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Computational Analysis of the Effects of Reduced Temperature on Thrombin Generation: The Contributions of Hypothermia to Coagulopathy

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Anesth Analg September 2013 117:565-574

背景：由组织低灌注、躯体暴露和输注低温复苏液引起的低体温，是导致创伤和手术期间凝血功能障碍的主要因素。尽管进行了大量研究，但低体温引起凝血功能受损的机制尚未完全明确。本研究利用动力学模型探究低体温对凝血酶生成的影响。

方法：研究采用一经验证的计算机模型预测和分析了低体温（伴随或不伴随血液稀释）对凝血酶生成和其量化指标的影响。计算机模型反映了关于凝血酶生成生化机制的机理说明的现有知识。研究对“每个”受试者进行分析，包括 472 例来自“莱顿血栓形成研究”对照组中的受试者。

结果：计算和分析了数以千计的动力学曲线，这些曲线特征性反映了凝血酶生成和凝血酶原复合物（TAT）的形成。在任何模拟情况下，31℃ 至 36℃ 的低体温时，凝血酶生成逐渐减缓，可通过凝血时间、凝血酶高峰时间和凝血酶原时间所反映，这些指标在所有受试者中均延长($P < 10^{-5}$)。凝血酶曲线的最大斜率逐渐减小，曲线下面积在低体温状态下增大($P < 10^{-5}$)；凝血酶峰值高度几乎不受影响。TAT 形成时间明显延长($P < 10^{-5}$)，但最终 TAT 水平无显著影响。影响凝血酶生成的参数中，酶折叠方式在较低体温时改变更大。尽管实验组差异很大，但此与参数本身和受试者凝血因子组成成分无关。低体温和血液稀释对凝血酶生成有关的参数的影响呈相加作用。

结论：此项计算机策略可被用于模拟改变温度对生化系统的动力学影响，并被用于分析低体温对凝血酶生成的影响。研究发现在不同血浆组成的个体中，即使在

轻度低体温时，凝血酶生成受损也很明显。研究指出凝血酶生成障碍的机制，这可能是由低体温引起和血液稀释参与的凝血功能障碍的主要因素。
（诸琳婕　译　陈杰　校）

BACKGROUND: Hypothermia, which can result from tissue hypoperfusion, body exposure, and transfusion of cold resuscitation fluids, is a major factor contributing to coagulopathy of trauma and surgery. Despite considerable efforts, the mechanisms of hypothermia-induced blood coagulation impairment have not been fully understood. We introduce a kinetic modeling approach to investigate the effects of hypothermia on thrombin generation.

METHODS: We extended a validated computational model to predict and analyze the impact of low temperatures (with or without concomitant blood dilution) on thrombin generation and its quantitative parameters. The computational model reflects the existing knowledge about the mechanistic details of thrombin generation biochemistry. We performed the analysis for an "average" subject, as well as for 472 subjects in the control group of the Leiden Thrombophilia Study.

RESULTS: We computed and analyzed thousands of kinetic curves characterizing the generation of thrombin and the formation of the thrombin–antithrombin complex (TAT). In all simulations, hypothermia in the temperature interval 31℃ to 36℃ progressively slowed down thrombin generation, as reflected by clotting time, thrombin peak time, and prothrombin time, which increased in all subjects ($P < 10{-}5$). Maximum slope of the thrombin curve was progressively decreased, and the area under the thrombin curve was increased in hypothermia ($P < 10{-}5$); thrombin peak height remained practically unaffected. TAT formation was noticeably delayed ($P < 10{-}5$), but the final TAT levels were not significantly affected. Hypothermia-induced fold changes in the affected thrombin generation parameters were larger for lower temperatures, but were practically independent of the parameter itself and of the subjects' clotting factor composition, despite substantial variability in the subject group. Hypothermia and blood dilution acted additively on the thrombin generation parameters.

CONCLUSIONS: We developed a general computational strategy that can be used to simulate the effects of changing temperature on the kinetics of biochemical systems and applied this strategy to analyze the effects of hypothermia on thrombin generation. We found that thrombin generation can be noticeably impaired in subjects with different blood plasma composition even in moderate hypothermia. Our work provides mechanistic support to the notion that thrombin generation impairment may be a key factor in coagulopathy induced by hypothermia and complicated by blood plasma dilution.

一项关于芳香疗法用于治疗术后恶心的随机化研究

Aromatherapy as Treatment for Postoperative Nausea: A Randomized Trial

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背景：术后恶心(PON)是麻醉和手术的一项常见并发症。针对高危患者使用止吐药物能减少但无法可靠阻止 PON 的发生。本试验探索芳香疗法是否可作为门诊手术后病人出现 PON 的一种治疗手段。主要假设是与吸入安慰剂的比较，吸入姜味香精油或者姜、绿薄荷、胡椒薄荷和豆蔻的混合物或异丙醇能显著减少 PON 的发生。次要假设是芳香疗法的有效性依赖于特定药物的使用。

方法：在某一门诊手术中心对在麻醉后监护室报告发生恶心的患者实施一项芳香疗法的随机试验。入组标准是成人，有知情同意能力，且无凝血障碍或香薰剂过敏史。在手术前，收集人口统计学和风险因素数据。给口述性量表（0-3）中，有恶心水平 1～3 级的患者一块含有随机选择芳香剂的纱布，并深吸气 3 次； 5 分钟后再次测量恶心水平（0-3）。预防性和恶心后应用止吐药需医生医嘱或病人要求。

结果：共有 1151 例患者进入筛查；303 例报告恶心(26.3%)者纳入，其中对符合协议标准的 301 例进行分析(26.2%)。与生理盐水组相比较，恶心水平具有显著变化，混合物组($P < 0.001$)、和生姜组($P = 0.002$)的恶心水平有明显变化，而酒精组则无差异($P < 0.76$)。与生理盐水组相比，混合物组和生姜组在止吐剂应用次数方面也显著减少 (分别为 $P = 0.002$ 和 $P < 0.001$)。

结论：芳香疗法可能是一种有效的 PON 治疗方法。在此研究结果基础上,未来应进一步评估芳香疗法。芳香疗法作为针对 PON 的一种廉价无创治疗方法，并可由患者根据需要进行管理和自控，是非常有前景的。

（孙晓琼　译　陈杰　校）

BACKGROUND: Postoperative nausea (PON) is a common complication of anesthesia and surgery. Antiemetic medication for higher-risk patients may reduce but does not reliably prevent PON. We examined aromatherapy as a treatment for patients experiencing PON after ambulatory surgery. Our primary hypothesis was that in

comparison with inhaling a placebo, PON will be reduced significantly by aromatherapy with (1) essential oil of ginger, (2) a blend of essential oils of ginger, spearmint, peppermint, and cardamom, or (3) isopropyl alcohol. Our secondary hypothesis was that the effectiveness of aromatherapy will depend upon the agent used.

METHODS: A randomized trial of aromatherapy with patients who reported nausea in the postanesthesia care unit was conducted at one ambulatory surgical center. Eligibility criteria were adult, able to give consent, and no history of coagulation problems or allergy to the aromatherapy agents. Before surgery, demographic and risk factors were collected. Patients with a nausea level of 1 to 3 on a verbal descriptive scale (0–3) received a gauze pad saturated with a randomly chosen aromatherapy agent and were told to inhale deeply 3 times; nausea (0–3) was then measured again in 5 minutes. Prophylactic and postnausea antiemetics were given as ordered by physicians or as requested by the patient.

RESULTS: A total of 1151 subjects were screened for inclusion; 303 subjects reporting nausea were enrolled (26.3%), and 301 meeting protocol were analyzed (26.2%). The change in nausea level was significant for the blend ($P < 0.001$) and ginger ($P = 0.002$) versus saline but not for alcohol ($P < 0.76$). The number of antiemetic medications requested after aromatherapy was also significantly reduced with ginger or blend aromatherapy versus saline ($P = 0.002$ and $P < 0.001$, respectively).

