic blood pressure was observed between 60 and 480 minutes ($P < 0.05$); 2 volunteers experienced a 30% decrease in systolic blood pressure when compared with the baseline value as compared with none in group R. Heart rate was similar between groups except at 60 minutes ($P < 0.01$).

CONCLUSION: Dexmedetomidine added to ropivacaine for tibial nerve block prolongs the duration of sensory blockade with similar onset time. However, patients should be monitored for potential adverse effects such as hypotension, bradycardia, and sedation.

简报：患者接受Whitacre型穿刺针侧向注射局麻药时维持长时间侧卧位可产生对称的感觉阻滞

Brief Report: Lateral Injection Using a Whitacre Needle with Patients in the Lateral Decubitus Position Maintained for a Prolonged Time Period Produces Symmetric Sensory Block

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背景：通过Whitacre型穿刺针的针尖方向定向注射药物可以调整感觉阻滞平面。假设使用Whitacre型穿刺针注射高比重局麻药，针尖斜面朝向侧面可以产生更为对称的感觉阻滞。

方法：择期行腰麻下下肢手术病人，侧卧位下随机接受1种或2种不同针尖方向（Whitacre型穿刺针，朝头侧或者侧面）0.5%重比重布比卡因10mg的穿刺麻醉。注射药物后维持侧卧位15min，再记录感觉阻滞情况。主要结果为在手术侧以及对侧感觉平面比较。采用Wilcoxon-Mann-Whitney，U检验非配对非参数数据。配对数据采用Hodges-Lehman估计组间阻滞节段的中位数差异以及95%可信区间（CI）

结果：侧向注射组的手术区和对侧区的阻滞平面无显著性差异。Hodges-Lehmann点估计量为0.5%，95%可信区间为0-2.5，意味着在足够长的侧卧时间下患者感觉阻滞平面可更对称。头向注射组中，对侧的平面显著低于手术侧。Hodges-Lehmann点估计量为2.5个节段，95%可信区间为0.5-5.

结论：Whitacre型穿刺针针尖侧向注射0.5%重比重布比卡因10mg可使手术侧和对侧产生的感觉阻滞平面更对称。
（陆秉玮　译　陈杰　校）

BACKGROUND: The directional flow of injection through a Whitacre needle can be used to modify the level of sensory blockade. We hypothesized that injection of hyperbaric local anesthetic through a Whitacre needle with the bevel oriented laterally can produce a more symmetric sensory block.
METHODS: Patients scheduled for lower limb surgery under spinal anesthesia with the patient in lateral decubitus position were randomized to receive 10 mg, 0.5% hyperbaric bupivacaine with the Whitacre needle orifice in 1 of 2 orientations, cephalad and lateral. The patient's position was maintained for 15 min after the injection, and sensory blocks were recorded. The primary outcome was the sensory levels between the dependent and nondependent side. The Wilcoxon-Mann-Whitney *U*-test odds was used to compare unpaired nonparametric data. For the paired samples, 95% confidence intervals (CI) of differences between group medians were calculated using the Hodges-Lehman estimator for the median difference in number of blocked segments.
RESULTS: There was no significant difference in block level between dependent and nondependent sides in the lateral group. The Hodges-Lehmann point estimator was 0.5% and 95% CI was 0–2.5, suggesting a more symmetric sensory block in patients in the lateral decubitus position maintained for a sufficient period of time. A significantly lower level of blockade was noticed on the nondependent side compared to the dependent side in the cephalad group. The Hodges-Lehmann point estimator was 2.5 segments and 95% CI was 0.5–5.
CONCLUSIONS: Injection of 10 mg of 0.5% hyperbaric bupivacaine with the bevel of the Whitacre needle oriented laterally produces more symmetric sensory levels of blockade between the dependent and nondependent sides.

新鲜全血用于治疗失血性休克： 避免出现并发症的同时认识其效益

Fresh Whole Blood Use for Hemorrhagic Shock: Preserving Benefit While Avoiding Complications

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随着血液储存及加工技术的发展，过去一段时间内对失血性休克病人输血支持的认识有了变化。输血技术随着第一次世界大战中对全血的应用而发展，而现在，在发达国家，多以成分输血治疗为主。与此相反，在一些发展中国家的部分儿童医院及条件简陋的医院，临床上仍然使用新鲜全血。在大出血的病人中，新鲜全血的应用相对成分输血也有其依据，但相关的前瞻性随机预期临床研究却很少。近期在成人创伤患者及复合严重休克和凝血障碍的重症患者给予新鲜全血治疗的的回顾性研究，也有这个争论数十年的问题。随着近期对输注新鲜全血风险的认识，对血液相应加工及储存方法的也得到了重视。重要的是要认

识到，目前血液成分处理和存储的方法还没有得到充分的探讨，以确定它们是否影响临床结果。在此文中，我们需要衡量任何引起出血性休克病人使用新鲜全血的风险及利益，随着现在及未来对血液处理及储存方法的变化，临床使用新鲜全血的效率及安全性也将受影响。为此我们提出假说及临床调查，确定如何取得临床上使用新鲜全血风险利益比值最大化。

（邓利兵译 薛张纲校）

Transfusion support of patients with hemorrhagic shock has changed over time with the development of storage and processing methods. Transfusion medicine developed during World War I with the use of whole blood, and now in the developed world, component therapy predominates. In contrast, there is still clinical use of fresh whole blood (FWB) in the developing world, in a minority of children's hospitals, and in combat settings. Although there is a rationale for the use of FWB in massively bleeding patients compared with the use of individual components, it has rarely been analyzed in prospective randomized clinical trials. Recent retrospective studies in adult trauma and mixed critically ill patients have revived this decades-old controversial question of the value of FWB for patients with severe shock and coagulopathy or those at risk. The risks of FWB use have also been highlighted recently, which has caused some to focus on reducing these risks with alternative processing and storage methods. It is important to recognize that current processing and storage methods for components have also not been adequately explored to determine whether they affect clinical outcomes. In this article, we review potential benefits and risks of FWB use for patients with hemorrhagic shock from any cause, and how current and future processing and storage methods may affect efficacy and safety of FWB in this population. We intend this review to stimulate hypothesis generation and clinical investigation in determining when FWB may be indicated and how to optimally process and store FWB to maximize its risk-benefit ratio

食欲素——对于鼠的异丙酚麻醉的促醒因子

Orexin-a facilitates emergence from propofol anesthesia in the rat

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背景：下丘脑的食欲素神经元在促进和维持哺乳动物的觉醒状态中发挥重要作用。先前的研究已经表明，食欲素神经元被异氟烷和七氟烷所抑制，而微注射食欲素则会促使其脱离挥发性麻醉剂的作用。在此项研究中，我们首先验证我们的假定：食欲素神经元的活性被异丙酚所抑制。在此之外，我们也将阐明：位于基底前脑的食欲素的作用——调节异丙酚麻醉的麻醉-苏醒周期

方法：老鼠分别在在静脉注射异丙酚0分钟、30分钟、60分钟和120分钟麻醉完成后反射恢复时处死。我们用c-Fos的表达监测食欲素神经元的活性。通过放射免疫法测定血浆中的食欲素-A的浓度。在异丙酚静脉注射前15分钟或是异丙酚注射完15分钟前我们将食欲素A(30或100pmol)或食欲素-1受体拮抗剂——SB-

334867A(5或20μg）微注射入鼠的基底前脑。记录失去反射和反射恢复的时间为诱导和苏醒的时间。
结果：C-Fos
免疫反应性食欲素神经元的减少表示异丙酚麻醉抑制了食欲素神经元活性。当老鼠从麻醉中苏醒时食欲素神经元的活性恢复。异丙酚麻醉减少了血浆中食欲素-A的浓度。基底部微注射食欲素-A对于诱导时间没有影响但加快了苏醒时间。相反，微注射食欲素-1受体拮抗剂SB-334867A延缓了苏醒时间。
结论：我们的研究表明：异丙酚麻醉抑制了食欲素神经元的活性，位于基底前脑的食欲素参与了异丙酚麻醉的麻醉-苏醒周期。
（郭晨跃译 薛张纲校）

