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**术中经食道心脏超声介导放置主动脉内球囊反搏泵**

**Positioning an Intraaortic Balloon Pump Using Intraoperative Transesophageal Echocardiogram Guidance**

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一名射血分数 25%的 72 岁老年男性计划在体外循环下择期行择期性冠状动脉搭桥术。由于手术的高风险性，外科医生想在体外循环开始前插入主动脉内球囊反搏泵 (IABP)。需要术中食道心脏超声 (TEE) 以确保放置在正确的位置。

（唐亮 译 马皓琳 李士通 校）

A 72-year-old man with an ejection fraction of 25% is scheduled to undergo elective coronary artery bypass graft using cardiopulmonary bypass. Because of the high-risk nature of the operation, the surgeon wants to insert an intraaortic balloon pump (IABP) before initiating cardiopulmonary bypass. An intraoperative transesophageal echocardiogram (TEE) is requested to ensure correct placement.

**一项地氟烷与丙泊酚的对比：对超重病人术后早期肺功能的影响**

**A Comparison of Desflurane Versus Propofol: The Effects on Early Postoperative Lung Function in Overweight Patients**

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**背景：** 在这项研究中，我们评估并比较了丙泊酚与地氟烷麻醉对超重病人术后肺功能和脉搏血氧饱和度值的影响。

**方法：** 我们前瞻性地研究了 134 名体重指数在 25 到 35 kg/m² 之间并正在进行持续 40 到 120 分钟的小型外周手术病人。病人被随机分配接受丙泊酚（全静脉麻醉）或经气管导管的地氟烷麻醉，控制脑电双频指数在 40 到 60 之间。术前用药、辅助药物使用和通气经过标准化。我们测定了术前（基线）和气管导管拔出后 10 分钟、0.5 小时、2 小时和 24 小时的血氧饱和度和肺功能。所有数值测定时病人均处于仰卧且头抬高 30° 体位。与术前基线数值比较的变化首先使用单变数方法分析体重指数和麻醉方式不同的影响，然后用线性回归和多元方差分析。
结果：在术后2小时内，丙泊酚组相对地氟烷组表现出较低的血氧饱和度（2小时，平均值±标准差，93.8%±2.0%比94.6%±2.1%；P<0.007）和肺功能（用力肺活量、第一秒用力呼气量[FEV₁]、呼气峰流量、呼气中流量[MEF]、用力吸气肺活量和吸气峰流量；在丙泊酚组相对基线有11%至20%的较大减少，所有P<0.001）。甚至术后24小时，FEV₁、呼气峰流量、MEF、用力吸气肺活量和吸气峰流量在丙泊酚组也降低更多（所有指标P<0.01）。在拔管后2小时，肥胖程度加重使丙泊酚而非地氟烷麻醉的病人FEV₁和MEF降低（P<0.01）。
结论：我们推断，对于最长达120分钟的表浅手术过程，使用丙泊酚维持麻醉对术后早期肺功能和血氧饱和度的损害较使用地氟烷大。而且，体重增加会降低丙泊酚麻醉术后2小时的肺功能，但地氟烷麻醉不会。

（张怡译 马皓琳 李士通校）

BACKGROUND: In this study, we evaluated the influence of propofol versus desflurane anesthesia in overweight patients on postoperative lung function and pulse oximetry values.

METHODS: We prospectively studied 134 patients with body mass indices of 25 to 35 kg/m² undergoing minor peripheral surgery lasting 40 to 120 minutes. Patients were randomly assigned to receive propofol (total IV anesthesia) or desflurane anesthesia via a tracheal tube targeting bispectral index values of 40 to 60. Premedication, adjuvant drug usage, and ventilation were standardized. We measured oxyhemoglobin saturation and lung function preoperatively (baseline), and at 10 minutes, 0.5 hour, 2 hours, and 24 hours after tracheal extubation. All values were measured with the patient supine, in a 30° head-up position. Changes from preoperative baseline values were first analyzed for the impact of body mass index and type of anesthesia using univariate methods, followed by linear regression and multivariate analysis of variance.

RESULTS: Within the first 2 hours after surgery, the propofol group displayed lower oxyhemoglobin saturation (at 2 hours, mean ± SD, 93.8% ± 2.0% vs 94.6% ± 2.1%; P < 0.007) and lung function (forced vital capacity, forced expiratory volume exhaled in 1 second [FEV₁], peak expiratory flow, midexpiratory flow [MEF], forced inspiratory vital capacity, and peak inspiratory flow; between 11% and 20% larger reduction from baseline in the propofol group, all P < 0.001) compared with the desflurane group. Even 24 hours after surgery, FEV₁, peak expiratory flow, MEF, forced inspiratory vital capacity, and peak inspiratory flow were reduced more in the propofol group (all P < 0.01). At 2 hours after extubation, increasing obesity was associated with decreasing FEV₁ and MEF in patients anesthetized with propofol but not desflurane (P < 0.01).

CONCLUSION: We conclude that, for superficial surgical procedures of up to 120 minutes, maintenance of anesthesia with propofol impairs early postoperative lung function and pulse oximetry values more than with desflurane. Furthermore, increasing obesity decreases pulmonary function at 2 hours after propofol anesthesia but not after desflurane anesthesia.

麻醉前准备程序的疏漏步骤
Missed Steps in the Preanesthetic Set-Up
Samuel Demaria Jr., MD, Kimberly Blasius, MD and Steven M. Neustein, MD
BACKGROUND: Anesthesiologists accomplish many tasks rapidly during induction of an anesthetic. Key preparation for induction is needed to maximize patient safety. Given the intense environment of the operating room, preparatory steps may be missed either unintentionally or possibly even intentionally to save time. We conducted this study to determine the incidence of missed steps in the operating room immediately before induction.

METHODS: In this study, 200 surgical procedures were randomly checked for missed steps before induction of anesthesia using a “Revised Preanesthetic Set-Up.” Additionally, multiple other operating room/case variables were recorded to determine whether there was correlation between the missed steps and certain variables such as room case load and regional versus general anesthesia.

RESULTS: Twenty-three missed steps were discovered. Manual resuscitation device availability and a working suction set-up were the most frequently missed steps. A higher percentage of missed steps was found in cases in which regional was the planned anesthesia technique, in rooms with higher case loads (≥5 cases scheduled), and in rooms that attending anesthesiologists completed the set-up.

CONCLUSIONS: Missed steps do occur at a significant and measurable rate. Measures need to be taken to decrease the number of missed steps to improve patient safety.