CONCLUSION: The hypothesis that aromatherapy would be effective as a treatment for PON was supported. On the basis of our results, future research further evaluating aromatherapy is warranted. Aromatherapy is promising as an inexpensive, noninvasive treatment for PON that can be administered and controlled by patients as needed.

七氟醚麻醉和异丙酚麻醉下禁食大鼠的葡萄糖利用

Glucose Use in Fasted Rats Under Sevoflurane Anesthesia and Propofol Anesthesia

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Anesth Analg September 2013 117:627-633

背景: 之前报道了七氟醚麻醉与异丙酚麻醉对喂养大鼠葡萄糖利用的影响有显著差别，但未能解释造成这种差异的机制。

方法: 本次研究中试验动物为禁食大鼠。在七氟醚麻醉下行手术准备后,大鼠分为以下三组:清醒组、七氟醚麻醉组、异丙酚麻醉组。对所有大鼠进行静脉葡萄糖耐量测试（IVGTT），静脉注射 0.5g/kg 的葡萄糖。在进行 IVGTT 之前，部分大鼠进行格列本脲或氯甲苯噻嗪预处理。在注入葡萄糖之前，通过测量大鼠的葡萄糖和胰岛素水平计算了胰岛素敏感性校对指数（QUICKI）；在进行 IVGTT 时测量了所有大鼠的葡萄糖、胰岛素、肿瘤坏死因子-α（TNF-α）以及高分子量脂联素水平。

结果：在注入葡萄糖之前，与清醒组相比,七氟醚麻醉组表现出相似程度的葡萄糖、胰岛素水平，但 QUICKI 显著升高；与清醒组相比,异丙酚麻醉组表现出相似程度的葡萄糖水平、显著升高的胰岛素水平和显著降低的 QUICKI。注入葡萄糖之后，与清醒组相比,七氟醚麻醉组表现出显著升高的葡萄糖水平和相似程度的胰岛素水平；而与清醒组相比，异丙酚麻醉组表现出相似程度的葡萄糖水平和显著升高的胰岛素水平。在注入葡萄糖之前，七氟醚麻醉组和异丙酚麻醉组的 TNF-α 水平与清醒组水平相近似。注入葡萄糖之后，在所有清醒组及七氟醚麻醉组中均检测不到 TNF-α，而在所有异丙酚麻醉组中均检测到了 TNF-α；异丙酚麻醉组的 TNF-α 水平显著高于清醒组。在整个试验期间，七氟醚麻醉组和异丙酚麻醉组中的高分子量脂联素水平与清醒组中的相近似。七氟醚麻醉下的大鼠，格列本脲显著降低了葡萄糖水平，并显著升高了胰岛素水平；然而氯甲苯噻嗪对葡萄糖及胰岛素水平并不造成显著影响。异丙酚麻醉下的大鼠，格列本脲显著降低了葡萄糖水平，并显著升高了胰岛素水平；氯甲苯噻嗪显著的降低了葡萄糖水平而没有改变胰岛素水平。

结论：七氟醚麻醉抑制了葡萄糖诱导的胰岛素分泌而不影响基础胰岛分泌，而异丙酚麻醉增强了胰岛素分泌并增强了胰岛素抵抗状态，而七氟醚麻醉没有削弱胰岛素敏感性；在异丙酚麻醉下，TNF-α 可能与胰岛素抵抗状态有关。

（王苑　译　陈杰　校）

BACKGROUND: We previously reported the marked differences in the effects of sevoflurane anesthesia and propofol anesthesia on glucose use in fed rats; however, we could not elucidate mechanisms underlying the differences.

METHODS: We used fasted rats in this study. After surgical preparation under sevoflurane anesthesia, rats were divided into 3 groups: awake rats, rats under sevoflurane anesthesia, and rats under propofol anesthesia. All rats underwent the IV glucose tolerance test (IVGTT); 0.5 g/kg glucose was administered IV to rats. Just before IVGTT, some rats were pretreated with glibenclamide or diazoxide. We measured glucose, insulin, tumor necrosis factor-α (TNF-α), and high molecular weight adiponectin levels during IVGTT and calculated the quantitative insulin sensitivity check index (QUICKI) using glucose and insulin levels before glucose administration in each rat.

RESULTS: Before glucose administration, rats under sevoflurane anesthesia showed similar glucose and insulin levels with significantly higher QUICKI compared with awake rats, while rats under propofol anesthesia showed similar glucose levels and significantly higher insulin levels with significantly lower QUICKI compared with awake rats. After glucose administration, rats under sevoflurane anesthesia showed significantly higher glucose levels and similar insulin levels compared with awake rats, while rats under propofol anesthesia showed similar glucose levels and significantly higher insulin levels compared with awake rats. Before glucose administration, TNF-α levels in rats under sevoflurane anesthesia and rats under propofol anesthesia were similar to those in awake rats. After glucose administration, TNF-α was undetectable in all awake rats and all rats under sevoflurane anesthesia, whereas TNF-α was detectable in all rats under propofol anesthesia; TNF-α levels in rats under propofol anesthesia were significantly higher than those in awake rats. High molecular weight adiponectin levels in rats under sevoflurane anesthesia and rats under propofol anesthesia were similar to those in awake rats throughout the experimental period. In rats under sevoflurane anesthesia, glibenclamide significantly decreased glucose levels and significantly increased insulin levels; however, diazoxide produced no significant effects on glucose and insulin levels. In rats under propofol anesthesia, glibenclamide significantly decreased glucose levels and significantly increased insulin levels, while diazoxide significantly decreased glucose levels without changing insulin levels.

CONCLUSIONS: Sevoflurane anesthesia attenuates glucose-induced insulin secretion without affecting basic insulin secretion, while propofol anesthesia enhances insulin secretion. Propofol anesthesia exaggerates insulin-resistive conditions, whereas sevoflurane anesthesia dose not impair insulin sensitivity; there may be a possible association of TNF-α with insulin-resistive conditions under propofol anesthesia.

简报：在手术室进行肺部听诊：一项比较电子和传统听诊器的前瞻性随即双盲对照实验

Brief Report: Pulmonary Auscultation in the Operating Room: A Prospective Randomized Blinded Trial Comparing Electronic and Conventional Stethoscopes

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背景: 此研究比较了两种听诊器(Holtex Ideal® 和 Littmann Cardiology III®)和一种电子听诊器(Littmann 3200®)在手术室中的主观肺部听诊质量。
方法: 在 100 例行机械通气的病人中进行一项前瞻性双盲随机对照研究。每例经过体检后，听诊者使用一个数字量表（0-10）来评估听诊质量。使用对单因素分析中显著因素校正后，伴有随机截距（操作者效应）的多层混合线性回归的方法来比较不同听诊器的听诊质量。P<0.05 时，差异有统计学意义。
结果: 共进行 100 例肺部听诊的比较性评估。电子听诊器的听诊质量值在 8.2 ± 1.6，Littmann Cardiology III 的值为 7.4 ± 1.8，而 Holtex Ideal 为 4.6 ± 1.8。与 Holtex Ideal 相比，另外 2 组听诊器的听诊质量更高 (P < 0.0001)。与 Littmann Cardiology III 相比， Littmann 3200 电子听诊器的听诊质量更高(β = 0.9 [95% 可信区间, 0.5–1.3])。
结论: 与传统听诊器相比，在手术室中使用电子听诊器可提供更好的肺部听诊质量，但提升效果有限。这是否能转化为临床上的受益还需要进一步研究。
（瞿亦枫 译 陈杰 校）

BACKGROUND: We compared the subjective quality of pulmonary auscultation between 2 acoustic stethoscopes (Holtex Ideal® and Littmann Cardiology III®) and an electronic stethoscope (Littmann 3200®) in the operating room.
METHODS: A prospective double-blind randomized study with an evaluation during mechanical ventilation was performed in 100 patients. After each examination, the listeners using a numeric scale (0–10) rated the quality of auscultation. Auscultation quality was compared in patients among stethoscopes with a multilevel mixed-effects linear regression with random intercept (operator effect), adjusted on significant factors in univariate analysis. A significant difference was defined as P < 0.05.
RESULTS: One hundred comparative evaluations of pulmonary auscultation were performed. The quality of auscultation was rated 8.2 ± 1.6 for the electronic stethoscope, 7.4 ± 1.8 for the Littmann Cardiology III, and 4.6 ± 1.8 for the Holtex Ideal. Compared with Holtex Ideal, auscultation quality was significantly higher with other stethoscopes (P < 0.0001). Compared with Littmann Cardiology III, auscultation

quality was significantly higher with Littmann 3200 electronic stethoscope (β = 0.9 [95% confidence interval, 0.5–1.3]).

