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通过对突触前和突触后具有高度特异性作用的毒素评估发现四个成串电刺激和强直刺激后衰减并非仅是突触前效应

Train-of-Four and Tetanic Fade Are Not Always a Prejunctional Phenomenon as Evaluated by Toxins Having Highly Specific Pre- and Postjunctional Actions

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背景：肌肉的神经刺激后衰减被普遍认为是由于神经末梢突触前乙酰胆碱受体（AchRs）被阻滞而产生的突触前现象，而颤搐张力的降低被认为是由于肌肉AchRs被阻滞而产生的突触后效应。本研究通过使用具有特异性突触前或触突后效应的配体，考察衰减并非仅是一个突触前现象的假设。

方法：给予大鼠肌注（2.5U）或静注（12U）肉毒杆菌毒素（Botx），或仅静脉注射α-金环蛇毒素(α-BTX)后测定神经肌肉功能。同样测定单独静脉注射二氢β刺桐定(DhβE，2mg/kg)以及同时给予α-BTX后的急性神经肌肉效应。BTX减少Ach的囊泡释放，α-BTX仅结合突触前烟碱样AchRs，而DHβE仅仅特异性结合突触前α3β2 AchRs。由于Botx即使在静脉注射后2h内也缺乏急性效应，因此评估其肌注(0.6U)24h后的神经肌肉效应，并与肌注α-BTX（25 μg/kg）或肌注生理盐水24h后的效应进行比较。对坐骨神经-胫骨肌施加四个成串电刺激和强直刺激进行神经肌肉效应的在体试验。

结果：静脉注射和肌注Botx后2h并未发现神经肌肉效应。静脉注射α-Botx后几分钟内产生了颤搐抑制，并在75%的基线颤搐张力时有显著的衰减(P = 0.002)；这些效应持续至2h的观察期结束。单纯静脉注射DHβE对单次颤搐刺激（P = 0.899）或四个成串电刺激（P = 0.394）并不产生显著的变化，但显著增强了静脉注射α-BTX后的衰减（P = 0.001，75%基线颤搐张力时）。肌注Botx或α-Botx24小时后,产生了单次颤搐和强直收缩张力的降低（P<0.0001），但Botx并未造成衰减，而α-Botx在注射后24h引起了显著衰减（P<0.0001）。24h后胫骨肌重量以及AChRα1亚单位的

蛋白表达（western blots）在Botx, α-BTX和生理盐水注射组之间无差别，但在去神经支配的肌肉中则增加（阳性对照）。

结论：Botx诱导的ACh释放减少并不导致衰减但导致了绝对张力的下降。α-BTX导致的功能性突触后AchRs的减少引起了衰减。DHβE对于α3β2 AChRs突触前衰减效应仅在联合应用α-BTX引起安全边际下降时体现出来。因此，重复刺激下的衰减并非总是突触前现象，也可能反映了神经传递安全阈值的下降，后者是单纯由于突触后AChRs阻滞或由于突触前后AChRs的双重阻滞。单纯阻滞突触前α3β2 AChRs并非衰减的充分必要条件。

（瞿亦枫　译　陈杰　校）

BACKGROUND: Nerve-stimulated fade in muscle is generally accepted as a prejunctional phenomenon mediated by block of prejunctional acetylcholine receptors (AChRs) at the nerve terminal, whereas decrease of twitch tension is considered a postjunctional effect due to block of muscle AChRs. Using ligands with specific pre- or postjunctional effects only, we tested the hypothesis that fade is not necessarily a prejunctional phenomenon.

METHODS: Neuromuscular function in rats was evaluated after IM (2.5 U) or IV (12.0 U) injection of botulinum toxin (Botx), or IV (250 μg/kg) α-bungarotoxin (α-BTX) alone. The acute neuromuscular effects of IV 2 mg/kg dihydro-β-erythroidine (DHβE), alone and in combination with α-BTX, were also tested. Botx decreases vesicular release of ACh, and α-BTX binds to postjunctional nicotinic AChRs only, whereas DHβE binds specifically to prejunctional α3β2 AChRs only. In view of the lack of acute effects of Botx even at 2 hours after IV injection, its neuromuscular effects were also evaluated at 24 hours after IM injection (0.6 U) and compared with IM injection of α-BTX (25 μg/kg) or saline also given 24 hours earlier. The sciatic nerve-tibialis muscle preparation, during train-of-four and tetanic stimulation, was used to test neuromuscular effects in vivo.