Head and Neck Position for Direct Laryngoscopy
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Anesth Analg July 2011 113:103-109
嗅花位（SP）历来被认为是直接喉镜检查（DL）的最佳头位。但是它相对于其他头位的优势近十年来一直受到质疑。我们回顾了有关这一主题的稀有文献，来检查支持或者反对嗅花位常规使用的证据。为了避免对于什么是合适的嗅花位产生混淆以及便于比较从不同研究得到的结果，必须使用一个嗅花位的标准定义（如颈屈35°和头伸15°）。虽然有人提出一些理论来解释嗅花位优越性，但是三轴成一线理论仍然被认为是有充分根据的解剖学解释。为了达到想得到的颈部前屈位，需要将头抬高，但是由于颈椎部的解剖和胸廓的大小不同，每个人头部抬高的程度都不一样。比如，对于婴幼儿就不需要抬高头位，因为头的大小和形状的关系，在水平头位时三轴就很接近。胸骨与外耳道水平对齐可以作为肥胖以及非肥胖患者嗅花位的定位标记。对于所能获得的文献的分析是支持直接喉镜时采用嗅花位。在肥胖病人，为了达到合适的嗅花位，应该采用“斜坡”（或背部抬高）体位。嗅花位不能保证对于所有的患者都暴露充分，因为有很多其它解剖因素会影响暴露的最终分级。但是，嗅花位应该作为直接喉镜检查的初始头位，因为这个体位提供了暴露充分的最佳机会。为了达到合适的体位，必须要调整体位的角度，避免小的技术失误。操作直接喉镜检查应该是不断修正的过程，在嗅花位遇到暴露困难的情况下应该调整体位。

在产科中用于硬膜外血斑的血量：一项随机、盲法临床试验

The Volume of Blood for Epidural Blood Patch in Obstetrics: A Randomized, Blinded Clinical Trial
Background: Our aim in this multinational, multicenter, randomized, blinded trial was to determine the optimum of 3 volumes of autologous blood for an epidural blood patch.

Methods: Obstetric patients requiring epidural blood patch after unintentional dural puncture during epidural catheter insertion were allocated to receive 15, 20, or 30 mL of blood, stratified for the timing of epidural blood patch and center. Participants were followed for 5 days. The primary study end point was a composite of permanent or partial relief of headache, and secondary end points included permanent relief, partial relief, persisting headache severity, and low back pain during or after the procedure.

Results: One hundred twenty-one women completed the study. The median (interquartile range) volume administered was 15 (15–15), 20 (20–20), and 30 (22–30) mL, with 98%, 81%, and 54% of groups 15, 20, and 30 receiving the allocated volume. Among groups 15, 20, and 30, respectively, the incidence of permanent or partial relief of headache was 61%, 73%, and 67% and that of complete relief of headache was 10%, 32%, and 26%. The 0- to 48-hour area under the curve of headache score versus time was highest in group 15. The incidence of low back pain during or after the epidural blood patch was similar among groups and was of low intensity, although group 15 had the highest postprocedural back pain scores. Serious morbidity was not reported.

Conclusions: Although the optimum volume of blood remains to be determined, we believe these findings support an attempt to administer 20 mL of autologous blood when
treating postdural puncture headache in obstetric patients after unintentional dural puncture.

**Reactive Oxygen Species Scavenger Inhibits STAT3 Activation After Transient Focal Cerebral Ischemia–Reperfusion Injury in Rats**

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**BACKGROUND:** Signal transducer and activator of transcription 3 (STAT3) activation in ischemic brain has been verified. However, the mechanism and the role of STAT3 activation after cerebral ischemia–reperfusion are poorly elucidated. In the present study, we sought to test the hypothesis that STAT3 activation after cerebral ischemia–reperfusion was related to reactive oxygen species (ROS) production.

**METHODS:** Adult male Sprague–Dawley rats were subjected to focal cerebral ischemia induced by middle cerebral artery occlusion. STAT3 activation was evaluated by immunohistochemistry and Western blotting. Rats were subjected to permanent ischemia or ischemia–reperfusion to clarify the temporal profile of STAT3 activation. The role of ROS in inducing STAT3 activation was assessed by administration of the ROS scavenger dimethylthiourea (DMTU). The effects of DMTU and the STAT3 activation inhibitor AG490 administration on brain ischemic injuries were evaluated by neurologic behavior scores and brain infarct volumes.

**RESULTS:** The activation of STAT3 after middle cerebral artery occlusion was significantly increased within peri-ischemia neurons and astrocytes. STAT3 activation mainly occurred in the reperfusion phase rather than in the ischemia phase. In addition,
DMTU suppressed STAT3 activation in a dose-dependent manner, indicating that STAT3 activation may be a subsequent event after ROS production. DMTU and AG490 significantly reduced infarct sizes and improved neurologic outcomes.

**CONCLUSION:** In comparison with ischemia, reperfusion is a more powerful stimulus for STAT3 activation. ROS scavenging is closely correlated with an inhibition of STAT3 activation. Neuroprotective effects are achieved through ROS scavenging and down-regulation of STAT3 activation.

**美金刚对大鼠浸润性皮肤镇痛的局部麻醉作用**

**The Local Anesthetic Effect of Memantine on Infiltrative Cutaneous Analgesia in the Rat**

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背景：美金刚可阻滞N-甲基-D-天冬氨酸受体以及Na⁺离子流，这是局部麻醉的主要机制之一。迄今尚无研究提及美金刚有局部麻醉作用，因此我们研究了美金刚的局部麻醉作用。

方法：在皮下注药阻滞表皮躯干肌肉反射后，我们评估了美金刚、利多卡因和地佐环平（MK-801）。将美金刚对大鼠的皮肤镇痛作用的剂量依赖性效应与利多卡因和MK-801进行比较。每种药物的作用时间通过等效基线（20%有效剂量[ED₂₀], ED₅₀和ED₈₀）来评估和比较。局麻药中频繁使用的利多卡因被视为对照组。

结果：我们证明了美金刚、利多卡因和MK-801在浸润性皮肤镇痛中产生剂量依赖性局部麻醉作用。相对药效为MK-801(10.4 [9.7–11.1]) > 美金刚(17.6 [15.2–20.4]) > 利多卡因(25.9 [23.8–28.1]) (P < 0.01)。在等效基线中，美金刚的作用时间较利多卡因(P = 0.008)长。联合给予美金刚(13.3 μmol/kg)和MK-801(1.3 μmol/kg)的作用较单独给予美金刚(13.3 μmol/kg)或MK-801(1.3 μmol/kg)强，时间也较长。而局部注射生理盐水或腹膜内给予大剂量美金刚、利多卡因或MK-801均不产生皮肤镇痛作用（数据未显示）。

结论：本研究表明美金刚的效能弱于MK-801，美金刚比利多卡因和MK-801可产生更长的镇痛时间。当与MK-801合用时，美金刚显示出皮肤镇痛的协同作用。我们的结论是美金刚比利多卡因提供更好的局部镇痛，而且N-甲基-D-天冬氨酸受体同样促进了美金刚的镇痛作用。

(瞿亦枫 译 马皓琳 李士通 校)

**BACKGROUND:** Memantine blocks N-methyl-D-aspartate receptors and the Na⁺ current, one principal mechanism of local anesthesia. Until now, no study mentioned that memantine had a local anesthetic effect, and therefore we investigated the local anesthetic effect of memantine.
METHODS: After blockade of cutaneous trunci muscle reflex with subcutaneous injections, we evaluated the cutaneous analgesic effect of memantine, lidocaine, and dizocilpine (MK-801) in rats. The dose-dependent response of memantine on cutaneous analgesia was compared with lidocaine and MK-801 in rats. The duration of action for each drug was evaluated and compared on an equipotent basis (20% effective dose [ED$_{20}$], ED$_{50}$, and ED$_{80}$). Lidocaine, a frequently used local anesthetic, was used as control.