CONCLUSIONS: An electronic stethoscope can provide a better quality of pulmonary auscultation than acoustic stethoscopes in the operating room, yet with a magnitude of improvement marginally higher than that provided with a high performance acoustic stethoscope. Whether this can translate into a clinically relevant benefit requires further studies.

二种硬膜外吗啡剂量在剖宫产后镇痛中的应用：一项随机非劣性实验

The Efficacy of 2 Doses of Epidural Morphine for Postcesarean Delivery Analgesia: A Randomized Noninferiority Trial

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背景：硬膜外单次给予吗啡能有效减轻剖宫产后疼痛，但也伴随一些副作用。此研究尝试：作为剖宫产后多模式镇痛的一部分，给予传统硬膜外吗啡的一半剂量，是否能产生非劣性镇痛效果和更少的副作用。

方法：将 90 名接受硬膜外麻醉下剖腹产手术的产妇纳入此项随机，双盲，非劣性研究。产妇被随机分成两组，一组接受 3mg 硬膜外吗啡，另一组接受 1.5mg 硬膜外吗啡。另外实验对象定时静脉给予酮咯酸和对乙酰氨基酚。当疼痛难以忍受时给予补救性镇痛（口服羟考酮）。主要预后指标是两组第一个 24 小时内的吗啡消耗量（采用静脉注射吗啡等效剂量的中位数来测量）。3.33mg 是预先设定非劣性剂量的边界值。次要预后指标包括：吗啡在第二个 24 小时中的消耗量，数值标定量表疼痛评分，第一次补救镇痛的时间间隔，总体疼痛缓解，产妇满意度，恢复质量和副作用。

结果：数据分析来自于 87 名受试者。通过测定 1.5mg 和 3mg 硬膜外给予吗啡后 24 小时内吗啡消耗量的中位数差异是 0mg（包含 1 的 95%可信区间，2.5mg）证实了非劣性的判断，这远小于预期的非劣性剂量 3.33mg。在第二个 24 小时或者整个 48 小时内，吗啡的消耗量在两组之间无显著差异。第二个 24 小时的疼痛评分、总体疼痛缓解，产妇满意度在两组之间无显著差异。1.5mg 硬膜外吗啡组在

术后 6-12 小时有更低的中重度瘙痒发生率（相对危险度，0.44,95%可信区间，0.2-0,9;相对危险度，0.41,95%可信区间，0.2-0.8）,并在术后 6 小时有更少的恶心呕吐发生率（相对危险度，0,22,95%可信区间,0.05-0.9）。在术后 12 周的平均疼痛评分中，两组无显著差异。

结论：作为剖宫产术后多模式镇痛的一部分，较 3mg 硬膜外的吗啡剂量，1.5mg 硬膜外吗啡在镇痛方面具有非劣性，而且副作用更少。

（郑华容　译　陈杰　校）

BACKGROUND: A single dose of epidural morphine is effective in reducing pain after cesarean delivery but is associated with adverse effects. In this study, we sought to establish whether half the traditional dose of epidural morphine, when administered as part of a multimodal analgesia regimen after cesarean delivery, was associated with noninferior analgesia and fewer adverse effects.

METHODS: Ninety term parturients undergoing cesarean delivery under epidural anesthesia were enrolled in this randomized, double-blinded, noninferiority study. Patients were randomly allocated to receive either 3 mg epidural morphine or, half this dose, 1.5 mg epidural morphine. In addition, subjects received regular systemic ketorolac and acetaminophen. Rescue analgesia (oral oxycodone) was administered for breakthrough pain. The primary outcome was the difference between groups in total opioid consumption (measured in median IV morphine equivalents) within the first 24 hours. A prespecified noninferiority margin of 3.33 mg was used. Secondary outcomes included total opioid consumption from 24 to 48 hours, numerical rating scale pain scores, time to first request for analgesics, overall pain relief, maternal satisfaction, quality of recovery, and adverse effects.

RESULTS: Data were analyzed for 87 participants. Noninferiority was demonstrated as the difference in median 24-hour opioid consumption between the 1.5 mg epidural morphine (EM) and 3 mg EM groups was 0 mg (1-sided 95% confidence interval [CI], 2.5 mg), which was less than the prespecified noninferiority margin of 3.33 mg. No significant differences were found between groups in the median 24- to 48-hour opioid consumption or the median total opioid consumption within 48 hours. Pain scores, overall pain relief, and satisfaction at 24 and 48 hours were not significantly different between groups. The 1.5 mg EM group had a lower incidence of moderate and severe pruritus at 6 and 12 hours (relative risk [RR] 0.44, 95% CI, 0.2–0.9 and RR 0.41, 95% CI, 0.2–0.8, respectively) and had less nausea and vomiting at 6 hours (RR 0.22, 95% CI, 0.05–0.9). There was no difference in average pain scores at 12 weeks between the 2 groups.

CONCLUSION: When used as part of a multimodal analgesia regimen, 1.5 mg epidural morphine provided noninferior postcesarean analgesia and caused fewer adverse effects compared with 3 mg epidural morphine.

简报：测定大脑灌注压的临床实际和实验研究比较：文献综述和从业者调查

Brief Report: A Comparison of Clinical and Research Practices in Measuring Cerebral Perfusion Pressure: A Literature Review and Practitioner Survey

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背景：本研究目的为确定如何通过平均动脉压来测算大脑灌注压在基础文献和多中心临床实践两者间是否有差异。

方法：通过回顾基础文献以及向多个神经重症监护学会的成员医院发送电子邮件进行调查研究。

结果：共有 32 篇文章报道了大脑灌注压数据，其中共有 16 篇参考了平均动脉压：10 篇是心脏来源，6 篇是中脑来源。临床调查反馈率为 14.3%。反馈来自 34 家美国神经学会认可的下属神经重症监护学会成员医院中的 31 所（91%），大多数参考心脏来源动脉压（74%），中脑占 16%。10%的反馈显示矛盾结果。

结论：在如何通过平均动脉压测算大脑灌注压的问题上，不管是文献报道还是临床实践都确实存在差异。

（陆秉玮　译　陈杰　校）

BACKGROUND: Our objective was to determine whether there is variability in the foundational literature and across centers in how mean arterial blood pressure is measured to calculate cerebral perfusion pressure.

METHODS: We reviewed foundational literature and sent an e-mail survey to members of the Neurocritical Care Society.

RESULTS: Of 32 articles reporting cerebral perfusion pressure data, the reference point for mean arterial blood pressure was identified in 16: 10 heart and 6 midbrain. The overall survey response rate was 14.3%. Responses from 31 of 34 (91%) United Council for Neurologic Subspecialties fellowship-accredited Neurointensive Care Units indicated the reference point was most often the heart (74%), followed by the midbrain (16%). Conflicting answers were received from 10%.

CONCLUSIONS: There is substantive heterogeneity in both research reports and clinical practice in how mean arterial blood pressure is measured to determine cerebral perfusion pressure.