BACKGROUND:Hypothalamic orexinergic neurons play a critical role in the promotion and maintenance of wakefulness in mammals. Previous studies have demonstrated that activities of orexinergic neurons were inhibited by isoflurane and sevoflurane, and microinjection of orexin facilitated the emergence from volatile anesthesia. In this study we first examined the hypothesis that the activity of orexin neurons is inhibited by propofol anesthesia. Moreover, the role of the orexinergic signals in basal forebrain in regulating the anesthesia-arousal cycle of propofol anesthesia is also elucidated.
METHODS:Rats were killed at 0, 30, 60, and 120 minutes of propofol infusion as well as at the time the righting reflex returned after the termination of anesthesia. Activated orexinergic neurons were detected by c-Fos expression. The plasma concentrations of orexin-A were measured by radioimmunoassay. Orexin-A (30 or 100 pmol) or the orexin-1 receptor antagonist, SB-334867A (5 or 20 μg), was microinjected into the basal forebrain 15 minutes before propofol infusion, or 15 minutes before the termination of propofol infusion. The loss and the return of the righting reflex time were recorded as the induction and the emergence time.
RESULTS:Propofol anesthesia resulted in an inhibition of orexinergic neuron activity as demonstrated by the reduced numbers of c-Fos-immunoreactive orexinergic neurons. The activities of orexinergic neurons were restored when rats emerged from anesthesia. Propofol anesthesia decreased plasma orexin-A concentrations. Intrabasalis microinjection of orexin-A had no effect on the induction time but facilitated the emergence from propofol anesthesia. Inversely, intrabasalis microinjection of the orexin-1 receptor antagonist SB-334867A delayed the emergence from propofol anesthesia.
CONCLUSIONS:Our findings indicate that activity of orexinergic neurons is inhibited by propofol anesthesia, and the orexin signals in basal forebrain are involved in anesthesia-arousal regulation from propofol anesthesia.

通过容量动力学监测脱水

Detection of dehydration by using volume kinetics

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背景：手术患者多数存在脱水情况，除了超过体重5%的严重脱水，一般的情况难以诊断，假设注射一定剂量的晶体液后，可以通过流体动力分析血红蛋白浓度监测脱水的程度。
方法：将10名健康志愿男性分为4组，互相隔离至少2天，每人给予醋酸钠林格氏液5-10ml/kg至少15分钟，开始静注前，给予速尿致容量损耗达1.5-2L（相当于体重的2%），120分钟后根据血红蛋白浓度计算注射液体的清除率和半衰期，改变体位后通过脉氧饱和度监测灌注指数和脉氧可变指数。
结果：脱水后，林格氏液清除率从1.84下降至0.53mL/kg/min，半衰期从23延长至76分钟，注射量越小，脱水状态和非脱水状态下前两者的差异越明显，此时，尿排泄量不可靠，脱水降低灌注指数，但对脉氧饱和指数无影响。
结论：脱水达体重2%时可通过注射5ml/kg醋酸林格氏液后监测液体清除率和及半衰期。（韩叙译 薛张纲校）

BACKGROUND: Patients admitted to surgery may be dehydrated, which is difficult to diagnose except when it is severe (>5% Gl116 of the body weight). We hypothesized that modest dehydration can be detected by kinetic analysis of the blood hemoglobin concentration after a bolus infusion of crystalloid fluid.
METHODS: Four series of experiments were performed on 10 conscious, healthy male volunteers. Separated by at least 2 days, they received 5 or 10 mL/kg acetated Ringer's solution over 15 minutes. Before starting half of the IV infusions, volume depletion amounting to 1.5 to 2.0 L (approximately 2% of body weight) was induced with furosemide. The elimination clearance and the half-life of the infused fluid were calculated based on blood hemoglobin over 120 minutes. The perfusion index and the pleth variability index were monitored by pulse oximetry after a change of body position.
RESULTS: Dehydration decreased the elimination clearance of acetated Ringer's solution [median (25th-75th percentile)] from 1.84 (1.23-2.57) to 0.53 (0.41-0.79) mL/kg/min (Wilcoxon matched-pair test $P < 0.001$) and increased the half-life from 23 (12-37) to 76 (57-101) minutes ($P < 0.001$). The smaller infusion, 5 mL/kg, fully discriminated between experiments performed in the euhydrated and dehydrated states, whereas the urinary excretion provided a less-reliable indication of hydration status. Dehydration decreased the perfusion index but did not affect the pleth variability index.
CONCLUSION: Dehydration amounting to 2% of the body weight could be detected from the elimination clearance and the half-life of an infusion of 5 mL/kg Ringer's solution.

简要报告：受体特异性决定丙泊酚和磷丙泊酚致痛属性。

Brief report: receptor specificity defines algogenic properties of propofol and fospropofol.
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背景：丙泊酚引起注射部位疼痛，而磷丙泊酚不引起。 我们猜测，不像丙泊酚，磷丙泊酚激活刺激性受体（TRPA1受体）。
方法：我们利用电生理和行为学来检测前面的假设。

结果：我们的数据表明，异丙酚（100μM）只在表达TRPA1受体的神经元上引起内向电流。 然而，磷丙泊酚（100μM和1mM）不能引起无论TRPA1受体阳性或TRPA1受体阴性的神经元的去极化电流。 丙泊酚和磷丙泊酚都能产生的全身麻醉。
结论：磷丙泊酚不能产生致痛性最可能是无法激活伤害性感受器TRPA1。
（贺盼译 薛张纲校）
BACKGROUND:Propofol-evoked injection site pain is not observed with fospropofol. We hypothesized that unlike propofol, fospropofol does not activate the irritant receptor, transient receptor potential 1 (TRPA1).
METHODS:We tested the hypothesis using electrophysiology and behavioral studies.
RESULTS:Our data demonstrate that propofol (100 μM) evokes an inward current only in TRPA1-expressing neurons. However, fospropofol (100 μM and 1 mM) is unable to evoke depolarizing currents in either TRPA1-positive or TRPA1-negative neurons. Both propofol and fospropofol produced general anesthesia.
CONCLUSIONS:The lack of algogenic activity in fospropofol is most likely the result of its inability to activate TRPA1 on nociceptors.

Bonfils纤维喉镜磨牙后入路临床应用的回顾

Clinical Uses of the Bonfils Retromolar Intubation Fiberscope: A Review

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Bonfils纤维喉镜是一种带有40度弯头的硬性直光学纤维镜，这有利于有针对性的插管。在1983年第一次记载Bonfils纤维喉镜采用磨牙后入路对小颌畸形综合征儿童进行气管插管。在经过最初一段严峻的学习经历后，Bonfils纤维喉镜已成为管理正常和困难气道的有力工具。它的优点在于它可当做一个光纤插管探头，使插管过程中气管导管头端可视化。纤细的外形使它可在张口受限及颈椎活动受限的病人中使用。不像可屈光纤镜，它的硬性结构提高了其操作性并使其可插过软组织障碍物。内窥镜方向的应用Bonfils光纤镜比可屈光纤镜更优，并且它同样轻便、耐用、设置简便。Bonfils光纤镜使用者感觉到其使用过程中最主要的困难和所有光纤镜一样，血液、分泌物、雾气和接触组织会限制视野。此外，使用Bonfils光纤镜不能采用鼻插管，可能直接导致组织伤和气压伤。虽然插管成功率非常高，但它仍然十分依赖于操作人员。其插管时间不如传统喉镜，费时多在某些方面可能是一个问题。总之，经过初期训练后，Bonfils光纤镜是管理困难气道的有效工具。
（方昕译 薛张纲校）
The Bonfils Retromolar Intubation Fiberscope is a rigid, straight fiberoptic device with a 40-degree curved tip, which facilitates targeted intubation. Bonfils, using a retromolar approach to intubate tracheas of children with Pierre Robin syndrome, was first described in 1983. After an initial steep learning curve, the Bonfils becomes a useful device in the management of normal and difficult airways. The advantages lie in its performance as an optical intubating stylet, which allows visualization from the tip of the endotracheal tube during intubation. The slim profile makes it useful in patients with limited mouth opening and cervical spine movement. Unlike the flexible fiberoptic bronchoscope, its rigid structure improves maneuverability and allows insertion past soft tissue obstructions. Endoscopic orientation of the Bonfils is better than the flexible fiberoptic bronchoscope, and it is also portable, durable, and simple to set up. The main

difficulty experienced by Bonfils users is common to all fiberoptic scopes, limited view due to blood, secretions, fogging, and tissue contact. Additionally, nasal intubation is not possible with the Bonfils, and direct trauma and barotrauma are possible. Although the intubation success rate is high, it is still very much operator dependent. Time to intubation is inferior to conventional laryngoscopy, and its expense may be an issue in some centers. In conclusion, the Bonfils is an effective tool for management of the difficult airway after initial training.