RESULTS: We demonstrated that memantine, lidocaine, and MK-801 produced dose-dependent local anesthetic effects as infiltrative cutaneous analgesia. The relative potency was MK-801 (10.4 [9.7–11.1]) > memantine (17.6 [15.2–20.4]) > lidocaine (25.9 [23.8–28.1]) (P < 0.01). On an equipotent basis, memantine showed longer duration than lidocaine (P = 0.012) and MK-801 (P = 0.008). Coadministration of memantine (13.3 μmol/kg) and MK-801 (1.3 μmol/kg) produced greater blockade and duration than memantine (13.3 μmol/kg) or MK-801 (1.3 μmol/kg) alone. Neither local injection of saline nor intraperitoneal administration of a large dose of memantine, lidocaine, or MK-801 produced cutaneous analgesia (data not shown).

CONCLUSIONS: This study indicated that memantine is less potent than MK-801, and that memantine elicits longer analgesic duration than both lidocaine and MK-801. When combined with MK-801, memantine demonstrates a synergetic effect of cutaneous analgesia. We conclude that memantine produces better local analgesia than lidocaine and that N-methyl-D-aspartate receptors also contribute to the analgesic effect of memantine.
估血压变异度。以 10mmHg 为最小单位，将 SBP 下限逐步提高，在术中设定 SBP 范围从 65-135 mmHg 升至 105-135 mmHg; 术前术后设定 SBP 范围从 75-145 mmHg 升至 105-135 mmHg 的过程中，进行各个设定下的变异度分析。采用多因素 Logistic 回归评估得出血压变异度与 ECLIPSE 试验得出的术后 30 天死亡率间关系。

结果：当设定 SBP 范围为术中 75-135 mm Hg，术前术后 85-145 mm Hg 时，血压变异度与术后 30 天内死亡率显著相关。每增加收缩压 60 mm Hg × min/h，30 天内死亡率比值比增加 1.16（95% 可信区间，1.04-1.30）。如果曲线下面积从 0 提高至 300 mm Hg × min/h，预计低风险患者的 30 天死亡率将从 0.2% 增至 0.5%，而高风险患者将从 42.4% 增至 60.7%。

讨论：围术期血压变异度与心脏手术患者 30 天死亡率相关。术中偏离 75 to 135 mm Hg，以及术前或术后偏离 85 to 145 mm Hg 范围的收缩压变异度与术后 30 天内死亡率显著相关。高风险患者预计死亡率大于低风险患者。（陈毓雯 译 陈杰 校）

BACKGROUND: Few studies describe an association of perioperative blood pressure stability with postoperative outcome. We tested the hypothesis that systolic blood pressure (SBP) variability in patients undergoing cardiac surgery is associated with 30-day mortality.

METHODS: Perioperative blood pressure variability was evaluated in the 1512 patients who were randomized and had perioperative hypertension in the ECLIPSE trials. Blood pressure variability was assessed as the product of magnitude × duration of SBP excursions outside defined SBP ranges (area under the curve). SBP ranges were analyzed from 65 to 135 mm Hg intraoperatively and 75 to 145 mm Hg pre- or postoperatively, up to 105 to 135 mm Hg intraoperatively and 115 to 145 mm Hg pre- or postoperatively, with the narrower ranges defined by progressively increasing the lower SBP limit by 10 mm Hg increments. Multiple logistic regression was used to assess the association of blood pressure variability with 30-day mortality obtained from the primary ECLIPSE trial results.

RESULTS: Increased SBP variability outside a range of 75 to 135 mm Hg intraoperatively and 85 to 145 mm Hg pre- and postoperatively is significantly associated with 30-day mortality. The odds ratio was 1.16 (95% confidence interval, 1.04–1.30) for 30-day mortality risk per incremental SBP excursion of 60 mm Hg × min/h. The predicted probability of 30-day mortality increased for low-risk patients from 0.2% to 0.5%, and for high-risk patients from 42.4% to 60.7% if the area under the curve increased from 0 to 300 mm Hg × min/h.

CONCLUSIONS: Perioperative blood pressure variability is associated with 30-day mortality in cardiac surgical patients, proportionate to the extent of SBP excursions outside the range of 75 to 135 mm Hg intraoperatively and 85 to 145 mm Hg pre- and postoperatively. Predicted mortality was greater for high-risk patients than for low-risk patients.

麻醉恢复室中 CYP2D6- 和 CYP3A- 依赖的昂丹司琼血浆浓度具有对映体选择性

CYP2D6- and CYP3A-Dependent Enantioselective Plasma Concentrations of Ondansetron in Postanesthesia Care
BACKGROUND: An influence of polymorphic cytochromes P450 (CYP) 2D6 genetic variants on antiemetic efficacy of ondansetron has been suggested. However, the role of CYP3A in ondansetron metabolism and efficacy has been unclear. In this study, we evaluated the hypothesis that genotype-dependent CYP2D6 and CYP3A activity selectively influences plasma concentrations of ondansetron enantiomers. Additionally, the effects of doubling the ondansetron dose on genotype-dependent plasma concentrations were investigated.

METHODS: Patients received IV ondansetron 4 or 8 mg for emesis prophylaxis before emergence from anesthesia. The CYP2D6-dependent activity score representing no, decreased, normal, or increased CYP2D6 enzyme activity as well as CYP3A low (CYP3A5*3/*3) and high expressor status (CYP3A5 wt/wt or wt/*3) were determined. Plasma concentrations of R- and S-ondansetron enantiomers were measured by liquid
chromatography–tandem mass spectrometry. Area under the plasma concentration-time curves (AUCs) of R- and S-ondansetron were associated with CYP2D6 and CYP3A5 genotype-dependent enzyme activity.