静脉给予右旋糖减少术后止吐治疗需要和术后住在监护室的时间

Intravenous Dextrose Administration Reduces Postoperative Antiemetic Rescue Treatment Requirements and Postanesthesia Care Unit Length of Stay

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背景：术后恶心呕吐（PONV）仍是最常见的术后并发症，可引起病人满意度降低，延长术后住院时间，及引起意想不到的住院。有些有限的数据表明右旋糖可减少恶心呕吐。在这项试验中，我们试图确定是否可通过术后右旋糖单剂量静脉内注射来减少 PONV 的发生率。

方法：为了检验术后给予右旋糖对 PONV 发生率的影响，我们进行了一项双盲、随机、安慰剂对照试验。我们招募了 62 名非糖尿病、ASA I 或 II 级、不抽烟、计划行妇科腹腔镜和宫腔镜手术的患者。病人被随机分为两组：治疗组在术后立即给予加入 5%右旋糖的乳酸林格液，对照（安慰剂）组在术后立即给予乳酸林格液。所有病人接受了标准化全身麻醉及麻醉苏醒前半小时给予一个剂量的止吐药。在麻醉后监护室（PACU）每间隔半小时记录一次 PONV 分数、止吐剂解救的用药情况、镇静剂的用量和离开 PACU 的时间。

结果:这两组在年龄、体重、焦虑度评分、以前的 PONV 史、禁食状况、术前葡萄糖、麻醉持续时间、术中麻醉性镇痛药的使用以及基于体重的总输液量这些方面是相似的。对这一段时间反复测定的值 Bonferroni 纠正之后的术后恶心分数在右旋糖组和对照组没有明显差别（P > 0.05）。然而，给予乳酸林格液中加入 5%右旋糖的病人比对照组的病人用更少的解救止吐药（比率平均差异 0.56,95%可信区间 0.39-0.82；P=0.02），并且在 PACU 逗留的时间短些（比率平均差异 0.80；95%可信区间，0.66-0.97；P=0.03）。

结论：在这个试验中，麻醉后静脉给予右旋糖减少止吐药的解救需要量和在 PACU 逗留的时间，所以确定其引起 PONV 管理的改善，这是值得进一步研究的。由于它的易行性、低风险及对病人护理和满意度方面的好处，可以考虑用这项治疗措施。

（王晓莉 译　马皓琳 李士通 校）

BACKGROUND: Postoperative nausea and vomiting (PONV) remains the most common postoperative complication, and causes decreased patient satisfaction, prolonged postoperative hospital stays, and unanticipated admission. There are limited data that indicate that dextrose may reduce nausea and vomiting. In this trial, we attempted to determine whether the rate of PONV can be decreased by postoperative administration of IV dextrose bolus.
METHODS: To test the effect of postoperative dextrose administration on PONV rates, we conducted a double-blind, randomized, placebo-controlled trial. We enrolled 62 nondiabetic, ASA class I or II nonsmoking outpatients scheduled for gynecologic laparoscopic and hysteroscopic procedures. Patients were randomized into 2 groups: the treatment group received dextrose 5% in Ringer lactate solution, and the control (placebo) group received Ringer lactate solution given immediately after surgery. All patients underwent a standardized general anesthesia and received 1 dose of antiemetic a half hour before emergence from anesthesia. PONV scores, antiemetic rescue medications, narcotic consumption, and discharge time were recorded in the postanesthesia care unit (PACU) in half-hour intervals.
RESULTS: The 2 groups were similar with regard to age, weight, anxiety scores, prior PONV, non per os status, presurgical glucose, anesthetic duration, intraoperative narcotic use, and total weight-based fluid volume received. Postoperative nausea scores were not significantly different in the dextrose group compared with the control group ($P > 0.05$) after Bonferroni correction for repeated measurements over time. However, patients who received dextrose 5% in Ringer lactate solution consumed less rescue antiemetic medications (ratio mean difference, 0.56; 95% confidence interval, 0.39–0.82; $P = 0.02$), and had a shorter length of stay in the PACU (ratio mean difference, 0.80; 95% confidence interval, 0.66–0.97; $P = 0.03$) compared with patients in the control group.
CONCLUSION: In this trial, postanesthesia IV dextrose administration resulted in improved PONV management as defined by reductions in antiemetic rescue medication requirements and PACU length of stay that are worthy of further study. In light of its ease, low risk, and benefit to patient care and satisfaction, this therapeutic modality could be considered.

比较甘草和糖水漱口预防术后咽喉痛及拔管后咳嗽作用的随机双盲研究

A Randomized, Double-Blind Comparison of Licorice Versus Sugar-Water Gargle for Prevention of Postoperative Sore Throat and Postextubation Coughing

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背景：一个小的研究表明，在麻醉诱导前用甘草漱口可以减少术后咽喉痛的发生率。双腔导管大，故而特别容易引起咽喉痛。因此，我们检验假设外科手术前，用甘草溶液漱口可以预防用双腔导管插管后的咽喉痛及拔管后呛咳反应。
方法：我们征集了 236 名需要进行双腔气管导管插管的择期胸外科手术患者。患者被随机分配到以下两组，在麻醉诱导前 5 分钟，分别用（1）Liquiritiae Fluidum 浸出液（甘草 0.5g）；或者（2）单一糖浆（糖 5g）漱口 1 分钟；分别溶解在 30ml 水中。分别在到达复苏室后 30min、90min 和 4h 时以及术后第一天上午，由不知道分组情况的研究者使用 11 点利克特量表评估咽喉痛和拔管后咳嗽。
结果：甘草漱口组的术后咽喉痛的发生率较糖水组明显降低：30min 时，分别为 19%和 36%；1.5h 时，分别为 10%和 35%；4h 时，分别为 21%和 45%。相应的估计治疗效果（相对危险度）为 0.54（95%可信区间，0.30-0.99，甘草对比糖水；P=0.005），0.31（0.14-0.68）（P<0.001），及 0.48（0.28-0.83）（P<0.001）。
结论：甘草漱口使咽喉痛的发生率减少一半。诱导前用甘草漱口看来是预防一个常见且令人烦恼的并发症的简便方法。
（董静 译　马皓琳 李士通 校 ）

BACKGROUND: One small study suggests that gargling with licorice before induction of anesthesia reduces the risk of postoperative sore throat. Double-lumen tubes are large and thus especially likely to provoke sore throats. We therefore tested the hypothesis that preoperative gargling with licorice solution prevents postoperative sore throat and postextubation coughing in patients intubated with double-lumen tubes.
METHODS: We enrolled 236 patients having elective thoracic surgery who required intubation with a double-lumen endotracheal tube. Patients were randomly assigned to gargle 5 minutes before induction of anesthesia for 1 minute with: (1) Extractum Liquiritiae Fluidum (licorice 0.5 g); or (2) Sirupus Simplex (sugar 5 g); each diluted in 30 mL water. Sore throat and postextubation coughing were evaluated 30 minutes, 90 minutes, and 4 hours after arrival in the postanesthesia care unit, and the first postoperative morning using an 11-point Likert scale by an investigator blinded to treatment.

RESULTS: The incidence of postoperative sore throat was significantly reduced in patients who gargled with licorice rather than sugar-water: 19% and 36% at 30 minutes, 10% and 35% at 1.5 hours, and 21% and 45% at 4 hours, respectively. The corresponding estimated treatment effects (relative risks) were 0.54 (95% CI, 0.30–0.99, licorice versus sugar-water; P = 0.005), 0.31 (0.14–0.68) (P < 0.001), and 0.48 (0.28–0.83) (P < 0.001).
CONCLUSION: Licorice gargling halved the incidence of sore throat. Preinduction gargling with licorice appears to be a simple way to prevent a common and bothersome complication.