RESULTS: IV and IM Botx had no observable neuromuscular effects at 2 hours. IV α-BTX caused twitch depression within a few minutes, and significant fade (P = 0.002) at 75% of baseline twitch tension; these effects persisted until the end of the observation period of 2 hours. IV DHβE alone caused no significant change in single twitch (P = 0.899) or train-of-four ratio (P = 0.394), but significantly enhanced the fade of IV α-BTX (P = 0.001 at 75% of baseline twitch tension). IM Botx or α-BTX, at 24 hours after their injection, resulted in a significant decrease of single twitch and tetanic tensions (P < 0.0001), but Botx did not cause fade, whereas α-BTX caused significant (P < 0.0001) fade at 24 hours. The tibialis muscle weights and protein expression of α1 subunit of AChR (Western blots) did not differ between Botx, α-BTX and saline-injected groups at 24 hours but increased in denervated muscle (positive control).

CONCLUSIONS: Botx-induced decreased ACh release in and of itself does not cause fade but does cause decrease of absolute tensions. Decrease of available (functional) postjunctional AChRs by α-BTX did induce fade. The prejunctional fade effects of DHβE on α3β2 AChRs become manifest only when the margin of safety was decreased by concomitant administration of α-BTX. Thus, fade during repetitive stimulation is not always a prejunctional phenomenon and may also reflect the decreased margin of safety of neurotransmission, which can be due to a pure postjunctional AChRs block or to a combination of both pre- and postjunctional AChRs block. Block of prejunctional α3β2 AChRs alone is not necessary and sufficient to cause fade.

使用简洁、无菌、一次性使用的压力传感器放置中心静脉导管的一项多中心评估

A Multicenter Evaluation of a Compact, Sterile, Single-Use Pressure Transducer for Central Venous Catheter Placement

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背景：大口径中心静脉导管（CVC）在尝试放置期间发生不慎置入动脉的几率为0.1%至1.0%，并可能导致出血，假性动脉瘤，中风甚至死亡。超声引导或观察血液的颜色及搏动并不是避免这些严重并发症的可靠方法。在导丝置入前测量针或塑料导管的压力已被证明是比较可靠的方法，但传统的压力测量方法较为不便。最近一种简洁数字显示、无菌、一次性使用的压力传感器可供选择。这项研究评估了这种新装置的性能(Compass® Vascular Access)。

方法：在这个前瞻性观察研究中，在4个教学医疗中心共放置了298个中心静脉导管。在插入导丝前后使用Compass® 传感器测量压力。其他操作细节由临床医生决定。收集中心静脉导管放置记录和任何并发症的数据。

结果：298例中心静脉导管置管中的279例由实习生放置。286例采用超声引导方法。有7例操作在重症监护病房进行，其余的在手术室。10例为锁骨下静脉置管，其余为颈内静脉置管。298例中心静脉导管中的274例在右侧。置入导丝前后的静脉压测定分别为7.2±4.3mmHg（标准差）和6.5±4.3mmHg（标准差）（P = 0.03）。操作医生的满意度评分为8.0±2.1（标准差，视觉模拟评分1-10，10为最满意）。有5例不慎刺破动脉（1.7%）。这5例都采用了超声引导。所有的误入动脉事件在导丝插入前都经Compass® 传感器测量动脉血压来识别。未曾发生导丝或CVC导管置入动脉的情况。

结论：在4个教学医疗中心共完成298例应用Compass® 压力传感器放置中心静脉导管。尽管采用超声引导，仍有5例不慎刺破动脉，所有这些事件均可通过使用Compass® 进行压力测量而识别。学员易于使用该设备，使用者都表现出很高的满意度。

（诸琳婕　译　陈杰　校）

BACKGROUND: Inadvertent arterial placement of a large-bore catheter during attempted placement of a central venous catheter (CVC) occurs at a rate of 0.1% to 1.0% and may result in hemorrhage, pseudoaneurysm, stroke, or death. Ultrasound guidance or observation of color and pulsatility of blood are not reliable methods for avoiding this serious complication. Measurement of pressure in the needle or short plastic catheter before insertion of the guidewire has been shown to be highly reliable; however, traditional pressure measurement methodology is cumbersome. Recently a compact, sterile, single-use pressure transducer with an integrated digital display has become available. In this study, we evaluated the performance of this new device (Compass® Vascular Access).

METHODS: In this prospective, observational study at 4 academic medical centers 298 CVCs were placed. Pressure was measured using the Compass transducer before and after guidewire insertion. Other details of the procedure were at the discretion of the clinician. Data describing the CVC placement and any complications were collected.