RESULTS: Complete data of 141 subjects were analyzed. Concentrations of S-ondansetron differed between CYP2D6 activity groups ($P = 0.01$) with highest values in patients with no CYP2D6 activity (mean [95% confidence interval]: 362.5 [238.3/486.7] h · ng/mL) and lowest values in those with increased activity (149.6 [114.5/184.8] h · ng/mL) compared with subjects displaying genotypes resulting in reduced or normal CYP2D6 activity (263.6 [228.8/298.8], 255.4 [228.2/282.7] h · ng/mL). AUC of R-ondansetron was 2 times higher in CYP3A5 low expressors compared with high expressors (281.5 [248.6/314.3] vs 142.5 [92.4/192.7] h · ng/mL; $P = 0.003$). Doubling the ondansetron dose increased plasma concentrations only in individuals with low CYP3A activity, but not in individuals with high enzyme activity ($P < 0.001$).

CONCLUSIONS: The metabolism of ondansetron seems to be enantioselective. In this postoperative setting, CYP2D6 activity scores correlated with concentrations of S-ondansetron, whereas CYP3A5 expressor status mainly influenced concentrations of R-ondansetron. Genetically and environmentally determined CYP2D6 and CYP3A enzyme activity might have implications for antiemetic efficacy.

背景：在肥胖患者中，可能因其呼吸变化和气体交换改变而推迟麻醉气体的起效和失效的时间。这项研究评估了肥胖对于七氟醚显效滞后现象的影响。七氟醚的显效是通过脑电双频指数（BIS）测量来证实。由于呼气末正压（PEEP）可改善肥胖病人气体交换能力，作者还评估了PEEP对于滞后现象的影响。

方法：本研究对15名肥胖和15名体重正常，ASA 分级 I 和 II 级，20 至 50 岁，接受全身麻醉的择期腹腔镜手术的患者进行前瞻性研究。使用异丙酚进行麻醉诱导，七氟醚和芬太尼进行麻醉维持。在手术结束后并使 BIS 值稳定在 60 至 65，增加七氟醚吸入浓度至 5% 维持 5 分钟后或直到 BIS 值<40 时降低吸入浓度。此项七氟醚的转换过程在体重正常的受试者（无 PEEP）进行一次，在肥胖患者中进行两次（PEEP 为 0 和 8cmH2O）。使用 NONMEM 6 法建立人群药代学/药效动力学（PK / PD）相关的抑制 Emax 模型。应用此模型描述在转换过程中七氟醚呼气末浓
BACKGROUND: The onset and offset of action of anesthetic gases might be delayed by respiratory changes and gas exchange alterations present in obese patients. In this study, we assessed the influence of obesity on the hysteresis between sevoflurane and its effect as measured by the bispectral index (BIS). Because the use of positive end-expiratory pressure (PEEP) in obese patients has improved gas exchange, we also assessed the influence of PEEP on hysteresis.

METHODS: Fifteen obese and 15 normal-weight patients, ASA physical status I and II, 20 to 50 years old, scheduled to undergo general anesthesia for elective laparoscopic surgery, were prospectively studied. Anesthesia was induced with propofol and maintained with sevoflurane and fentanyl. At the end of surgery and after stable BIS values of 60 to 65, the inspired concentration of sevoflurane was increased to 5 vol% for 5 minutes or until BIS was <40 and then decreased. Sevoflurane transitions were performed once in normal-weight subjects (without PEEP) and twice in obese patients (one without PEEP and one with a PEEP of 8 cm H2O). The hysteresis between sevoflurane end-tidal concentrations and BIS during these transition periods was modeled with an inhibitory Emax model using a population pharmacokinetic/pharmacodynamic (PK/PD) approach with NONMEM VI. A descriptive analysis of sevoflurane inspired and expired concentrations, BIS values, and time to reach different BIS end points was also used to compare the PK and PD characteristics.

RESULTS: All patients completed the study. The data were adequately fit with the PK/PD model. The hysteresis expressed as the effect-site elimination rate constant was not influenced by body mass index or PEEP (P > 0.05). Neither obesity nor PEEP showed any influence on the PK/PD descriptors.

CONCLUSIONS: Our results do not support the hypothesis that obesity prolongs induction or recovery times when sevoflurane, a poorly soluble anesthetic, is used to maintain anesthesia from 90 to 120 minutes.
BACKGROUND: Aspiration pneumonia remains a serious anesthetic-related complication. A reliable diagnostic tool to assess gastric volume is currently lacking. We recently demonstrated that gastric sonography can provide reliable qualitative and quantitative information about gastric content and volume in healthy volunteers. In the current study, we performed a prospective qualitative and quantitative analysis of the gastric antrum in 200 fasted patients undergoing elective surgery.

METHODS: A standardized gastric scanning protocol was applied before anesthetic induction. Patients were classified following a 3-point grading system based solely on qualitative sonographic assessment of the antrum in the supine and right lateral decubitus positions.

RESULTS: Eighty-six patients were classified as grade 0 (empty antrum); 107 patients as grade 1 (minimal fluid volume detected only in the right lateral decubitus position); and 7 patients were classified as grade 2 (antrum clearly distended with fluid visible in both supine and lateral positions). The 3-point grading system correlated with total gastric fluid volume as predicted by a previously reported mathematical model. Essentially grade 0 corresponds to a completely empty stomach, grade 1 corresponds to negligible fluid volumes (16 ± 36 mL) within normal ranges expected for fasted patients, and grade 2 correlates with significantly higher predicted gastric fluid volumes (180 ± 83 mL) beyond previously reported “safe” limits. One patient with a grade 2 antrum had an episode of significant regurgitation of gastric contents on emergence from anesthesia.

CONCLUSION: We propose a 3-point grading system based exclusively on qualitative sonographic assessment of the gastric antrum that correlates well with predicted gastric volume. This grading system could be a promising “biomarker” to assess perioperative aspiration risk. Before it can be applied widely to clinical practice, this diagnostic tool needs to be further validated and characterized.
Hydroxyethyl Starch (130 kD) Inhibits Toll-Like Receptor 4 Signaling Pathways in Rat Lungs Challenged with Lipopolysaccharide

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BACKGROUND: A number of studies have shown that hydroxyethyl starch (HES) solutions are able to down-regulate the expression of inflammatory mediators and inhibit neutrophil-mediated tissue injuries when they are used in patients with sepsis or other diseases with severe inflammatory responses. However, our knowledge about the underlying mechanisms is limited. Toll-like receptor 4 (TLR4) signaling has a pivotal role in inflammatory processes. In this study, we examined the possible involvement of TLR4 signaling in the antiinflammatory effects of HES.

METHODS: Male Sprague-Dawley rats were exposed to lipopolysaccharide (LPS) (10 mg/kg, IV) and received IV saline (30 mL/kg) or HES 130/0.4 (15 or 30 mL/kg). Six hours after LPS challenge, rats were killed and their lungs harvested. Lung injury was examined by hematoxylin and eosin staining. TLR4 mRNA expression, p38 mitogen-activated protein kinase (MAPK) and extracellular signal-regulated kinases 1/2 MAPK activation, and activator protein 1 (AP-1) activity in the lungs were detected.
with quantitative polymerase chain reaction, Western blotting, and electrophoretic mobility shift assay, respectively.