在正常健康怀孕妇女血栓弹力图和标准止血实验室测试的前瞻性纵向研究

Prospective Longitudinal Study of Thromboelastography and Standard Hemostatic Laboratory Tests in Healthy Women During Normal Pregnancy

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背景：止血障碍是常见的产科并发症。血栓弹力图（TEG® ）用于同时测量10至20分钟内凝血和纤溶作用。在这个前瞻性纵向研究中我们的首要目标是获得在正常怀孕和8周产后的TEG® 生理变量。第二个目的是比较产后8周及妊娠10～15周TEG® 变量的变化并且将TEG® 参数和标准实验室分析关联起来。

方法：收集了45位健康怀孕妇女从孕10~15周、20~22周、28~30周、38~40周及产后8周的血液标本。 接下来TEG分析包括：凝血时间(TEG® -R)，20毫米血凝块形成的时间(TEG® -K)，凝血角度(TEG® -Angle)，最大振幅(TEG® -MA)，30分钟后溶解(TEG® -LY30)。并对活化部分凝血活酶时间，凝血酶原时间，可溶性纤维蛋白，抗凝血酶，D-二聚体，和血小板计数进行了分析。

结果：与产后8周相比孕期TEG® -R至少缩短0.9分钟一直到孕28到30周（上限99%可信区间），平均减少在23%-26%。TEG® -K在整个孕期至少缩短0.1分钟，平均减少在18%-35%之间。TEG® -Angle在孕期至少增加2.5度，平均增加在6%-8%。TEG® -LY30在孕28-30周和孕38-40周至少降低0.03%，平均减少幅度在67%-73%。常规凝血功能实验室检查结果均在正常怀孕的界限范围内。TEG® 和实验室变量之间的不相关或弱相关。

结论：TEG® 反映出孕期凝血功能增加纤溶系统功能降低。止血启动更快，血凝块强度增加。在妊娠后期纤溶下降。孕期需要可供选择的TEG® 变量限值。孕期标准止血的实验室测试与预期一致。确定粘弹性方法是否是在诊断产后出血凝血功能障碍的最好的标准止血实验方法的研究还需进一步进行。

（李丽红译 薛张纲校）

BACKGROUND:Hemostatic disorders are common in obstetric complications. Thromboelastography (TEG®) simultaneously measures coagulation and fibrinolysis within 10 to 20 minutes. Our primary aim in this prospective longitudinal study was to obtain knowledge about physiological changes in TEG® variables during normal pregnancy and 8 weeks postpartum. The secondary aims were to compare TEG® variables during pregnancy with TEG® variables 8 weeks postpartum and gestational weeks 10 to 15 and to correlate TEG® variables to standard laboratory analyses.
METHODS:Blood samples were collected from 45 healthy pregnant women at gestational weeks 10 to 15, 20 to 22, 28 to 30, and 38 to 40, and at 8 weeks postpartum. The following TEG® analyses were performed: time until start of clotting (TEG® -R), time until 20-mm clot firmness (TEG® -K), angle of clotting (TEG® -Angle), maximum amplitude (TEG® -MA), and lysis after 30 minutes (TEG® -LY30). Activated partial thromboplastin time, prothrombin time, soluble fibrin, antithrombin, D-dimer, and platelet count were analyzed.
RESULTS:Compared to 8 weeks postpartum TEG® -R was at least 0.9 minutes shorter (upper limit 99% confidence intervals) until gestational weeks 28 to 30 and the mean reduction varied between 23%-26%. TEG® -K was at least 0.1 minutes shorter throughout pregnancy and the mean reduction varied between 18%-35%. TEG® -Angle was at least 2.5 degrees greater duringpregnancy and the mean increase varied between 12%-20%. TEG® -MA was also at least 0.4 mm greater during pregnancyand the mean increase varied between 6%-8%. TEG® -LY30 was at least 0.03% lower during gestational weeks 28 to 30 and 38 to 40 and the mean reduction varied between 67%-73%. The routine coagulation laboratory values were within normalpregnant limits. There were no or weak correlations between TEG® and the laboratory variables.
CONCLUSIONS:TEG® demonstrates increased coagulability and decreased fibrinolysis during pregnancy. There was a faster initiation of hemostasis, with a minor increase in clot strength. Fibrinolysis decreased during late pregnancy. Alternative cutoff limits for TEG® variables may be required during pregnancy. Standard hemostatic laboratory tests were as expected duringpregnancy. Future studies are needed to ascertain whether viscoelastic methods are preferable to standard hemostatic testsfor the diagnosis of coagulopathy during obstetric hemorrhage.

静脉注射碳酸氢钠能够证实行机械通气儿童的静脉导管位置

Intravenous sodium bicarbonate verifies intravenous position of catheters in ventilated children

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背景：儿童的通路血管容易有意外的静脉输液外渗和药物对组织的潜在损伤。在这个前瞻性的对照研究中我们对行机械通气的儿童诊断实用程序使用静脉稀释碳酸氢钠确认放置静脉导管。稀释的碳酸氢钠是由8.4%未被稀释的碳酸氢钠和无菌水按1:3和1:5的比例分别稀释为2.1%和1.05%的碳酸氢钠。

方法：分析18例年级为1-8岁，ASA分级为I-
II级的行机械通气的儿童中，以随机的顺序注射稀释为2.1%、1.05%的碳酸氢钠以1ml/kg和0.9%的生理盐水。所有的孩子都监测氧饱和度、动脉血压、心电监护和呼气末二氧化碳。另外，分析注射前的静脉血样本和最后注射10分钟后的静脉血样本的PH值和电解质。
结果：孩子中，静脉注射稀释为2.1%的碳酸氢钠会使呼气末二氧化碳显著增加（平均32.8 +/-3.4mmHg至39.0+/-
3.5mmHg，P<0.001），意味着在做3次呼吸增加了6.2mmHg（95%的预测区间为4.3至8.1 mmHg）。静脉注射稀释为1.05%的碳酸氢钠更明显，在呼气末二氧化碳更明显（33.4 ± 3.8 mm Hg to 36.3 ± 3.4 mm Hg, P <
0.001），意味着3次呼吸增加了2.9mmHg（95%的预测区间为1.8至4.1mmHg）。生理盐水没有什么明显改变，平均增加了0.06mmHg（95%预测区间为-1.3 to 1.4 mm
Hg）。在未知的麻醉后通过观察呼气末二氧化碳的变换可以轻易的很快的分辨出两种稀释浓度的碳酸氢钠和生理盐水。分析注射前和注射后的静脉PH值，碳酸氢盐和钠离子浓度不能检测到临床上的显著改变。在经脉中标记了一个小的且统计上显著的增加。
结论：在ASA分级为I-
II级，行机械通气的儿童中注射2.1%的碳酸氢钠通过呼气末二氧化碳的增加能够识别血管内静脉导管的位置。这种注射在临床上不会显著影响血液PH值、碳酸氢盐和钠离子浓度。
（孙丽萍译 薛张纲校）
BACKGROUND: Vascular access in children carries a significant risk of accidental extravasation of IV fluids and medications with the potential for tissue injury. In this prospective controlled study we assessed the diagnostic utility of using IV diluted sodium bicarbonate to confirm placement of IV catheters in ventilated children. Diluted sodium bicarbonate was created using undiluted standard 8.4% (1 mEq/mL) sodium bicarbonate mixed in a 1:3 and 1:5 ratio with sterile water to achieve a final diluted concentration of 2.1% (0. 25 mEq/mL) and 1.05% (0.125 mEq/mL) sodium bicarbonate, respectively.
METHODS: In 18 ASA I-II mechanically ventilated children ages 1 to 8 years, the effects of 1 mL/kg of dilute 2.1%, 1.05% sodium bicarbonate, or 0.9% normal saline, injected in a randomized order, were analyzed. All children had oxygen saturation, arterial blood pressure, electrocardiograph, and end-tidal carbon dioxide (ETCO(2)) monitoring. In addition, venous blood samples were taken before injection and 10 minutes after the final injection for analysis of venous blood pH and electrolytes.
RESULTS: In children, IV diluted 2.1% sodium bicarbonate resulted in significantly increased etco(2) (mean of 32.8 ± 3.4 mm Hg to 39.0 ± 3.5 mm Hg, P < 0.001), a mean increase of 6.2 mm Hg (95% prediction interval: 4.3 to 8.1 mm Hg) within 3 breaths. Intravenous diluted 1.05% sodium bicarbonate caused a less pronounced but still significant increase in etco(2) (33.4 ± 3.8 mm Hg to 36.3 ± 3.4 mm Hg, P < 0.001), a mean increase of 2.9 mm Hg (95% prediction interval: 1.8 to 4.1 mm Hg) within 3 breaths. Normal saline did not result in any significant changes, with a mean increase of 0.06 mm Hg (95% prediction interval: -1.3 to 1.4 mm Hg). Both concentrations of sodium bicarbonate were easily differentiated from normal saline injection by blinded anesthesiologists observing the change in etco(2) values immediately after injection. Analysis of pre- and postinjection venous pH, bicarbonate, and sodium levels could not

detect clinically significant changes. A small but statistically significant increase in venous bicarbonate was noted.
CONCLUSION: The injection of 2.1% sodium bicarbonate in mechanically ventilated ASA I-II children identified intravascular placement and patency of an IV catheter by an increase in the exhaled CO(2) concentration. The injections did not have any clinically significant effects on blood pH, bicarbonate, or sodium concentration.