RESULTS: Trainees placed 279 of 298 CVCs. Ultrasound guidance was used for 286 of 298 CVCs. Seven of the CVC placements occurred in the intensive care unit, with the balance occurring in the operating room. Ten of the CVCs were placed in a subclavian vein, with the balance being internal jugular vein. Two hundred seventy-four of 298 CVCs were placed on the right side. Venous pressure measured before and after guidewire insertion was 7.2 ± 4.3 (SD) and 6.5 ± 4.3 (SD) mm Hg respectively (P = 0.03). The satisfaction score recorded by the physician performing the procedure was 8.0 ± 2.1 (SD; visual analog scale 1–10, 10 being most satisfying). There were 5 inadvertent arterial punctures (1.7%). Ultrasound guidance was used in all 5 cases of arterial puncture. All of the arterial punctures were recognized before guidewire insertion by measurement of arterial pressure with the Compass transducer. No guidewires or CVC catheters were placed in arteries.
CONCLUSION: The Compass pressure transducer for CVC placement performed as intended in 298 cases from 4 academic medical centers. There were 5 inadvertent arterial punctures despite the use of ultrasound guidance, all of which were correctly identified by pressure measurement using the Compass. The device was easily used by trainees, and users expressed a positive level of satisfaction.

根据瞳孔测量法来评估分娩疼痛，一项前瞻性观察研究

Assessment of Pain During Labor with Pupillometry: A Prospective Observational Study

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背景：疼痛的强烈程度通常是由病人通过数字评价量表(NRS)自我评定的，但这种量表不能被用于无法交流的病人。在麻醉的病人中，实验性伤害刺激增加瞳孔直径(PD)、瞳孔对光反射振幅(PLRA)和光刺激前后的瞳孔直径差异。分娩疼痛是一种急性而强烈的非试验性刺激，能被硬膜外镇痛有效缓解。在这项前瞻性观察研究中，描述分娩疼痛和用硬膜外镇痛来缓解疼痛对PD和PLRA的影响，评估后两者与疼痛强度的关系，并考察单次PD或PLRA测量值对疼痛评估的能力。
方法：第一产程，在4个时间点（硬膜外镇痛前后，宫缩前后）测定26名分娩产妇的疼痛程度（11分值NRS）、PD和PLRA。比较4个时间点的瞳孔大小，使用r^2值来评估疼痛绝对值与PD或PLRA之间，宫缩前后疼痛值与PD或PLRA变化之间的相关性。第二产程，此方法应用于104名分娩产妇。使用r^2值来评估疼痛与PD或PLRA之间的相关性。同时评估PD或PLRA辨别疼痛（NRS大于4分）的能力。
结果：第一产程，宫缩期间观察到疼痛评分、PD、PLRA均有显著增加，而硬膜外镇痛后消失。代表宫缩前后疼痛与PD或PLRA变化之间相关性的r^2 值(分别为 0.25 [95% 可信区间, 0.07–0.46] ； 0.34 [0.14–0.56])，比代表疼痛与PD或PLRA绝对值之间相关性的r^2 值（分别为 0.14 [0.04–0.28])； 0.22 [0.10–0.37])要更高，表明变化比数值本身有更强的相关性。第二产程中,

PD和PLRA与疼痛相关的r^2 值分别为0.23 [0.10–0.38]和 0.26 [0.11–0.40]，两者的受试者操作特征曲线下面积分别是 0.82 [0.73–0.91] 和 0.80 [0.71–0.89]。

结论：宫缩前后引起的PD和PLRA变化可作为评估无法交流患者疼痛的一种方法。

（詹恺诞　译　陈杰　校）

BACKGROUND: Pain intensity is usually self-rated by patients with a numeric rating scale (NRS) but this scale cannot be used for noncommunicating patients. In anesthetized patients, experimental noxious stimulus increases pupillary diameter (PD) and pupillary light reflex amplitude (PLRA), the difference between PD before and after light stimulation. Labor pain is an intense acute nonexperimental stimulus, effectively relieved by epidural analgesia. In this prospective observational study, we therefore describe the effects of labor pain and pain relief with epidural analgesia on PD and PLRA, determine their association with pain intensity and determine the ability of a single measurement of PD or PLRA to assess pain.