布比卡因和罗哌卡因对原代鼠细胞培养物中肌管和永生细胞系的肌毒性作用

The Myotoxic Effect of Bupivacaine and Ropivacaine on Myotubes in Primary Mouse Cell Culture and an Immortalized Cell Line

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背景：两个局部麻醉药（LAs）布比卡因和罗哌卡因对不同组织有急性的细胞毒性作用。在这方面，局麻药导致的肌毒性已经有很多研究；然而确切的机制仍未完全阐明。出于可行性考虑，大多数离体研究应用永生细胞系。因此，建立一个原代细胞系可能得到更精确的结果。在这项研究中，我们检验了永生化对布比卡因和罗哌卡因导致的肌毒性离体研究的影响。
方法：我们建立了相同组织和物种的永生细胞系（N = 6）和原代细胞系（N = 8），并诱导分化为肌管。细胞分别被暴露在浓度递增的布比卡因和罗哌卡因中 1 或 2 小时。处理后 24 和 48 小时，应用流式细胞仪测量死亡和存活细胞的比例。通过单因素方差分析和 post hoc Dunnett T3 检验法来检验显著性。用 T 检验来比较数据集配对的中位数。
结果：递增浓度的两个局麻药均导致了两种细胞系中细胞存活的减少（例如，在两种细胞系中 5000 ppm 布比卡因培养 1 或 2 小时及 24 小时恢复后 P < 0.001）。在相同局麻药浓度下，永生细胞系培养的存活率明显较高（例如，2500 ppm 罗哌卡因培养 1 小时及 24 小时恢复后 P < 0.001）。除此之外，相同浓度的布比卡因较罗哌卡因导致了明显减少的存活细胞（例如，2500 ppm 罗哌卡因培养 1 小时及恢复 24 小时后 P = 0.032）。2 小时的培养较 1 小时的培养导致细胞死亡率

明显增高（例如，C2C12 细胞暴露于 2500 ppm 布比卡因及恢复 24 小时后 P = 0.004）。

结论：原代骨骼肌细胞较永生细胞对局麻药更易损。在体研究中布比卡因较罗哌卡因有较高的肌毒潜在性，可以在离体培养中再现。暴露时间对细胞存活有影响。（张怡 译　马皓琳 李士通 校）

BACKGROUND: The 2 local anesthetics (LAs) bupivacaine and ropivacaine have acute cytotoxic effects on different tissues. In this respect, LA-induced myotoxicity has been subject to various studies; however, the exact mechanisms are still not fully understood. Most in vitro studies use immortalized cell lines because of feasibility. Thus, establishing a primary cell line might result in more accurate results. In this study, we examined the effects of immortalization on bupivacaine- and ropivacaine-induced myotoxicity in vitro.

METHODS: An immortalized (N = 6) and a primary cell line (N = 8) of the same tissue and species were established, and differentiation in myotubes was induced. Cells were exposed to increasing concentrations of bupivacaine and ropivacaine for 1 or 2 hours, respectively. Twenty-four and 48 hours after treatment, the fractions of dead and vital cells were measured using flow cytometry. Significance was tested through 1-way analysis of variance with post hoc Dunnett T3 test. Medians of dataset pairs were compared by T test.

RESULTS: In both cell lines, increasing concentrations of both LAs resulted in decreased cell survival (e.g., $P < 0.001$ for 5000 ppm bupivacaine, 1 or 2 hours of incubation, and 24 hours recovery in both cell lines). For the same LA concentrations, survival was significantly higher in the immortalized cell culture (e.g., $P < 0.001$ for 2500 ppm ropivacaine, 1 hour of incubation, and 24 hours recovery). In addition, equal concentrations of bupivacaine resulted in significantly fewer vital cells compared with ropivacaine (e.g., $P = 0.032$ for 2500 ppm ropivacaine, 1 hour of incubation, and 24 hours recovery). Two hours of incubation resulted in a significantly higher rate of dead cells compared with 1 hour of incubation (e.g., $P = 0.004$ for C2C12 cells, 2500 ppm bupivacaine, and 24 hours recovery).

CONCLUSIONS: Primary skeletal muscle cells are more vulnerable to LAs than immortalized cells. The higher myotoxic potential of bupivacaine compared with ropivacaine in vivo can be reproduced in vitro. Incubation time has an influence on cell survival.

血管内皮多糖包被：肺水肿和急性肺损伤中的新概念

The Endothelial Glycocalyx: Emerging Concepts in Pulmonary Edema and Acute Lung Injury

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血管内皮多糖包被是一种位于血管内皮管腔表面的大分子动态层，涉及到体液的平衡和调节。它在血管通透性和水肿形成中的作用正在浮现，但还不十分明了。在这篇特别的文章中，我们着重阐述了内皮功能障碍中关于多糖包被的关键概念，并对多糖包被作为肺水肿和急性肺损伤进展重要过程中的一个调节物质提供了新的见解。
（邢怡安 译　马皓琳 李士通 校）
The endothelial glycocalyx is a dynamic layer of macromolecules at the luminal surface of vascular endothelium that is involved in fluid homeostasis and regulation. Its role in vascular permeability and edema formation is emerging but is still not well understood. In this special article, we highlight key concepts of endothelial dysfunction with regards to the glycocalyx and provide new insights into the glycocalyx as a mediator of processes central to the development of pulmonary edema and lung injury.

局麻药注射后的周围神经损伤

Peripheral Nerve Injury After Local Anesthetic Injection

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背景：周围神经阻滞的常见并发症之一是周围神经损伤，可由穿刺针或所用的药物毒性导致。本研究旨在确定不同常用局麻药束内注射所致损伤的程度。
方法：16 只 Lewis 大鼠分别接受盐水（对照组）或三种局麻药（布比卡因、利多卡因或罗哌卡因）之一的坐骨神经束内注射（n = 4）。两周后取坐骨神经作组织形态学及电镜分析。

结果：接受束内局麻药注射的动物比对照组损伤更严重，尤其表现在大直径神经纤维计数显著减少（所有局麻药组 $P < 0.01$），神经严重损伤区域和非损伤区域剩余纤维面积之比显著减少（所有局麻药组 $P < 0.01$）。损伤程度存在分层，距注射部位最近的损伤最重，距损伤部位最远的无损伤。布比卡因对大直径纤维的损伤比另外两种局麻药更严重。所有试验组均发现穿刺针造成的神经束横断损伤。电镜证实了神经损伤。

结论：常规浓度的常用局麻药对周围神经存在一定毒性，可损伤周围神经。任何合并的运动和/或感觉后遗症可能由于不同神经束的分布造成。

（陈彬彬 译， 马皓琳、李士通 审校）

BACKGROUND: A well-known complication of peripheral nerve block is peripheral nerve injury, whether from the needle or toxicity of the medication used. In this study, we sought to determine the extent of damage that results from intrafascicular injection of various commonly used local anesthetics (LAs).

METHODS: Sixteen Lewis rats received an intrafascicular injection of saline (control) or 1 of 3 LAs (bupivacaine, lidocaine, or ropivacaine) into the sciatic nerve ($n = 4$). At a 2-week end point, the sciatic nerves were harvested for histomorphometric and electron microscopic analysis.

RESULTS: Animals that received intrafascicular LA injections showed increased severity of injury as compared with control. In particular, there was a significant loss of large-diameter fibers as indicated by decreased counts ($P < 0.01$ for all LAs) and area ($P < 0.01$ for all LAs) of remaining fibers in severely injured versus noninjured areas of the nerve. There was a layering of severity of injury with most severely injured areas closest to and noninjured areas furthest from the injection site. Bupivacaine caused more damage to large fibers than the other 2 LAs. In all groups, fascicular transection injury from the needle was observed. Electron microscopy confirmed nerve injury.

CONCLUSIONS: Frequently used LAs at traditional concentrations are toxic to and can injure the peripheral nerve. Any combination of motor and/or sensory sequelae may result due to the varying fascicular topography of a nerve.