**RESULTS:** Compared with saline, HES profoundly attenuated the histological changes induced by LPS in the lungs at both dose levels. Molecular analysis showed that both 15 and 30 mL/kg HES significantly decreased TLR4 mRNA levels and inhibited activation of p38 MAPK and AP-1 in rats challenged with LPS, whereas activation of extracellular signal-regulated kinases 1/2 MAPK was not affected by either dose of HES.

**CONCLUSIONS:** These findings indicate that the beneficial effects of HES 130/0.4 on inflammation are mediated at least in part by inhibiting the TLR4/p38 MAPK/AP-1 pathway in lungs from rats challenged with LPS.

**鸡蛋过敏的儿童对丙泊酚的过敏反应**

**Allergic Reactions to Propofol in Egg-Allergic Children**

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**背景:** 鸡蛋和/或豆类过敏通常是丙泊酚应用的禁忌症。本次研究的目的在于评估患有免疫球蛋白E介导的鸡蛋和/或豆类过敏症的儿童是否也在应用丙泊酚治疗后发生过敏反应。

**方法:** 作者对悉尼Westmead儿童医院1999年至2010年间患有IgE介导的鸡蛋和/或豆类过敏症的儿童同时接受丙泊酚治疗的病例采取回顾性病例分析。

**结果:** 研究共纳入28位鸡蛋过敏的患儿，他们共接受了43次丙泊酚治疗。没有患儿因为对豆类过敏并应用了丙泊酚而纳入研究。在被纳入的患儿中，21位（75%）为男孩，患儿在接受麻醉时的平均年龄为2.4岁（范围为1至15岁），并且这些患儿通常合并有其它的过敏性疾病（61%患有湿疹，32%患有哮喘，43%对花生过敏）。大多数患儿（n=19，68%）对鸡蛋发生过由IgE介导的临床反应，并且经蛋清皮肤点刺激试验（skin prick test，SPT）强阳性（≥7 mm）证实。其中，有两位患儿发生过对鸡蛋的过敏反应，其余的9位患儿由于SPT强阳性（≥7 mm）而从未进食过鸡蛋。所有对鸡蛋的SPT实验均在应用丙泊酚后12个月内进行。研究中有一位患儿在应用丙泊酚15分钟后发生了非过敏性休克性过敏反应（n=1，2%），该患儿为一位7岁的男孩，既往有鸡蛋过敏史，并对其它多种物质均有IgE介导的过敏症（如牛奶、坚果，和芝麻），患儿对丙泊酚的SPT为3mm。其他对鸡蛋过敏的患儿应用丙泊酚后均无反应。

**结论:** 尽管目前澳大利亚的标签上仍注明相关警告，丙泊酚还是被频繁应用于对鸡蛋过敏的患儿。对于大多数有鸡蛋过敏史但既往未发生过鸡蛋源性的过敏性休克的患儿来说，丙泊酚是可以安全使用的。

（周姝婧 译 陈杰 校）

**BACKGROUND:** Egg and/or soy allergy are often cited as contraindications to propofol administration. Our aim was to determine whether children with an immunoglobulin (Ig)E-mediated egg and/or soy allergy had an allergic reaction after propofol use.
METHODS: We performed a retrospective case review over an 11-year period (1999–2010) of children with IgE-mediated egg and/or soy allergy who had propofol administered to them at the Children's Hospital Westmead, Sydney.

RESULTS: Twenty-eight egg-allergic patients with 43 propofol administrations were identified. No child with a soy allergy who had propofol was identified. Twenty-one children (75%) were male, the median age at anesthesia was 2.4 years (range, 1–15 years), and the presence of other atopic disease was common (eczema 61%, asthma 32%, peanut allergy 43%). Most children (n = 19, 68%) had a history of an IgE-mediated clinical reaction to egg with evidence of a significantly positive egg white skin prick test (SPT) reaction (≥7 mm). Two of these had a history of egg anaphylaxis. The remaining children (n = 9, 32%) had never ingested egg because of significantly positive SPT (≥7 mm). All SPTs to egg were performed within 12 months of propofol administration. There was one nonanaphylactic immediate allergic reaction (n = 1 of 43, 2%) that occurred 15 minutes after propofol administration in a 7-year-old boy with a history of egg anaphylaxis and multiple other IgE-mediated food allergies (cow's milk, nut, and sesame). SPT to propofol was positive at 3 mm. No other egg-allergic child reacted to propofol.

CONCLUSIONS: Despite current Australian labeling warnings, propofol was frequently administered to egg-allergic children. Propofol is likely to be safe in the majority of egg-allergic children who do not have a history of egg anaphylaxis.

Neuropeptides Contribute to Peripheral Nociceptive Sensitization by Regulating Interleukin-1β Production in Keratinocytes
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背景：越来越多的证据表明：对于复杂性区域疼痛综合症（CRPS）的患者，皮肤炎症细胞因子的产生与增高的神经肽信号表达有密切的关系。在此之前一项研究观察到在胫骨骨折的 CRPS 大鼠模型上，角质细胞产生白介素(IL)-1β 需要包含 NALP1 炎性因子在内的蛋白酶-1 的活化，且白介素-1 受体拮抗剂（anakinra）的应用降低了骨折导致的后爪机械性痛觉过敏。因此，本研究假设神经肽通过提高炎症状因子和蛋白酶-1 的活性来激活皮肤的天然免疫系统从而导致痛觉过敏。

方法：考察向大鼠后爪皮肤注射神经肽 P 物质（SP）和降钙素基因相关肽（CGRP）后，出现的痛觉致敏是否有白介素-1β 的参与。接着研究是否这些神经肽能够刺激角质细胞产生白介素-1β，并且可以增加包括 NALP-1 和蛋白酶-1 在内的炎症状因子蛋白质成分的表达。最后，确定神经肽刺激产生白介素-1β 是否需要蛋白酶-1 和组织蛋白酶 B 的激活。

结果：在大鼠足底注射 P 物质和降钙素基因相关肽导致痛觉过敏，降钙素基因相关肽的效应大约较前者小 10 倍。此外，静脉注射白介素-1 受体拮抗剂阿那白滞素（anakinra），可预防神经肽产生的痛觉过敏。同样，局部应用神经肽后大鼠皮肤角质细胞白介素-1 受体表达上调。体外实验数据证明，P 物质和降钙素基因相关
Peptide injection results in a dose-dependent increase in interleukin-1β (IL-1β) expression in keratinocytes. Furthermore, systemic administration of the IL-1 receptor antagonist anakinra prevented IL-1β-mediated allodynia. Moreover, mouse skin keratinocytes express IL-1R, which is up-regulated after local neuropeptide application. In vitro data demonstrated that both SP and CGRP increased IL-1β gene and protein expression in REKs in a dose-dependent manner. Furthermore, SP time- and dose-dependently up-regulated NALP1 and caspase-1 mRNA and protein levels in REKs. In contrast, CGRP time- and dose-dependently enhanced NALP1 and caspase-1 mRNA levels without causing a significant change in NALP1 or caspase-1 protein expression in REKs. Inhibition of caspase-1 activity using the selective inhibitor Ac-YVAD-CHO reduced SP and, less effectively, CGRP-induced increases in IL-1β production in REK cells. The selective cathepsin B inhibitor CA-74Me inhibited neuropeptide-induced IL-1β production in REKs as well.