体外循环患儿改变肝素效能观察对活化凝血时间的影响

Change in heparin potency and effects on the activated clotting time in children undergoing cardiopulmonary bypass.

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背景：肝素是体外循环中最常用的抗凝药，其主要检测项目为活化凝血时间。2009年十月，美国食品药品管理局修改了美国药典的专着普通肝素采用新的质量测试和新的效能试验和参考标准，后者在体外试验中降低了10%单位的肝素效能。在整合“新”肝素入试验后，我们主观上认定在体外循环开始前使用，其相对常规肝素负荷量缩短了活化凝血时间。为提供客观证据以验证这一假设，我们以活化凝血时间为标准，评价新肝素的抗凝恢复并记录行体外循环前低于我们最初的阈值的活化凝血时间。
方法：病例回顾分析分析了在亚特兰大儿童保健院所有行体外循环的儿童，分“旧肝素”组（2008年7月1日至2009年6月30日）和“新肝素”组（2010年6月1日至2011年5月31日）。分别记录基础活化凝血时间和给予400
U/kg肝素后的活化凝血时间我们决定各组活化凝血时间在给予肝素后至开始体外循环前小于480秒的患者人数。另外，根据年龄将患儿分成3组（<1月，1至12月，大于12月）以便分析相似的活化凝血时间的改变。
结果：新肝素组肝素后活化凝血时间明显短于旧肝素组，且在给予最初肝素负荷量后有更多的患儿活化凝血时间<480秒（旧肝素组：68/557[12.2%]；新肝素组: 140/491 [28.5%]; P < 0.0001).）。对年龄分组分析后各组的差异显著。
结论:我们针对以下假设提供客观证据：在开始体外前给予不同效能的肝素，以活化凝血时间为评价标准，使用新肝素明显降低了活化凝血时间。这一结果在不同年龄组都得到了体现，且新肝素更易于低于体外循环的阈值。应考虑在体外循环前根据体重给予肝素。（杨琰译 薛张纲校）

BACKGROUND: Heparin is the anticoagulant most commonly used for cardiopulmonary bypass (CPB), and the activated clotting time (ACT) is its primary monitor. In October 2009, the Food and Drug Administration changed the United States Pharmacopeia (USP) monograph for unfractionated heparin to incorporate new quality tests and a new potency assay and reference standard. This latter change was anticipated by in vitro tests to reduce heparin potency by 10% in each USP unit dose. After integration of the "new" heparin into our practice, we subjectively noticed less prolongation of the ACT with our routine heparin bolus before the initiation of CPB. We performed this investigation to provide objective evidence of a reduction in the level of

anticoagulation achieved with use of the new heparin as assessed by ACT values and to document the occurrence of having an ACT below our institutional threshold before the initiation of CPB.
METHODS: A retrospective chart review was performed on all children who underwent CPB at Children's Healthcare of Atlanta between July 1, 2008, and June 30, 2009, before the release of the new heparin ("old heparin" [OH] group) and between June 1, 2010, and May 31, 2011, after complete integration of the new heparin ("new heparin" [NH] group). Baseline ACTs and ACTs after the administration of 400 U/kg of heparin were recorded for both the OH and NH groups. We determined the number of patients in each group having an ACT <480 seconds after the initial heparin bolus but before the initiation of CPB. Additionally, patients were divided into 3 age groups (<1 month, 1 to 12 months, and >1 year) to analyze similar ACT changes.
RESULTS: Postheparin ACTs were significantly lower in the NH group than in the OH group. There were significantly more patients having an ACT <480 seconds after the initial heparin bolus in the NH group (OH: 68 of 557 [12.2%] versus NH: 140 of 491 patients [28.5%]; P < 0.0001). The change remained significant when assessed across the age groups.
CONCLUSIONS: In this investigation we provide objective evidence that the level of anticoagulation after the initial pre-CPB heparin bolus as assessed by the ACT is significantly less with use of the new heparin. This reduction remained consistent across 3 age groups and was associated with a more frequent occurrence of ACTs below our institutional threshold for the initiation of CPB. Consideration should be given to increasing the initial weight-based heparin dose administered before CPB

肾移植麻醉中腹横肌平面阻滞：一项随机对照研究

Transversus Abdominis Plane Block for Analgesia in Renal Transplantation: A Randomized Controlled Trial

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背景：腹横肌平面阻滞（TAP）已被证实能有效减少阿片类药物的使用量和降低包括下腹部等部位手术的疼痛评分。在此项研究中，我们评估了腹横肌平面阻滞在进行尸体肾移植的终末期肾衰患者中的有效性。
方法：65位成年肾移植受体随机分为两组，一组采用全身麻醉复合20ml 0.375%左旋布比卡因的腹横肌平面阻滞，另一组采用全身麻醉复合20ml 0.9%生理盐水的空白阻滞。每组都采用吗啡自控镇痛和口服对乙酰氨基酚。在麻醉复苏室和术后2、4、6、12、24小时，进行患者评估。主要结果是肾移植后第一个24小时内吗啡使用总量。其他评估结果包括疼痛评分，恶心呕吐、过度镇静和呼吸抑制的发生率。
结果：吗啡的使用量在两组间无差别，TAP组31.6±5.6mg，对照组32.6±5.5mg（95%可信区间[CI]：-8.96至7.09，P=0.817）。疼痛评分在术后任何时间点也无明显差别。恶心发生率在TAP组为53%，在对照组为24%。发生与治疗相关的恶心的相对危险度为2.2（95% CI：1.1至4.3，P=0.017）。没有患者出现过度镇静和呼吸抑制。

结论：肾移植的镇痛方案中增加腹横肌平面阻滞并不能减少吗啡的用量。
（郁玲玲译 薛张纲校）

BACKGROUND: The transversus abdominis plane (TAP) block has proven effective in reducing opioid requirements and pain scores for some procedures involving the lower abdominal wall. In this study we assessed its efficacy in patients with end-stage renal failure undergoing cadaveric renal transplantation.
METHODS: Sixty-five adult renal transplant recipients were prospectively randomized to receive a standard general anesthetic technique supplemented with levobupivacaine 0.375% 20 mL TAP block or sham block with 20 mL 0.9% saline. Both groups received patient-controlled morphine analgesia and acetaminophen . Patient assessment occurred in the postanesthetic care unit and at 2, 4, 6, 12, and 24 hours. The primary outcome was total morphine consumption in the first 24 hours after renal transplantation. Other outcomes assessed included pain scores, presence of nausea or vomiting, excesusive sedation, and respiratory depression.
RESULTS: Morphine requirements did not differ between the 2 groups, 31.6 _ 5.6 mg in the TAP group and 32.6 _ 5.5 mg in the control group (95% confidence interval [CI], _8.96 to 7.09, P _0.817). Pain scores also did not differ significantly at any time point after surgery. Nausea was reported in 53% of the TAP group and 24% of the control group. The relative risk of nausea associated with treatment was 2.2 (95% CI, 1.1 to 4.3, P _ 0.017). No patient exhibited excessive sedation or respiratory depression.
CONCLUSIONS: The addition of a TAP block to the analgesia regimen for renal transplantation did not reduce morphine requirements.

简报：腰丛阻滞减少髋关节镜术后疼痛：一项前瞻性随机对照试验。

Brief report: lumbar plexus blockade reduces pain after hip arthroscopy: a prospective randomized controlled trial.