经前列腺切除器刺激预测膀胱肿瘤切除术中阻滞内收肌收缩反应的需要

Trans-Resectoscope Stimulation Predicts the Need to Block Adductor Response During Bladder Tumor Resection

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背景：对行经尿道切除膀胱下侧肿瘤的患者施行闭孔神经阻滞以防止股内收肌收缩。但除了肿瘤位置以外，我们没有标准来判断是否所有病人都有这个阻滞的必要。而且，术前很难预测闭孔神经阻滞的有效性。为解决这些难题，我们已经设计了一个经前列腺切除器刺激技术，通过前列腺切除器将一些单个颤搐电刺激传递到膀胱内壁来引发股内收肌的收缩。

方法：对泌尿科医生要求闭孔神经阻滞的 45 个病人的 51 次手术中实施经前列腺切除器刺激。如果在经前列腺切除器刺激下，没有观察到股内收肌收缩（即，阴性结果），在不考虑其他因素，实施肿瘤切除手术。如果观察到阳性结果，则实施闭孔神经阻断或给予病人一个肌松药，直到结果转阴。记录对最初的经前列腺切除器刺激的阳性或阴性结果及随后肿瘤切除术中的股内收肌收缩。

结果：51 例病例中有 29 例（57%）最初的经前列腺切除器刺激结果为阴性。在这些病例中，允许开始肿瘤切除，且未发生股内收肌收缩（发生率[95%置信区间]：0%[0%-5.7%]）。在最初的经前列腺切除器刺激结果为阳性的病例中（22/51 或 43%），我们实施了闭孔神经阻滞或给予一个肌松药后，再次刺激以在术前验证内收肌没有反应，在肿瘤切除手术中没有观察到病人股内收肌收缩现象。

结论：经前列腺切除器刺激不但有益于预测膀胱肿瘤切除手术中阻滞股内收肌收缩的必要性，还能避免不必要的闭孔神经阻滞。

(赵晓 译 马皓琳 李世通 校)

BACKGROUND: Obturator nerve block is performed on patients who undergo transurethral resection of inferolateral bladder tumors to prevent thigh adductor muscle contraction. However, other than the tumor site, we have no criteria to judge whether this block is necessary in all patients. Moreover, it is difficult to predict the efficacy of obturator nerve block before resection. To solve these problems, we have devised a trans-resectoscope stimulation technique that involves delivering several single-twitch electrical stimuli to the inside wall of the bladder via a resectoscope to elicit contraction of the thigh adductor muscle.

METHODS: Trans-resectoscope stimulation was performed in 51 cases on 45 patients for which urologists had requested obturator nerve block. If no thigh adductor muscle contraction was observed with trans-resectoscope stimulation (i.e., negative result), tumor resection was performed without further investigation. If the result was positive, we performed obturator nerve block or administered a muscle relaxant until the result turned negative. Positive or negative responses to the initial trans-resectoscope stimulation and thigh adductor muscle contraction during subsequent resection were recorded.

RESULTS: The initial trans-resectoscope stimulation result was negative in 29 of the 51 cases (57%). In these cases, tumor resection was allowed to proceed, and no thigh adductor muscle contraction occurred (rate of incidence [95% confidence interval]: 0% [0%–5.7%]). In cases with a positive initial trans-resectoscope stimulation result (22/51 or 43%), we performed an obturator nerve block or administered a muscle relaxant after which we once again stimulated to verify the lack of adductor response before proceeding with the resection, and no thigh adductor muscle contraction was observed during resection.
CONCLUSIONS: Trans-resectoscope stimulation is beneficial not only to predict the need to block the contraction of the thigh adductor during tumor resection but also to avoid unnecessary obturator nerve block.

库存血小板预热后功能不下降

Stored platelet functionality is not decreased after warming with a fluid warmer

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背景：手术中静脉补液和血液制品常规加热后输注以维持正常体温。虽然缺乏文献证据，依然有一些当前指南反对对血小板预热。我们的初步研究目的是探究血小板预热对其功能的影响。
方法：我们从输血服务中心取得了 10 个单位 3 天前采集的富血浆血小板。在预热前从每个单位的血小板中取 5mL 样品。其余的血小板用预热装置预热 2 分钟。在预热装置的流出端采集预热后的血小板样品。分别对对照组和预热组测定血小板凝集试验。试验用二磷酸腺苷、胶原蛋白和花生四烯酸作为激动剂。此外还做了血栓弹力图试验。
结果：对照组的平均温度是 22.4℃ ± 0.5℃，预热组的平均温度是 37.8℃ ± 2.3℃。所有血小板凝集试验和血栓弹力图中各项指标的 P 值没有显著性差异(所有 P 值≥ 0.13)。只有 1 项参数的平均值下降 5%(用 5μM 二磷酸腺苷为激动剂的血小板凝集，95%置信区间为-115% to 105%)。用花生四烯酸为激动剂的血小板凝集试验观察值变化最大，上升了 116%(95%置信区间-91% to 323%)。
结论：尽管样本量小，该试验不支持禁止预热血小板的主张。加热后血小板激活的研究仍需深入。
(陈实玉译 薛张纲校)

BACKGROUND: Warming of IV-administered fluids and blood products is routinely performed in the operating room to help maintain normothermia. Current guidelines recommend against the warming of platelets (PLTs), although there is no evidence for this prohibition in the literature. Our goal in this pilot study was to determine whether the warming of stored PLTs had any effect on their function.
METHODS: Ten units of 3-day-old, PLT-rich plasma-derived whole blood PLTs were acquired from the transfusion service. A 5-mL aliquot was taken from each unit before warming (control samples). The remainder of the unit was then passed into a blood-warming device and held there for 2 minutes. Postwarming (warmed) PLT samples were then collected from the effluent end of the warming device. PLT aggregometry assays with adenosine diphosphate, collagen, and arachidonic acid as agonists were performed on the control and warmed samples. Thromboelastography tests were also performed on the control and warmed samples from 6 of the 10 PLT units.
RESULTS: The mean temperature of the control and warmed samples was 22.4°C ± 0.5°C and 37.8°C ± 2.3°C, respectively. There was no significant difference (all $P \geq 0.13$) in any of the PLT aggregometry assays or in the maximum amplitude of the thromboelastography test between the control and the warmed samples. The observed mean of only 1 parameter decreased (PLT aggregometry with 5 μM adenosine diphosphate) by 5% (95% confidence interval, -115% to 105%). The maximum change observed was PLT aggregometry with arachidonic acid as agonist, which increased by 116% (95% confidence interval, -91% to 323%).
CONCLUSION: Although small in size, the results of this study do not support the prohibition against mechanical PLT warming. Studies of PLT activation after warming are also warranted.

围术期戒烟的有效性研究：一项随机临床试验

The effectiveness of a perioperative smoking cessation program: a randomized clinical trial.