CONCLUSIONS: Collectively, these results demonstrate that neuropeptides induce nociceptive sensitization by enhancing IL-1β production in keratinocytes. Neuropeptides rely on both caspase-1 and cathepsin B for this enhanced production. Neurocutaneous signaling involving neuropeptide activation of the innate immunity may contribute to pain in CRPS patients.
Brief Reports: An Assessment of Subarachnoid Block: A Survey of 175 Articles and Recommendations for Improvement
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BACKGROUND: Assessment of subarachnoid block, particularly the sensory component, may be incomplete and influence the conclusions of studies involving subarachnoid anesthesia, as well as their application in routine clinical practice.

METHODS: We manually searched 175 articles concerning subarachnoid block published from 2006 to 2009 in 8 anesthesia journals to determine the components of the subarachnoid anesthetic procedure recorded as well as the extent of sympathetic and motor block.

RESULTS: The level of subarachnoid injection was reported in 86% of the articles, baricity in 84%, concentration of local anesthetic in 77%, patient’s position in 75%, needle size in 77%, and needle type in 71%. The stimulus used for assessing sensory block was reported in 69% of the articles; 17% described the block as unilateral or bilateral, and 11% described the lines along which the stimulus was applied. Motor and sympathetic block were assessed in 40% and 18% of studies, respectively.

CONCLUSIONS: These results suggest incomplete description of tools and assessment of sensory block in studies involving subarachnoid anesthesia. We propose a checklist to facilitate a more standardized evaluation of the extent of subarachnoid anesthesia.
Multiple Electrode Whole Blood Aggregometry, PFA-100, and In Vivo Bleeding Time for the Point-of-Care Assessment of Aspirin-Induced Platelet Dysfunction in the Preoperative Setting.
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Background: Acquired platelet dysfunction due to aspirin ingestion may increase bleeding tendency during surgery. Thus, we examined the diagnostic accuracy of in vivo bleeding time (BT) and 2 platelet function assays for the preoperative assessment of a residual antiplatelet effect in patients treated with aspirin.

Methods: Consecutive patients scheduled for surgery were prospectively enrolled in this study. The patients' last aspirin ingestion had occurred within the previous 48 hours.
before blood sampling in the "full aspirin effect" group, between 48 and 96 hours before in the "variable aspirin effect" group, and >96 hours before in the "recovered aspirin effect" group. The control group had not taken any aspirin. Multiple electrode aggregometry, platelet function analyzer (PFA)-100, and in vivo BT were performed to assess the effects of aspirin. One-way analysis of variance on ranks with a post hoc multiple-comparison procedure (Dunn) was used to detect differences among the groups. Categorical data were compared using the z test. Receiver operating characteristic (ROC) curves were created to determine the diagnostic accuracy of the platelet function assays investigated. The area under the ROC curve (AUC), sensitivity, and specificity of the assays were calculated. The level of statistical significance was set at $P < 0.05$.

**Results:** Three hundred ninety-four patients were included in the analysis (133 control and 261 aspirin-treated patients). All 3 methods were able to detect the antiplatelet effect of aspirin in the full aspirin effect group. Furthermore, no difference in the measurement values between the recovered aspirin effect and control group was found, irrespective of the assay performed. Measurement values in the variable aspirin effect group were different from those of the control group in the ASPItest using multiple electrode aggregometry and COL-EPI using PFA-100 but not in BT. ROC analysis showed the highest diagnostic accuracy in excluding the residual aspirin effect in the ASPItest (AUC 0.81, $P < 0.001$), followed by COL-EPI (AUC 0.78, $P < 0.001$) and BT (AUC 0.56, $P = 0.05$). The cutoff value of 53 U in the ASPItest excluded the effect of aspirin with a sensitivity of 88% and specificity of 71%.

**Conclusions:** The full therapeutic antiplatelet effects of aspirin can be expected within 48 hours of the patient's last aspirin ingestion. Platelet function recovered in our study if aspirin cessation occurred >96 hours (4 days) before; thus, in these patients, preoperative platelet function testing is not useful. To quantify any residual aspirin effect in patients who ceased their intake of aspirin between 48 and 96 hours before surgery, the ASPItest might have the highest diagnostic accuracy.

**Lean Body Weight Scalar for the Anesthetic Induction Dose of Propofol in Morbidly Obese Subjects.**

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**背景：** 病态肥胖相关的特殊的麻醉风险已经有所记录，由于和肥胖有关的生理和人体的变化药物管理会有所改变。不幸的是，对于极度肥胖的麻醉药效学的研究还很薄弱。尽管丙泊酚作为诱导药物频繁使用在肥胖病人身上，但是适合这些患者的丙泊酚诱导剂量尚存争议。因此，我们对肥胖病人丙泊酚麻醉诱导剂量的不同体重标量进行了对比。

**方法：** 选60名肥胖患者（体重指数≥40kg/m²）进行丙泊酚麻醉诱导，他们随机接受以总体重或标准体重为标量的药物剂量。选30名正常体重的患者（体重指数≤25kg/m²）接受以总体重为基础的丙泊酚注射（100mg/kg/h），注射器读数用于标
Background: The unique anesthetic risks associated with the morbidly obese (MO) population have been documented. Pharmacologic management of these patients may be altered because of the physiologic and anthropometric changes associated with obesity. Unfortunately, studies examining the effects of extreme obesity on the pharmacology of anesthetics have been sparse. Although propofol is the induction drug most frequently used in these patients, the appropriate induction dosing scalar for propofol remains controversial in MO subjects. Therefore, we compared different weight-based scalars for dosing propofol for anesthetic induction in MO subjects.

Methods: Sixty MO subjects (body mass index ≥40 kg/m²) were randomized to receive a propofol infusion (100 mg·kg⁻¹·h⁻¹) for induction of anesthesia based on total body weight (TBW) or lean body weight (LBW). Thirty control subjects (body mass index ≤25 kg/m²) received a propofol infusion (100 mg·kg⁻¹·h⁻¹) based on TBW. Syringe drop was used as the marker for loss of consciousness (LOC), at which point the propofol infusion was stopped. The propofol dose required for syringe drop and time to LOC were recorded.