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背景：髋关节镜会导致中度至重度术后疼痛。我们假设腰丛神经阻滞（LPB）将减少手术当天出院回家的患者在麻醉后监护室（PACU）内产生术后疼痛。
方法：患者接受硬膜外阻滞联合静脉注射镇静剂，昂丹司琼和酮咯酸。有一半的患者（n =42）通过LPB单次注射了布比卡因。术后镇痛（PACU和出院后）提供口服氨酚氢可酮（5/500毫克）和非甾体类抗炎药物。有需要时，可在PACU 静脉注射氢吗啡酮。
结果：LPB减少在PACU的静息痛（GEE：在0至10 范围内的平均β估计值为-0.9；95％可信区间为-1.7至-0.1，P = 0.037）。由于LPB，平均PACU静息痛评分从4.2降低到3.3（P = 0.048，95％可信区间差异为0.007至1.8；采用独立样本t检验进行初步评估比较组间疼痛，未纠正每个患者的多个数值）。在PACU使用镇痛药、PACU疼痛与活动及病人舒适度

这三个方面，无显著统计学差异。没有长期的不良事件的发生，但有2个LPB病人在PACU浴室跌倒，无损伤。有3个未预期的病人入院；一个LPB病人是因硬膜外药物扩散和尿潴留入院。有两个对照组患者入院，一个是因为血氧饱和度下降，另一个是因为疼痛和恶心。

结论：LPB能在统计学上显着减少髋关节镜术后在PACU发生的静息痛，但是并没有明显改善最次要的结果，表明LPB风险和利益的评估应该个体化。

（周玲译 薛张纲校）

BACKGROUND: Hip arthroscopy causes moderate to severe postoperative pain. We hypothesized that performance of a lumbar plexus block (LPB) would reduce postoperative pain in the postanesthesia care unit (PACU) for patients discharged home on the day of surgery.

METHODS: Patients received a combined spinal epidural with IV sedation, ondansetron, and ketorolac. Half of the patients (n = 42) also underwent a single-injection bupivacaine LPB. Postoperative analgesia (PACU and after discharge) was provided with oral hydrocodone/acetaminophen (5/500 mg) and an oral nonsteroidal antiinflammatory drug. IV hydromorphone was given as needed in the PACU.

RESULTS: The LPB reduced pain at rest in the PACU (GEE: β estimate of the mean on a 0 to 10 scale = -0.9; 95% confidence interval = -1.7 to -0.1; P = 0.037). Mean PACU pain scores at rest were reduced by the LPB from 4.2 to 3.3 (P = 0.048, 95% confidence interval for difference = 0.007-1.8; uncorrected for multiple values per patient, using independent samples t test for preliminary evaluation comparing pain between the groups). There were no statistically significant differences in PACU analgesic usage, PACU pain with movement, and patient satisfaction. No permanent adverse events occurred, but 2 LPB patients fell in the PACU bathroom, without injury. Three unplanned admissions occurred; one LPB patient was admitted for epidural spread and urinary retention. Two control patients were admitted, one for oxygen desaturation and one for pain and nausea.

CONCLUSION: LPB resulted in statistically significant reductions in PACU resting pain after hip arthroscopy, but the absence of improvement in most secondary outcomes suggests that assessment of risks and benefits of LPB should be individualized.

二尖瓣的前位观：定义和获得

En Face View of the Mitral Valve: Definition and Acquisition

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二尖瓣的3维立体心超观被称为“前位观”或“外科观”，它所呈现的二尖瓣的视图接近于外科医生从左房角度观察到的二尖瓣。尽管这个视图的解剖学标志已经被很好的定义了，但

是还没有全面的心超定义。在回顾了文献以后，我们提供二尖瓣左房和左室前位观的定义。我们也讨论了用于获得这个视图的技术。
（唐莹 译 马皓琳 李士通 校）
A 3-dimensional echocardiographic view of the mitral valve, called the “en face” or “surgical view,” presents a view of the mitral valve similar to that seen by the surgeon from a left atrial perspective. Although the anatomical landmarks of this view are well defined, no comprehensive echocardiographic definition has been presented. After reviewing the literature, we provide a definition of the left atrial and left ventricular en face views of the mitral valve. Techniques used to acquire this view are also discussed.

白天与夜晚应用氯胺酮和戊巴比妥对大鼠松果体褪黑素分泌和运动行为的昼夜节律的不同影响

Day or Night Administration of Ketamine and Pentobarbital Differentially Affect Circadian Rhythms of Pineal Melatonin Secretion and Locomotor Activity in Rats

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背景：手术和全身麻醉会影响病人的昼夜节律，可能导致术后睡眠障碍和谵妄。然而，不同麻醉药物在静息-
活动周期中不同时相的应用如何影响昼夜节律尚未明确。我们假设戊巴比妥（一种γ-氨基丁酸A受体拮抗剂）和氯胺酮（一种*N*-甲基-d-
天门冬氨酸受体拮抗剂）对昼夜节律有不同影响，并且这些作用还受药物应用时相（静息比活动时相）的影响。
方法：大鼠按照给予的麻醉药（戊巴比妥或氯胺酮）和腹腔内给药时间（活动/夜晚时相或休息/白天时相）的不同分成四组。大鼠接受全身麻醉和微透析导管植入后，让其经历五天的光照/黑暗（12/12小时）周期，通过在线松果体微透析法，我们分析了松果体褪黑素分泌和运动行为的节律。应用余弦分析法对数据节律性进行分析。
结果：休息时相应用氯胺酮组在麻醉后第一天的褪黑素分泌和运动行为节律方面分别提前65和153分钟。相反，活动时相应用氯胺酮组分别延迟43和235分钟。戊巴比妥不管在哪个时相给药，都对褪黑素分泌或运动行为的节律没有影响。在活动时相给药时，两种药物都会降低麻醉后褪黑素分泌的幅度；然而在休息时相给药时两种药物对幅度均无影响。麻醉后3天里所有动物的运动行为幅度均降低。
结论：通过不同时相给药，氯胺酮对于昼夜节律有相反的时相转换效应，而戊巴比妥则没有此效应。而且两种药物在24小时的休息-
活动周期中活动时相应用时均可降低术后松果体褪黑素分泌的幅度，而在休息时相给药时则无此效应。
（张怡 译 马皓琳 李士通校）
BACKGROUND: Surgery with general anesthesia disturbs circadian rhythms, which may lead to postoperative sleep disorders and delirium in patients. However, it is unclear how circadian rhythms are affected by different anesthetics administered at different times during the rest-

activity cycle. We hypothesized that pentobarbital (an agonist at the γ-aminobutyric acid A receptors) and ketamine (an antagonist at the *N*-methyl-d-aspartate receptors) would have differential effects on circadian rhythms, and these effects would also be influenced by the time of their administration (the active versus resting phase).
METHODS: Rats were divided into 4 groups according to the anesthetic administered (pentobarbital or ketamine) and the timing of intraperitoneal administration (active/night phase or resting/day phase). Using online pineal microdialysis, we analyzed pineal melatonin secretion and locomotor activity rhythms in rats under a light/dark (12/12-hour) cycle for 5 days after anesthesia and microdialysis catheter implantation. The data were analyzed for rhythmicity by cosinor analysis.
RESULTS: Ketamine administered during the resting phase produced 65- and 153-minute phase advances, respectively, in melatonin secretion and locomotor activity rhythms on the first day after anesthesia. In contrast, ketamine administered during the active phase produced 43- and 235-minute phase delays. Pentobarbital had no effect on the phase of either melatonin secretion or locomotor activity, irrespective of the timing of administration. When administered during the active phase, both anesthetics decreased the amplitude of melatonin secretion on the day after anesthesia; when administered during the resting phase, however, neither anesthetic affected the amplitude. The amplitude of locomotor activity decreased in all animals for 3 days after anesthesia.
CONCLUSION: Ketamine has opposite phase-shifting effects on circadian rhythms according to the time of administration, whereas pentobarbital has no effect. Furthermore, both anesthetics decrease the postoperative amplitude of pineal melatonin secretion if administered during the active, but not the resting, phase of the 24-hour rest-activity cycle.