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背景：吸烟会增加手术患者的并发症，特别是围手术期的呼吸问题以及伤口愈合不良。在本研究中，研究者试图证明一个专为忙碌的住院前门诊设计的戒烟干预是否能成功的降低吸烟率以及术中和术后并发症的发生率。
方法：该项随机对照实验是在一所位于加拿大安大略伦敦市的大学附属医院进行的。在住院前门诊就诊的患者至少提前三周被随机分为对照组（84 人）以及干预组（84 人）。对照组的患者不接受任何特别的戒烟干预。干预组的患者将受到（1）入院前护士的简短的辅导，（2）戒烟小手册，（3）被介绍给加拿大癌症协会的吸烟者热线，以及（4）免费提供 6 周透皮尼古丁替代治疗。所有手术当日的结果评估者以及照顾者对于患者分组皆盲。主要的评估结果是通过呼出一氧化碳呼气测试确定的戒烟率。次要评估标准包括围手术期并发症以及术后 30 日的吸烟情况。
结果：在 2010 年 10 月至 2012 年 4 月间，有 168 名患者被纳入该研究。干预组中有 12 名患者戒烟（14.3%）,对照组有 3 名患者戒（3.6%），（相对危险 4.0，98%可信区间[CI]，1.2-13.7;P=0.03）。干预组和对照组之间术中和术后并发症的整体联合率无显著差别（分别为 13.1%和 16.7%,相对危险 0.79；95%CI, 0.38-1.63;P=0.67）。术后连续 30 日内，干预组有 22 名患者戒烟（28.6%），对照组有 8 名患者戒烟（11%）（相对危险 2.6, 95% CI 1.2-5.5; P=0.008）。
结论：对于反对在住院前门诊广泛使用戒烟干预的意见之一其过于劳动密集。该研究结果显示，旨在减少医生或护理的额外时间，戒烟干预可以减少手术当日吸烟率以及促进术后 30 日的戒烟。
（陈婉南译 薛张纲校）

BACKGROUND：Cigarette smoking by surgical patients is associated with increased complications, particularly perioperative respiratory problems and poor wound healing. In this study, we sought to determine whether a pragmatic perioperative smoking cessation intervention designed for a busy preadmission clinic would be successful in reducing smoking rates and intraoperative and immediate postoperative complications.
METHODS: This randomized controlled trial was conducted at a university-affiliated hospital in London, Ontario, Canada. Patients seen in the preadmission clinic at least 3 weeks preoperatively were randomized to either the control group (84 patients) or the intervention group (84 patients). The control group received no specific smoking cessation intervention. The intervention group received (1) brief counseling by the preadmission nurse, (2) brochures on smoking cessation, (3) referral to the Canadian Cancer Society's Smokers' Helpline, and (4) a free 6-week supply of transdermal nicotine replacement therapy. All outcome assessors and caregivers on the operative day were blinded to group assignment. The primary outcome was the rate of smoking cessation as confirmed by exhaled carbon monoxide

breath test. Secondary outcomes included perioperative complications and smoking status at 30 days postoperatively.

RESULTS: Between October 2010 and April 2012, 168 patients were recruited into the study. Smoking cessation occurred in 12 patients (14.3%) in the intervention group as compared with 3 patients (3.6%) in the control group (relative risk 4.0; 95% confidence interval [CI], 1.2-13.7; P = 0.03). The overall rate of combined intraoperative and immediate postoperative complications was not significantly different between intervention and control groups (13.1% and 16.7%, respectively; relative risk 0.79; 95% CI, 0.38-1.63; P = 0.67). At follow-up 30 days postoperatively, smoking cessation was reported in 22 patients (28.6%) in the intervention group compared with 8 patients (11%) in controls (relative risk 2.6; 95% CI, 1.2-5.5; P = 0.008).

CONCLUSIONS：One of the objections to widespread use of smoking cessation interventions in the preadmission clinic is that it is too labor-intensive. The results of this study show that a smoking cessation intervention, designed to minimize additional use of physician or nursing time, results in decreased smoking rates on the day of surgery and promotes abstinence 30 days postoperatively.

简报：食管探测时的泄漏可以导致正压通气时跨肺间压在通气装置的错误设置

Brief report: leaking esophageal probe may lead to false ventilator settings when guiding positive end-expiratory pressure by transpulmonary pressure.

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食管的压力（Pes）代表了胸腔的压力。在正压通气时通过食管压力的测定来调整跨肺间压(PL)，可以提高急性呼吸窘迫综合征时的供氧和预后。在病态肥胖的病人中，我们观察到了跨肺间压的逐渐增高，但是气道压力(Paw)、腹内压、病人的位置都没有变化。在以后的测试里，我们决定在食道压探测泄露时逐渐人工增高跨肺间压，这将导致低估食管内压和高估跨肺间压，这个结果源于一个等式PAW-PES=PL。

（蒋鑫梅译 薛张纲校）

Esophageal pressure (Pes) is a surrogate for intrapleural pressure. Measuring Pes during mechanical ventilation allows for positive end-expiratory pressure adjustments by transpulmonary pressure (PL), which has been shown to improve oxygenation and outcome in acute respiratory distress syndrome patients. In morbidly obese patients,

we saw progressively increasing PL measurements, although airway pressure (Paw), intra-abdominal pressure, and patient position did not change. On further examination, we determined that the gradual increases of PL were artifacts caused by a leak in the pressure probes, which resulted in underestimation of Pes and overestimation of PL as derived from the equation Paw - Pes = PL.

智利人群中椎管内麻醉和晚期卵巢癌预后的关系

The relationship between neuraxial anesthesia and advanced ovarian cancer-related outcomes in the chilean population.

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背景：各项已发表的证据表明肿瘤外科手术中局部麻醉的使用可以减少肿瘤复发并改善总的生存期。我们研究全身麻醉复合硬膜外麻醉在晚期卵巢癌切除过程中及之后，对肿瘤复发和总生存期的影响。
方法： 本研究通过前瞻性临床注册，共获取 80 例晚期卵巢癌患者（国际妇产科联合会分期 III C 期和 IV 期），手术时间 2000 年 1 月至 2011 年 3 月。在控制选择偏倚后，使用一般健康状态评分（PS 评分系统，配对和负加权）来比较施行硬膜外麻醉和未施行硬膜外麻醉两组患者的复发时间和总生存期。
结果：CNAP 相较 IAP 总的准确度(偏倚)为收缩压-6.3 ± 18.9, 舒张压 7.4 ± 10.5, 平均压 4.0 ±11.3mm Hg(mean ± SD) 。严重低血压时偏倚增加为收缩压 11.8 ± 14.5, 舒张压 13.8 ± 12.4, 平均压 12.9 ± 12.4 mm Hg.CNAP 对应的 IAP 两组血压差值小于 15mmHg 定义为一致性(95%可信限),总的一致性为舒张压 58.5% (57.9-58.6), 舒张压 75.8% (75.5-76.0), 平均压 82.2% (81.9-82.4);快速起搏时一致性为收缩压 56.4% (54.2-58.9; P = 0.71), 舒张压 53.2%* (51.1-56.0), 平均压 57.4%* (56.3-59.1; *P < 0.001) . CNAP 和 IAP 平均值的相关性较好,在快速起搏各时相差别不显著. EA 组和非 EA 组的中位复发时间分别为 1.6 年和 0.9 年（P=0.02）。使用 PS 评分系统进行配对后 EA 组和非 EA 组的中位复发时间分别为 1.6 年和 1.4 年（P=0.3）。相类似的，PS 评分系统加权后也未证明硬膜外麻醉对肿瘤复发时间的改善。在 PS 配对样本中使用 COX 比例风险模型分析，EA 暴露的估算损害比（0.72，95%CI：0.40-1.33），实质上不能改变化疗的估算损害比（0.73，95%CI：0.40-1.31）。使用 PS 加权可得到类似结果。EA 组和非 EA 组的生存期分别为 3.3 年和 1.9 年（P=0.01）。PS 配对后 EA 组和非 EA 组的中位生存期分别为 3.3

年和 2.7 年（P=0.37）。相类似的，PS 加权后也未能证明硬膜外麻醉对生存期的改善。PS 配对样本 EA 暴露的估算损害比（0.74，95%CI：0.36-1.49），实质上不能改变化疗的估算损害比，使用 PS 加权可得到类似结果。

结论：通过 PS 配对和加权，我们没有发现晚期卵巢癌（IFGO IIIc 期和 IV 期）瘤体减灭术中及术后使用硬膜外麻在总体生存期和复发时间上的改善。

（李春译 薛张纲校）

BACKGROUND: Mixed evidence has been published relating the use of regional anesthesia during oncologic surgery to a decrease in time to cancer recurrence and improvement in overall survival. We investigated whether the use of epidural anesthesia, in addition to general analgesia during and/or after surgical removal of advanced ovarian cancer, has an impact on time to recurrence and overall survival.