Results: Total propofol dose (mg/kg) required for syringe drop and time to LOC were similar between control subjects and MO subjects given propofol based on LBW. MO subjects receiving a propofol infusion based on TBW had a significantly larger propofol dose and significantly shorter time to LOC. There was a strong relationship between LBW and total propofol dose received in all 3 groups.

Conclusion: LBW is a more appropriate weight-based scalar for propofol infusion for induction of general anesthesia in MO subjects.
BACKGROUND: Photoplethysmography uses light transmission to measure changes in tissue volume. The resulting photoplethysmogram is composed of AC and DC components. Limited data are available on the effects of vasodilation on the AC and the DC components of the photoplethysmograph signal. The aims of our study were (1) to investigate the effects of sympathectomy on different components of the photoplethysmogram, and (2) to compare sympathectomy-induced changes in the photoplethysmogram with changes in peripheral temperature.

METHODS: In 10 healthy subjects, sympathectomy-induced peripheral vasodilation was achieved using an axillary brachial plexus block. The nonblocked arm served as control. We obtained measurements of bilateral continuous measurements of finger blood volume (by photoplethysmography) and finger temperature. We separated the finger photoplethysmogram into its AC and DC components. In addition, we calculated the ratio of AC to DC (AC/DC). All data were recorded until 30 minutes after the end of brachial plexus block. Repeated-measures analysis of variance followed by the Dunnett post hoc test determined the effect of brachial plexus block on the finger photoplethysmogram and finger temperature.

RESULTS: The DC component of the finger photoplethysmogram decreased (vasodilation) significantly (P < 0.0001) after brachial plexus block in the blocked arm starting 2.7 minutes after the block. Average decrease in DC values was -51% ± 19% (95% confidence interval: -61% to -42%) at 30 minutes after the block. None of the other photoplethysmogram components changed significantly from preblock baseline values. On average, the finger temperature increased significantly (P < 0.0001) starting 5.7 minutes after brachial plexus block in the blocked arm. Average increase in temperature was 7.1°C ± 3.8°C (95% confidence interval: 5.1°C-9.0°C) 30 minutes after the block.
The DC component of the photoplethysmogram had the highest sensitivity and specificity to predict a successful block.

CONCLUSIONS: This study characterizes sympathectomy-induced changes in the AC and DC components of the finger photoplethysmogram. In this experimental model, we found the DC component to be most sensitive in detecting peripheral vasodilation.
airway management and difficulty, medications used, intraoperative fluid administration, transfusion requirements, vascular access used, and postoperative complications.

RESULTS: Eighty-two unique patients were identified who underwent 134 general anesthetics and 2 lumbar neuraxial anesthetics for surgeries related to KTS. Preoperatively, 27% of patients had a history of recurrent bleeding, 24% recurrent cellulitis, 9% deep vein thrombosis, and 2% pulmonary embolism. The mean age at time of surgery was 21 ± 15 years. The majority of surgical procedures involved laser coagulation or varicose vein sclerotherapy or stripping. All of the 74 direct laryngoscopies and tracheal intubations were performed on the first attempt without difficulty. Mask ventilation was possible in all 131 patients for whom this was attempted, with only 1 requiring an oral airway. Documented estimated blood loss ranged from 20 to 18,000 mL, with a mean of 740 ± 2739 mL. Use of a tourniquet did not obviate the possibility of substantial blood loss. The only significant postoperative complication involved a calf hematoma after vein stripping and avulsion that required return to the operating room for evacuation.

CONCLUSIONS: Patients with KTS have multiple associated comorbidities relevant to perioperative management. In contrast to previous reports, difficulty with airway management was not encountered. Surgery related to severe KTS may be associated with massive hemorrhage despite tourniquet use, and the anesthesiologist should anticipate the need for appropriate fluid resuscitation. Neuraxial techniques may be considered only if the possibility of trauma to neurovascular malformations has been excluded with recent spine imaging.

毛細血管再充盈时间：这还是一个有用的临床标志？
Medical Intelligence Article: Capillary Refill Time: Is It Still a Useful Clinical Sign?
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毛细血管再充盈时间（CRT）作为对危重病人快速心肺评估的一部分被卫生保健工作者广泛运用。其测量包括血液回流到远端毛细血管的目视检查。据推测，CRT是对周围灌注改变的一个简单的测量方法。目前，麻醉状态下 CRT 的测量尚缺乏证据，尚需进一步研究。但可从其他领域的研究证据中得到借鉴。在这篇论文中，我们研究这方面的证据和影响 CRT 测量的影响因素。新的方法来评估的 CRT 正在研究中。在未来，CRT 测量可能使用新技术，如数字录像或进化后的血氧饱和度探头，这些新的方法将消除与临床 CRT 显示器测量的限制，甚至可以提供一个自动化的 CRT 测量方法。

（陆丽虹译 薛张纲校）
Capillary refill time (CRT) is widely used by health care workers as part of the rapid, structured cardiopulmonary assessment of critically ill patients. Measurement involves the visual inspection of blood returning to distal capillaries after they have been emptied by pressure. It is hypothesized that CRT is a simple measure of alterations in peripheral
perfusion. Evidence for the use of CRT in anesthesia is lacking and further research is required, but understanding may be gained from evidence in other fields. In this report, we examine this evidence and factors affecting CRT measurement. Novel approaches to the assessment of CRT are under investigation. In the future, CRT measurement may be achieved using new technologies such as digital videography or modified oxygen saturation probes; these new methods would remove the limitations associated with clinical CRT measurement and may even be able to provide an automated CRT measurement.

麻醉药异氟醚对缺氧诱导的含半胱氨酸的天冬氨酸蛋白水解酶3激活和β位淀粉样前体蛋白裂解酶增加潜在的双重作用

The Potential Dual Effects of Anesthetic Isoflurane on Hypoxia-Induced Caspase-3 Activation and Increases in (β)-Site Amyloid Precursor Protein-Cleaving Enzyme Levels.