普瑞巴林对有神经性疾病的小鼠脾细胞的免疫调节作用

The Immunomodulatory Effect of Pregabalin on Spleen Cells in Neuropathic Mice

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背景：疼痛与免疫功能之间有着密切的关系。外周神经损伤后神经性疼痛的发展与损伤部位的炎症一起发生。T淋巴细胞反应，作为细胞介导的免疫反应的一部分，已牵涉在外周神经痛的发病机理和疼痛进程中。普瑞巴林[（S）-3 -（氨甲基）-5 -甲基己酸]，作为抗癫痫药物被开发，在临床和实验室方面它已经显示出用于神经性疼痛的疗效。为了评估普瑞巴林对免疫调节的可能影响，我们在神经性疾病小鼠模型中评估了自然杀伤（NK）细胞针对YAC-1鼠淋巴细胞和植物血凝素刺激的T淋巴细胞增殖反应的杀肿瘤活性。
方法：通过雄性BALB/c小鼠右侧坐骨神经的慢性缩窄性损伤（CCI）来诱导神经病模型。用一个动态足底触觉计衡量机械性痛觉过敏。确认痛觉过敏后，从手术后第2天开始口服给予容量为10 mL/kg的普瑞巴林或生理盐水（对照组）总量为10 mL/kg，剂量为30 mg/kg，每天两次。术后第7天，测定NK细胞的细胞毒性和脾细胞增殖反应。使用乳酸脱氢酶法评估NK细胞活性。把不同数量的效应细胞加入到100μL含有1×10^4目标YAC-1细胞的威尔斯微量滴定板的井孔中，以达到最终的效应物对靶细胞比例为80:1、40:1和2

0:1。通过检测溴脱氧尿苷来测定脾细胞对植物血凝素的增殖反应。基于溴脱氧尿苷整合入细胞DNA的测定，计算刺激指数，以确定细胞增殖数量。对于体外研究中，测定不同浓度的普瑞巴林（3、10和30μg/mL）时NK细胞活性及分离脾细胞的增殖。
结果：在第7天CCI引起明显的机械性异常性疼痛，而口服普瑞巴林逆转机械性痛觉过敏。
CCI小鼠中的NK细胞活性及脾细胞增殖较对照组小鼠显著增加。在CCI小鼠中，普瑞巴林治疗显著抑制NK细胞活性及脾细胞增殖。在对照组小鼠中NK细胞活性为8.4％±4.7％，在CCI小鼠中为29.2％±20.2％；普瑞巴林治疗可以降低CCI小鼠中的细胞毒性至6.8％±2.4％。在CCI组中，刺激指数为169％±71％，但与对照组相比，普瑞巴林治疗使其降低至67％±52％。在体外，当普瑞巴林浓度≥10μg/ mL（P <0.05）时，NK细胞的活性被抑制。
结论：神经性疼痛增强了免疫反应，而普瑞巴林治疗可调节该反应。普瑞巴林的治疗抑制了NK细胞的活性和脾细胞增殖反应的增加。
（余亦南 译 马皓琳 李士通 校）

BACKGROUND: There is a strong relationship between pain and immune function. The development of neuropathic pain after peripheral nerve damage occurs with inflammation at the injury site. T lymphocyte function, a part of cell-mediated immunity, has been implicated in the pathogenesis and nociceptive processing of peripheral neuropathic pain. Pregabalin [(*S*)-3-(aminomethyl)-5-methylhexanoic acid], which was developed as an antiepileptic drug, has shown clinical and laboratory efficacy for neuropathic pain. To assess the possible influence of pregabalin therapy on immunomodulation, we assessed natural killer (NK) tumoricidal activity against YAC-1 murine lymphoma cells and phytohemagglutinin-stimulated T lymphocyte proliferation in a neuropathic mouse model.
METHODS: The neuropathic model was induced by chronic constriction injury (CCI) to the right sciatic nerve in male BALB/c mice. Mechanical hyperalgesia was measured with a dynamic plantar aesthesiometer. After confirming hyperalgesia, pregabalin or saline (for control mice) in a volume of 10 mL/kg was administered orally at a dosage of 30 mg/kg, twice daily from day 2 after surgery. On day 7 postsurgery, NK cell cytotoxic activity and splenocyte proliferation were measured. NK cell activity was assessed by lactate dehydrogenase assay. Various numbers of effector cells were added to the wells of a microtiter plate containing 1×10^4 target YAC-1 cells in 100 μL, to achieve final effector-to-target cell ratios of 80:1, 40:1, and 20:1. The proliferative response of splenocytes to phytohemagglutinin was measured by bromodeoxyuridine detection. Stimulation index was calculated to quantify cell proliferation based on the measurement of bromodeoxyuridine incorporation in cellular DNA. For in vitro study, NK cell activity and splenocyte proliferation from isolated spleen cells were determined at different concentrations of pregabalin (3, 10, and 30 μg/mL).
RESULTS: CCI caused marked mechanical allodynia on day 7 and orally administered pregabalin reversed mechanical hyperalgesia. NK cell activity and splenocyte proliferation were significantly increased in CCI mice compared with control mice. Pregabalin treatment in CCI mice significantly suppressed NK cell activity and proliferation of splenocytes. NK cell activity was 8.4% ± 4.7% in control and 29.2% ± 20.2% in CCI mice; pregabalin treatment reduced cytotoxicity to 6.8% ± 2.4% in CCI mice. Stimulation index was 169% ± 71% in CCI mice but pregabalin treatment reduced it to 67% ± 52% compared with control. In vitro, NK cell activity was suppressed at a pregabalin concentration of ≥10 μg/mL ($P < 0.05$).

CONCLUSIONS: Neuropathic pain increased immunological reactivity and pregabalin treatment modulated this reactivity. Increased NK cell activity and splenocyte proliferation were inhibited by pregabalin treatment.

腹部手术围术期高氧浓度吸氧后长期死亡率增加：一个随机临床试验的随访

Increased Long-Term Mortality After a High Perioperative Inspiratory Oxygen Fraction During Abdominal Surgery: Follow-Up of a Randomized Clinical Trial

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背景：已有研究建议围术期高浓度吸氧（80%）可预防术后伤口感染。然而，最近的最大试验之一——
PROXI试验未发现手术部位感染有减少，且吸80%氧的患者30天死亡率较高。在PROXI试验的这项随访研究中，本文评估了行腹部手术的患者中长期死亡率与围术期高浓度吸氧的相关性。
方法：从2006年10月8日至2006年10月6日，1386名择期或急诊行剖腹手术的患者随机分配到术中及术后2小时接受80%或30%氧气组。随访日期为2010年2月24日。采用 Kaplan-Meier统计及Cox比例危险率模型分析生存率。
结果：在中位数为2.3年（范围1.2-3.4年）的随访期后从1386例中的1382例患者得到生存状态。80%氧气组685例患者中159例（23.2%）死亡，而30%氧气组701例中128例（18.3%）死亡（HR，1.30[95%置信区间，1.03-1.64,]，*P*=0.03）。癌症手术患者HR为1.45；95%置信区间为1.10-1.90；*P*=0.009；非癌症手术后HR为1.06；95%置信区间为1.69-1.65；*P*=0.79。
结论：围术期接受80%氧气的患者长期死亡率显著增加，且这在行癌症手术的患者中有统计学显著性意义，而在非癌症手术患者中无统计学显著性意义。
（许辛 译，马皓琳，李世通 校）

BACKGROUND: A high perioperative inspiratory oxygen fraction (80%) has been recommended to prevent postoperative wound infections. However, the most recent and one of the largest trials, the PROXI trial, found no reduction in surgical site infection, and 30-day mortality was higher in patients given 80% oxygen. In this follow-up study of the PROXI trial we assessed the association between long-term mortality and perioperative oxygen fraction in patients undergoing abdominal surgery.
METHODS: From October 8, 2006, to October 6, 2008, 1386 patients underwent elective or emergency laparotomy and were randomized to receive either 80% or 30% oxygen during and for 2 hours after surgery. The follow-up date was February 24, 2010. Survival was analyzed using Kaplan-Meier statistics and the Cox proportional hazards model.

RESULTS: Vital status was obtained in 1382 of 1386 patients after a median follow-up of 2.3 years (range 1.3 to 3.4 years). One hundred fifty-nine of 685 patients (23.2%) died in the 80% oxygen group compared to 128 of 701 patients (18.3%) assigned to 30% oxygen (HR, 1.30 [95% confidence interval, 1.03 to 1.64], $P = 0.03$). In patients undergoing cancer surgery, the HR was 1.45; 95% confidence interval, 1.10 to 1.90; $P = 0.009$; and after noncancer surgery, the HR was 1.06; 95% confidence interval, 0.69 to 1.65; $P = 0.79$.
CONCLUSIONS: Administration of 80% oxygen in the perioperative period was associated with significantly increased long-term mortality and this appeared to be statistically significant in patients undergoing cancer surgery but not in noncancer patients.