METHODS: Patients were identified from a prospective clinical registry. Eighty patients with advanced ovarian cancer (International Federation of Gynecologists and Obstetricians, stage IIIC and IV) undergoing surgery between January 2000 and March 2011 were studied. Propensity scoring (PS) methods (matching and inverse weighting) were used to compare the time to recurrence and overall survival of patients who did and did not receive epidural anesthesia and/or analgesia (EA), after controlling for selection bias.

RESULTS: The median time to recurrence was 1.6 and 0.9 years for the EA and no EA groups, respectively (P = 0.02). After PS matching, the median time to recurrence was 1.6 and 1.4 years for the EA and no EA groups, respectively (P = 0.30). Similarly, PS weighting did not demonstrate an improvement in time to recurrence with the use of EA. Using a Cox proportional hazards model in the PS-matched sample, the estimated hazard ratio for EA exposure (0.72; 95% confidence interval [CI], 0.40-1.33) did not change substantially after adjusting for chemotherapy (0.73; 95% CI, 0.40-1.31). Similar results were obtained using PS weighting. The median survival time was 3.3 and 1.9 years for the EA and no EA groups, respectively (P = 0.01). After PS matching, the median survival time was 3.3 and 2.7 years for the EA and no EA groups, respectively (P = 0.37). Similarly, PS weighting did not demonstrate an improved survival with the use of EA. The estimated hazard ratio (0.74; 95% CI, 0.36-1.49) in the PS matched sample did not change substantially after adjusting for chemotherapy, with similar results when PS weighting was applied.

CONCLUSIONS: After PS matching and weighting, we found no benefit in overall survival or time to recurrence in patients with advanced stages (International Federation of Gynecologists and Obstetricians IIIC and IV) of ovarian cancer after the use of EA during and after tumor debulking surgery.

焦点综述：重度子痫前期患者的脊髓麻醉

Focused review: spinal anesthesia in severe preeclampsia.

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当未留置硬膜外导管或存在神经脊髓麻醉禁忌时，腰麻被广泛认为是重度子痫前期患者行剖宫产手术的合理麻醉选择。与健康产妇相比，重度子痫前期患者较少发生腰麻后的严重低血压。在重度子痫前期的患者，腰麻比硬膜外麻醉有更高的低血压发生率，然而这种低血压通常是容易治疗和短暂的，且临床结局的差别无显著相关性。在这篇综述中，我们描述了对重度子痫前期患者进行腰麻的优点和局限性，以及指导术中血流动力学管理的证据。
（凌晓敏译 薛张纲校）

Spinal anesthesia is widely regarded as a reasonable anesthetic option for cesarean delivery in severe preeclampsia, provided there is no indwelling epidural catheter or contraindication to neuraxial anesthesia. Compared with healthy parturients, those with severe preeclampsia experience less frequent, less severe spinal-induced hypotension. In severe preeclampsia, spinal anesthesia may cause a higher incidence of hypotension than epidural anesthesia; however, this hypotension is typically easily treated and short lived and has not been linked to clinically significant differences in outcomes. In this review, we describe the advantages and limitations of spinal anesthesia in the setting of severe preeclampsia and the evidence guiding intraoperative hemodynamic management.

局部布比卡因的禁忌-减轻术后微球体带来的有毛发的皮肤切口处的剧烈疼痛感。

Inhibition by local bupivacaine-releasing microspheres of acute postoperative pain from hairy skin incision.

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背景：术后剧烈的疼痛会引起身体虚弱且恢复缓慢。临床目标在于实现手术过去几天后，可以通过局部麻醉剂来减少疼痛感，这一目标是靠新配方来实现，此处汇报一下以动物来试验的情况。

方法：我们给老鼠皮下注射新型的乳酸聚合物微球，在手术之前的两个小时为老鼠背部提供 96 小时以上稳定的药物释放。我们先在老鼠身上割一道 1.2 厘米长的皮肤切口，然后将皮肤钝性分离出底层筋膜，再缝合 2 针，最后是 14 天的测试。手术前两个小时，局部注射包含 5，10，20 和 40 毫克布比卡因的微球体；无布比卡因的微球体是媒介控制，布比卡因 HCL 溶液（0.5%）是阳性对照。通过拨弄尼龙单丝（触觉测量套件），施加 4 到 15 克的力，分别对触摸疼、痛觉过敏和针刺疼进行测试，然后由局部肌肉收缩的频率决定机械灵敏度。

结论：布比卡因微球体（40 毫克药品）注射入未受损的皮肤能降低对 15 克触觉测量套件的反应，作用时间为 6 小时，对于针刺能起 36 小时作用。盐酸布比卡因分别减少的时间为 3 小时和 2 小时。皮肤切口和单独解剖导致 14 天的机械性痛觉异常和痛觉过敏。包含 20 或 40 毫克布比卡因的微球体，最多 3 天会压制手术后的超敏性，减少整体疼痛异常（回应与时间关系曲线区域），在手术后 1 到 5 天内 7 以 51%+/-20%(中间值+/-SE)和 78%+/-12%的比例，用分别的剂量，以 55%+/-13%和 64%+/-11%的比例减少整体疼痛尽管有 40mg 布比卡因注射到切口两侧，微球体中 5mg 和 10mg 布比卡因以及 0.5%布比卡因溶液对减少术后过敏没有效果。

结论：在完整皮肤，缓释布比卡因制剂对术后疼痛的抑制作用持久。这些发现论证了完善术后镇痛可以预防因急性疼痛转化为慢性疼痛。

（刘毅译 薛张纲校）

BACKGROUND: Acute postoperative pain causes physiological deficits and slows recovery. Reduction of such pain by local anesthetics that are delivered for several days postoperatively is a desirable clinical objective, which is approached by a new formulation and applied in animal studies reported here.

METHODS: We subcutaneously injected a new formulation of poly-lactic-co-glycolic acid polymer microspheres, which provides steady drug release for 96+ hours into rats at the dorsal region 2 hours before surgery. A single 1.2-cm-long skin incision was followed by blunt dissection of skin away from the underlying fascia, and closed by 2 sutures, followed by 14 days of testing. Microspheres containing 5, 10, 20, and 40 mg bupivacaine were injected locally 2 hours before surgery; bupivacaine-free microspheres were the vehicle control, and bupivacaine HCl solution (0.5%), the positive control. Mechanical sensitivity was determined by the frequency of local muscle contractions to repeated pokes with nylon monofilaments (von Frey hairs) exerting 4 and 15 g forces, testing, respectively, allodynia and hyperalgesia, and by pinprick.

RESULTS: Injection of bupivacaine microspheres (40 mg drug) into intact skin reduced responses to 15 g von Frey hairs for 6 hours and to pinprick for 36 hours. Respective reductions from bupivacaine HCl lasted for 3 and 2 hours. Skin incision and dissection alone caused mechanical allodynia and hyperalgesia for 14 days. Microspheres containing 20 or 40 mg bupivacaine suppressed postoperative hypersensitivity for up to 3 days, reduced integrated allodynia (area under curve of response versus time) over postoperative days 1 to 5 by 51% ± 20% (mean ± SE) and 78% ± 12%, and reduced integrated hyperalgesia by 55% ± 13% and 64% ± 11%, for the respective doses. Five and ten milligrams bupivacaine in microspheres and the 0.5% bupivacaine solution were ineffective in reducing postoperative hypersensitivity, as were 40 mg bupivacaine microspheres injected contralateral to the incision.
CONCLUSIONS: Significant suppression of postoperative pain by the slow-release bupivacaine preparation outlasts its anesthetic action on intactskin. These findings demonstrate preventive analgesia and indicate the importance of acute processes in the development of chronic postoperativepain.