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背景：β淀粉样蛋白(Aβ)积聚、含半胱氨酸的天冬氨酸蛋白水解酶激活、细胞凋亡和缺氧导致的神经毒性都被提出与阿尔茨海默病神经病理发生机制有关。β淀粉样蛋白是淀粉样前体蛋白由天冬酰蛋白酶β位淀粉样前体蛋白裂解酶(BACE)和γ分泌酶蛋白酶解加工产生。吸入麻醉药长久以来被认为有针对神经毒性的保护作用。但是，近期的研究提出吸入麻醉药异氟醚可能通过诱导含半胱氨酸的天冬氨酸蛋白水解酶激活和凋亡，以及增加β位淀粉样前体蛋白裂解酶和β淀粉样蛋白的水平来促进神经毒性。因此我们寻求明确异氟醚是否可诱导剂量相关性的双重作用：含半胱氨酸的天冬氨酸蛋白水解酶激活和β位淀粉样前体蛋白裂解酶水平增加，是神经保护作用还是促进神经毒性作用。

方法：人类H4神经胶质瘤细胞由单纯缺氧(3% O2)、不同浓度异氟醚(0.5%和2%)和缺氧联合0.5%或2%异氟醚处理。我们通过蛋白印迹分析测量含半胱氨酸的天冬氨酸蛋白水解酶3裂解(激活)、β位淀粉样前体蛋白裂解酶和B细胞淋巴瘤-2基因水平。

结果：结果显示初次经过0.5%异氟醚治疗8小时减弱了缺氧诱导的含半胱氨酸的天冬氨酸蛋白水解酶3激活和β位淀粉样前体蛋白裂解酶水平增加作用，而2%异
BACKGROUND: β-Amyloid protein (Aβ) accumulation, caspase activation, apoptosis, and hypoxia-induced neurotoxicity have been suggested to be involved in Alzheimer disease neuropathogenesis. Aβ is produced from amyloid precursor protein through proteolytic processing by the aspartyl protease β-site amyloid precursor protein-cleaving enzyme (BACE) and γ-secretase. Inhaled anesthetics have long been considered to protect against neurotoxicity. However, recent studies have suggested that the inhaled anesthetic isoflurane may promote neurotoxicity by inducing caspase activation and apoptosis, and by increasing levels of BACE and Aβ. We therefore sought to determine whether isoflurane can induce concentration-dependent dual effects on hypoxia-induced caspase-3 activation and increases in BACE levels: protection versus promotion.

METHODS: H4 human neuroglioma cells were treated with hypoxia (3% O(2)) alone, different concentrations of isoflurane (0.5% and 2%), and the combination of hypoxia and 0.5% or 2% isoflurane. The levels of caspase-3 cleavage (activation), BACE, and Bcl-2 were determined by Western blot analysis.

RESULTS: We show for the first time that treatment with 0.5% isoflurane for 8 hours attenuated, whereas treatment with 2% isoflurane for 8 hours enhanced, hypoxia-induced caspase-3 activation and increases in BACE levels. The 2% isoflurane treatment also enhanced a hypoxia-induced decrease in Bcl-2 levels.

CONCLUSIONS: These results suggest a potential concept that isoflurane has dual effects (protection versus promotion) on hypoxia-induced toxicity, which may act through Bcl-2 family proteins. These findings could lead to more systematic studies to determine the potential dual effects of anesthetics on Alzheimer disease-associated neurotoxicity.
递途径，与神经元的可塑性有关。我们检验了依那西普的作用，它是一种肿瘤坏死因子α能抑制小鼠身上的吗啡耐受。

**方法**：在雄性为 Wister 小鼠体内植入两根鞘内导管，一根导管连接一个微泵，用来注射吗啡(15 μg/h)或者生理盐水(1 μL/h)各 5 天。在第 5 天，吗啡停用后，给予注射依那西普(50 μg)或者生理盐水(10 μL)。3 个小时以后，给予急性吗啡治疗(15 μg/10 μL 静脉注射)，所有的小鼠之后都接受了伤害性的尾巴轻拍试验。

**结果**：结果显示对于吗啡耐受的小鼠，急性依那西普(50μg)治疗可以提高吗啡抗伤害性刺激的作用。对吗啡耐受的小鼠，蛋白电泳提示依那西普能降低细胞膜谷氨酸运载蛋白 GLT-1 和 GLAST 的下调。依那西普能抑制 AMP 受体和 N-methyl-d-aspartate 受体亚单位（包括 GluR1/GluR2 和 NR1/NR2A）的上调。

**结论**：这些结果说明在吗啡耐受后，依那西普部分恢复吗啡的抗伤害性刺激的作用。依那西普对减轻临床疼痛治疗有潜在价值，特别是对于长期接受阿片类药物治疗的患者，它能阻止耐受，更好地发挥阿片类药物的作用。

（翁梅琳译 薛张纲校）

**BACKGROUND**: Long-term exposure to morphine leads to analgesic tolerance. In addition to an opioid receptor conformational change, enhancing the glutamatergic signal transmission is also involved in morphine tolerance. Tumor necrosis factor-α has been demonstrated to correlate with neuronal plasticity via activation of glutamatergic transmission. We examined the effect of etanercept, a tumor necrosis factor-α inhibitor on morphine tolerance in rats.

**METHODS**: Male Wistar rats were implanted with 2 intrathecal (IT) catheters, and 1 IT catheter was connected to a mini-osmotic pump, used for either morphine infusion (15 μg/h) or saline (1 μL/h) infusion for 5 days. On day 5, either etanercept (50 μg) or saline (10 μL) was injected after discontinued morphine infusion. Three hours later, acute morphine (15 μg/10 μL, IT) treatment was given and all rats received a nociceptive tail-flick test.

**RESULTS**: The results showed that acute etanercept (50 μg) treatment caused a significant antinociceptive effect of morphine in morphine-tolerant rats. Western blotting indicated that etanercept attenuated the downregulation of membrane glutamate transporters GLT-1 and GLAST in morphine-tolerant rats. Etanercept also inhibited the upregulation of surface AMPA-receptor and N-methyl-d-aspartate–receptor subunits, including GluR1/GluR2 and NR1/NR2A.

**CONCLUSIONS**: These results demonstrate that etanercept partially restores the antinociceptive effect of morphine in morphine tolerance after a morphine challenge. Etanercept has potential for use in the clinical management of pain, particularly in patients who require long-term opioid treatment, and the effectiveness of which can be hampered by tolerance.

**臂丛阻滞在术中对氧平衡的影响**

**Influence of Brachial Plexus Blockade on Oxygen Balance During Surgery**

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有选择性地在上肢局部疾病手术中实施臂丛神经阻滞会产生一个集合麻醉、运动阻滞和药物性交感阻滞的有利的效果。为了在未来的治疗中更好地利用臂丛神经阻滞的持久效应，我们进行了一个健康病人行择期手部手术的可控的前瞻性研究，研究中利用可靠的静脉血气监测技术，肯定了上肢阻滞区氧平衡的情况较为阻滞区地有改善。
（张玥琪译，薛张纲校）
The combined effects of anesthesia, motor blockade, and chemically induced sympathectomy after brachial plexus blockade can have a beneficial impact, when applied in selected, isolated diseased states of the upper limb. With the aim of using the prolonged effects of brachial plexus blockade for a future therapeutic application, we demonstrated a dependable methodology of venous blood gas monitoring and confirmed an improved oxygen balance of the blocked versus nonblocked upper extremity in a controlled, prospective study in healthy patients undergoing elective hand surgery.