重症监护室内对患者全身体循环血管顺应性、应力容积和心功能曲线的床旁评价

Bedside Assessment of Total Systemic Vascular Compliance, Stressed Volume, and Cardiac Function Curves in Intensive Care Unit Patients

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背景：，对依赖呼吸机支持的患者行吸气屏气操作时通过床旁微创监测可测量体循环平均充盈压（$Pmsf_{hold}$），作为心输出量–中心静脉压曲线的零流量拦截。我们比较了吸气屏气操作时的体循环平均充盈压与血管闭塞时的上肢血管平衡压（$Pmsf_{arm}$），以及对它们对通过血管内补液管理评价全身血管顺应性（Csys）和应力容积的能力。
方法：对心脏手术术后机械通气患者，在正常血流量和每次输注50ml胶体之后（连续10次）在不同气道压力下行吸气屏住操作以及上肢血流停流操作。在输液管理每一步时，我们测量了中心静脉压、血管闭塞时的上肢血管的平衡压、每搏输出量和心输出量以构建中心静脉压/心输出量（心功能）曲线和容积变化/体循环平均充盈压变化（顺应性）曲线。输液管理前后测量吸气屏气操作时的体循环平均充盈压。通过外推体循环平均充盈压-容积曲线零压力拦截来测定应力容积。
结果：共15例入选本研究。吸气屏气操作时的体循环平均充盈压和血管闭塞时的上肢血管的平衡压有密切相关性。 全身血管顺应性呈线性关系（64.3±32.7 mL ·mm Hg^{-1}，0.97±0.49 mL ·mm Hg^{-1} · kg^{-1}预测体重）。应力容积估计为1265±541ml（预计总血容量的28.5%±15%）。增加>12%的容量至超过500ml（容量反应）时，患者的心功能曲线是陡峭的，而其余患者的心功能曲线是平缓的。
结论：全身血管顺应性、应力容积和心功能曲线并可以在床边测得，并可以被用来描述病人血流动力学状态的特征。
（方斌 译 马皓琳 李士通校）
BACKGROUND: Mean systemic filling pressure (Pmsf) can be measured at the bedside with minimally invasive monitoring in ventilator-dependent patients using inspiratory hold maneuvers

($Pmsf_{hold}$) as the zero flow intercept of cardiac output (CO) to central venous pressure (CVP) relation. We compared $Pmsf_{hold}$ with arm vascular equilibrium pressure during vascular occlusion ($Pmsf_{arm}$) and their ability to assess systemic vascular compliance (Csys) and stressed volume by intravascular fluid administration.
METHODS: In mechanically ventilated postoperative cardiac surgery patients, inspiratory holds at varying airway pressures and arm stop-flow maneuvers were performed during normovolemia and after each of 10 sequential 50-mL bolus colloid infusions. We measured CVP, $Pmsf_{arm}$, stroke volume, and CO during fluid administration steps to construct CVP to CO (cardiac function) curves and ΔvolumeΔPmsf (compliance) curves. $Pmsf_{hold}$ was measured before and after fluid administration. Stressed volume was determined by extrapolating the Pmsf-volume curve to zero pressure intercept.
RESULTS: Fifteen patients were included. $Pmsf_{hold}$ and $Pmsf_{arm}$ were closely correlated. Csys was linear (64.3 ± 32.7 mL ·mm Hg^{-1}, 0.97 ± 0.49 mL ·mm Hg^{-1} ·kg^{-1} predicted body weight). Stressed volume was estimated to be 1265 ± 541 mL (28.5% ± 15% predicted total blood volume). Cardiac function curves of patients with an increase of >12% to 500 mL volume extension (volume responsive) were steep, whereas the cardiac function curves of the remaining patients were flat.
CONCLUSIONS: Csys, stressed volume, and cardiac function curves can be determined at the bedside and can be used to characterize patients' hemodynamic status.

可视喉镜在产科麻醉中表现的回顾性研究

A Retrospective Study of the Performance of Video Laryngoscopy in an Obstetric Unit
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本研究评价了在产科麻醉中使用可视喉镜进行气管插管的表现。我们分析了三年内的气道管理细节，并观察了180例气管插管。所有病例均使用直接喉镜法或可视喉镜法。直接喉镜法首次插管成功率为157/163（95%可信区间[CI]为92%-99%），失败一次。可视喉镜法首次插管成功率为18/18（95%CI为81%-100%）。失败的直接喉镜法气管插管通过可视喉镜法补救成功。使用可视喉镜法插管的患者往往需进行急诊手术，并且18例患者中有16例预计存在直接喉镜法插管困难。可视喉镜可能是产科气道管理的一种有效辅助工具，它在困难气道管理方案中的作用尚需进一步研究。
（陈彬彬译 马皓琳 李士通校）

We evaluated the performance of tracheal intubation using video laryngoscopy in an obstetric unit. We analyzed airway management details during a 3-year period, and observed 180 intubations. All cases were managed with direct or video laryngoscopy. Direct laryngoscopy resulted in 157 out of 163 (95% confidence interval [CI], 92%–99%) first attempt successful intubations and failed once. Video laryngoscopy resulted in 18 of 18 (95% CI, 81%–100%) successful intubations on first attempt. The failed direct laryngoscopy was rescued with video laryngoscopy. The patients managed with video laryngoscopy frequently required urgent or

emergency surgery and had predictors of difficult direct laryngoscopy in 16 of 18 cases. Video laryngoscopy may be a useful adjunct for obstetric airway management, and its role in this difficult airway scenario should be further studied.

术中使用氯胺酮能否减轻术后的炎症反应？系统回顾和荟萃分析

Does Intraoperative Ketamine Attenuate Inflammatory Reactivity Following Surgery? A Systematic Review and Meta-Analysis

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背景：关于麻醉药物氯胺酮减轻术后炎症反应的能力的报道都不一致。在本系统回顾中，我们通过白细胞介素-6浓度的评价来检测围术期给予氯胺酮对术后炎症反应的影响。
方法：本研究是基于PubMed、Scopus、Web of Knowledge和the Cochrane Library中的一个系统搜索。用英语写的在人类身上进行的随机对照试验均符合要求。为了包括在分析中，结果必须与炎症反应或免疫调节有关。每项研究由2名评定人员独立回顾。根据GRADE的方法对数据进行分析，并按照PRISMA推荐规范进行报道。
结果：14项研究有资格进行评估（684例）。手术在全身麻醉下进行，在术前或术中使用不同剂量的氯胺酮。8项研究涉及心肺分流手术，4项腹部手术，1项胸外科手术，1项白内障手术。3项研究被视为低质量。 9项研究检测了IL-6在术后6个小时内的浓度。但在3项研究中，在术前或术中使用了其他有效的抗炎药物，因此6项研究（n=331）被列入荟萃分析。根据术后IL-6浓度的结果，氯胺酮具有抗炎的作用；荟萃分析显示，平均术前-术后IL-6的浓度差（95％置信区间）为-71（-101～-41）pg/ml。
结论：可以得出结论，术中给予氯胺酮能显著抑制术后早期IL-6介导的炎症反应。未来的研究应该进一步探讨氯胺酮在大手术中的抗炎作用，确定氯胺酮治疗是否改变功能性的结果，阐明其抗炎作用的机制，并提出适当的给药方案。
（崔晓娜 译 马皓琳 李士通 校）
BACKGROUND: Reports regarding the ability of the anesthetic drug ketamine to attenuate the inflammatory response to surgery are conflicting. In this systematic review we examined the effect of perioperative ketamine administration on postoperative inflammation as assessed by concentrations of the biomarker interleukin-6 (IL-6).
METHODS: This study was based on a systematic search in PubMed, Scopus, Web of Knowledge, and the Cochrane Library. English written randomized controlled trials conducted in humans were eligible. To be included in the analysis, outcome had to relate to inflammation or immune modulation. Each study was reviewed independently by 2 assessors. Data were analyzed

according to the GRADE's approach and reported in compliance with the PRISMA recommendations.
RESULTS: Fourteen studies were eligible for evaluation (684 patients). Surgery was performed under general anesthesia, and ketamine was given before or during the surgery in varied doses Eight studies involved cardiopulmonary bypass operations, 4 were for abdominal surgery, 1 thoracic surgery, and 1 cataract surgery. Three studies were deemed of low quality. Nine studies measured IL-6 concentrations within the first 6 hours postoperatively; but in 3 studies, other potent anti-inflammatory drugs were used as premedication or during the operation; thus 6 studies (n = 331) were included in the meta-analysis. Using postoperative IL-6 concentrations as an outcome, ketamine had an anti-inflammatory effect; the meta-analysis showed a mean preoperative–postoperative IL-6 concentration difference (95% confidence interval) of −71 (−101 to −41) pg/mL.
CONCLUSIONS: It can be concluded that intraoperative administration of ketamine significantly inhibits the early postoperative IL-6 inflammatory response. Future studies should further examine the anti-inflammatory effect of ketamine during major surgery, determine whether ketamine treatment alters functional outcomes, elucidate the mechanisms of its anti-inflammatory effect, and suggest an appropriate dosing regimen.

白藜芦醇调节NMDA受体表达，并抑制吗啡耐受大鼠的神经炎症反应

Resveratrol Regulates *N*-Methyl-d-Aspartate Receptor Expression and Suppresses Neuroinflammation in Morphine-Tolerant Rats

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背景：本研究目的是确定中草药-白藜芦醇对减轻大鼠吗啡耐受的作用及机制。
方法：在雄性Wista大鼠鞘内放置两根导管，一根导管连接微量渗透泵，用于输注吗啡(15 μg/h)或生理盐水（1 μL/h），连续5天。第五天，停止输注吗啡输注后即刻，白藜芦醇(7.5、15、30或60 μg)、二甲亚砜(5 μL)、或生理盐水 (5 μL)经另一根鞘内导管注射至鞘内。3小时后吗啡（15μg 在5 μL 生理盐水中）经鞘内给予。在吗啡挑战后120分钟里，每隔30分钟对所有大鼠进行一次感受伤害的甩尾试验。
结果：长时间输注吗啡可引起抗伤害反应性耐受及耐受的脊髓背角突触小体部分中NMDA受体亚基NR1

及NR2B的表达上调。白藜芦醇预处理可使吗啡在吗啡耐受大鼠中产生显著的镇痛作用，这与其逆转吗啡耐受大鼠脊髓的突触小体部分中NR1
及NR2B亚基上调有关。给予NR1/NR2B特异性拮抗剂艾芬地尔可以产生与白藜芦醇类似的作用。此外，白藜芦醇预处理还可抑制吗啡耐受大鼠脊髓中突触后密度-95/NR1/NR2B复合物免疫沉淀的增加。而且，吗啡长期输注可激活神经胶质细胞，引起吗啡耐受大鼠脊髓中促炎细胞因子包括肿瘤坏死因子-α，白介素-1β及白介素-6 mRNA表达增加，吗啡挑战前使用白藜芦醇预处理可抑制这些效应。
结论：白藜芦醇可通过抑制神经炎症反应和下调NMDAR NR1 and NR2B亚基的表达来减轻吗啡耐受。白藜芦醇调节NMDAR的表达可能与引起支架突触后密度-95蛋白的缺失有关。
（邱郁薇 译 马皓琳 李士通 校）

BACKGROUND: In the present study, we examined the effects and mechanisms of the Chinese herb resveratrol on attenuation of morphine tolerance in rats.
METHODS: Male Wistar rats were implanted with 2 intrathecal catheters; one catheter was connected to a mini-osmotic pump, used for either morphine (15 μg/h) or saline (1 μL/h) infusion for 5 days. On day 5, resveratrol (7.5, 15, 30, or 60 μg), dimethyl sulfoxide (5 μL), or saline (5 μL) was injected via the other catheter immediately after the discontinued morphine infusion. Three hours later, intrathecal morphine (15 μg in 5 μL saline) was given. All rats received the nociceptive tail-flick test every 30 minutes for 120 minutes after the morphine challenge.
RESULTS: Long-term morphine infusion induced antinociceptive tolerance and up-regulated *N*-methyl-d-aspartate receptor (NMDAR) subunit NR1 and NR2B expression in the synaptosome fraction of the tolerant spinal cord dorsal horn. Resveratrol pretreatment provided a significant antinociceptive effect of morphine in morphine-tolerant rats, and it was associated with reversal of the up-regulated NR1 and NR2B subunits in the synaptosome fraction of morphine-tolerant rat spinal cords. NR1/NR2B-specific antagonist ifenprodil treatment produced a similar effect as that of resveratrol. Furthermore, an increase of postsynaptic density-95/NR1/NR2B complex immunoprecipitation in morphine-tolerant rat spinal cord was also inhibited by resveratrol pretreatment. Moreover, chronic morphine infusion activated glial cells with an increase of proinflammatory cytokine tumor necrosis factor-α, interleukin-1β, and interleukin-6 mRNA expression in morphine-tolerant rat spinal cords and these effects were suppressed by resveratrol pretreatment before the morphine challenge.
CONCLUSIONS: Resveratrol attenuates morphine tolerance by inhibiting neuroinflammation and down-regulating NMDAR NR1 and NR2B subunit expression. Resveratrol regulates the NMDAR expression, which might be involved in a loss of scaffolding postsynaptic density-95 protein.

超声引导下的肌间沟臂丛神经阻滞中1.5%甲哌卡因和0.5%布比卡因的注入顺序不会影响阻滞起效的潜伏时间及镇痛的持续时间

The Sequence of Administration of 1.5% Mepivacaine and 0.5% Bupivacaine Does Not Affect Latency of Block Onset or Duration of Analgesia in Ultrasound-Guided Interscalene Block

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背景：在外周神经阻滞时，可先后给予不同的局麻药。为了使阻滞能快速起效同时有较长的持续时间，典型的做法是在长效局麻药之前给予短效或者中效局麻药。然而，关于这种给药顺序的优点的数据却很少。在超声引导下的肌间沟阻滞时，我们先后混合使用了甲哌卡因及布比卡因，并假定注入两种药物的顺序不会影响达到的神经阻滞的临床效果。
方法：64名行肩关节镜手术的患者（年龄18-65岁，ASA分级I-II级），只接受单次注射超声引导下的肌间沟臂丛神经阻滞。随机将受试者分成两组，分别接受以下两种局麻药给药顺序中的一种：A组先注入1.5%甲哌卡因15mL，再注入0.5%布比卡因15mL；B组相同的局麻药但顺序相反。主要观察指标为感觉和运动阻滞的持续时间，同时评估神经阻滞的起效时间。
结果：A组及B组在运动阻滞持续时间上未见明显差异（10.1± 4.7 小时比10.3 ± 5.1小时，平均差异 0.2 小时，95%可信区间[CI] −3.3~2.9，*P* = 0.9）。镇痛持续时间在A组及B组间也相似（9.5 ± 5.6 小时比10.2 ± 4.5小时，平均差异0.7小时，95%CI -3.2~1.9)，*P* = 0.42）。两组在感觉阻滞的起效时间上也得到相似结果（A组：15.9 ± 7.1 分钟；B组：13.9 ± 7.0 分钟，平均差异1.9分钟，95%CI −1.4~5.2，*P* = 0.25）。
结论：在超声引导下的肌间沟臂丛神经阻滞中，15mL的1.5%甲哌卡因及15mL的0.5%布比卡因的注入顺序不会对阻滞的起效及持续时间产生有意义的临床影响。
（王赟 译 马皓琳 李士通 校）

BACKGROUND: During peripheral nerve blockade, different local anesthetics may be sequentially administered. Typically, a short- or intermediate-acting local anesthetic is administered before a long-acting local anesthetic to achieve a block with rapid onset and long duration. However, there is a paucity of data on advantages of such sequencing. We hypothesized that when using a sequential mixture of mepivacaine and bupivacaine for ultrasound-guided interscalene block, the order of injection of the drugs does not influence the clinical characteristics of the block achieved.
METHODS: Sixty-four patients undergoing arthroscopic shoulder surgery (aged 18–65 years; ASA physical status I–II) with a single-injection ultrasound-guided interscalene brachial plexus block as sole anesthetic were studied. The subjects were randomized to receive 1 of 2 local anesthetic sequences: 15 mL of mepivacaine 1.5% followed by 15 mL of bupivacaine 0.5% (group A), or the same local anesthetics in the reverse order (group B). The durations of sensory and motor block were the primary outcomes. Block onset was also assessed.
RESULTS: Duration of motor block was similar between group A and group B (10.1 ± 4.7 hours vs 10.3 ± 5.1 hours, mean difference 0.2 hours, 95% confidence interval [CI] −3.3 to 2.9, *P* = 0.9). Duration of analgesia was also similar between group A and group B (9.5 ± 5.6 hours vs 10.2 ± 4.5 hours, mean difference 0.7 hours, 95% CI −3.2 to 1.9, *P* = 0.42). Onset of sensory block was similar between the 2 groups (15.9 ± 7.1 minutes for group A, 13.9 ± 7.0 minutes for group B, mean difference 1.9 minutes, 95% CI −1.4 to 5.2, *P* = 0.25).
CONCLUSIONS: The sequence in which 15 mL mepivacaine 1.5% and 15 mL bupivacaine 0.5% are administered does not seem to have a clinically meaningful effect on duration or onset of ultrasound-guided interscalene brachial plexus block.