METHODS: In the first stage, pain (11-point NRS), PD, and PLRA were measured in 4 conditions in 26 laboring women: before and after epidural analgesia and in the presence and absence of a uterine contraction. Pupillometry values among the 4 conditions were compared, and the strength of the association between absolute values of pain and PD or PLRA and between pain and changes in PD or PLRA brought about by uterine contraction was assessed with r^2. In the second stage, 1 measurement was performed in 104 laboring women. The strength of the association between pain and PD or PLRA was assessed with r^2. The ability of PD or PLRA to discriminate pain (NRS > 4) was also assessed.

RESULTS: In the first stage, a statistically significant increase in pain, PD, and PLRA was observed during a contraction, and this change was abolished after epidural analgesia. The r^2 for the association between pain and changes in PD (r^2 = 0.25 [95% confidence interval, 0.07–0.46] or PLRA (r^2 = 0.34 [0.14–0.56]) brought about by a uterine contraction was higher than the r^2 for the association between pain and absolute values of PD (r^2 = 0.14 [0.04–0.28]) or PLRA (r^2 = 0.22 [0.10–0.37]) suggesting a stronger association for changes than for absolute values. In the second stage, r^2 was 0.23 [0.10–0.38] for PD and 0.26 [0.11–0.40] for PLRA and the area under the receiver operating characteristics curve was 0.82 [0.73–0.91] and 0.80 [0.71–0.89], respectively.

CONCLUSIONS: Changes in PD and PLRA brought about by a uterine contraction may be used as a tool to assess analgesia in noncommunicating patients.

综述：非甾体抗炎药在孕期和哺乳初期的使用

Review Article: Nonsteroidal Anti-Inflammatory Drugs During Pregnancy and the Initiation of Lactation

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摘要：非甾体抗炎药（NSAIDs）和阿司匹林在大部分国家都是作为非处方药物销售并且广泛用于孕妇和处于哺乳期的妇女。它们是一类被广泛用于经阴道分娩及剖腹产术后的非阿片类镇痛药物。此外，非甾体抗炎药还常用于先兆早产的安胎治疗，而低剂量的阿司匹林对先兆子痫和抗磷脂综合征患者的复发性流产有预防作用。非甾体抗炎药和阿司匹林可

能影响生育并且增加妊娠早期流产的风险。在妊娠中期非甾体抗炎药和阿司匹林的使用被认为是相当安全的，不过现在已被证实与胎儿隐睾相关。在妊娠晚期，由于胎儿风险的显著增加，比如肾损伤、羊水过少、动脉导管收缩（新生儿持续性肺动脉高压的潜在风险）、坏死性结肠炎和颅内出血，应避免使用非甾体抗炎药和阿司匹林。大部分非甾体抗炎药的母体给予或经肠道摄入会导致婴儿低剂量的母乳暴露，而COX-1和COX-2抑制剂在母乳喂养时被认为是安全的，且优于阿司匹林。

（孙莉荔　译　陈杰　校）

Nonsteroidal anti-inflammatory drugs (NSAIDs) and aspirin, which are available as “over-the counter” medications in most countries, are widely used by both pregnant and lactating women. They are popular non-opioid analgesics for the treatment of pain after vaginal and operative delivery. In addition, NSAIDs are used for tocolysis in premature labor, and low-dose aspirin has a role in the prevention of preeclampsia and recurrent miscarriage in antiphospholipid syndrome. NSAIDs and aspirin may affect fertility and increase the risk of early pregnancy loss. In the second trimester their use is considered reasonably safe, but has been associated with fetal cryptorchism. In the third trimester, NSAIDs and aspirin are usually avoided because of significant fetal risks such as renal injury, oligohydramnios, constriction of the ductus arteriosus (with potential for persistent pulmonary hypertension in the newborn), necrotizing enterocolitis, and intracranial hemorrhage. Maternal administration or ingestion of most NSAIDs results in low infant exposure via breastmilk, such that both cyclooxygenase-1 and cyclooxygenase-2 inhibitors are generally considered safe, and preferable to aspirin, when breastfeeding.

头皮区域阻滞在开颅术后镇痛中的应用：一项系统性回顾和Meta分析

Regional Scalp Block for Postcraniotomy Analgesia: A Systematic Review and Meta-Analysis

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背景：据报告多达三分之二的患者在颅脑手术后手术部位存在中重度疼痛，并且考虑到对神经系统评估的影响，通过全身应用阿片类药物来治疗疼痛是有所顾虑的。此外，关于神经外科可替代的镇痛策略缺少共识和证据。头皮区域阻滞（RSB）是一项成熟的技术，包括在定义的解剖部位做局部浸润麻醉，作用于支配头皮的主要感觉神经。然而，RSB的降低术后疼痛的疗效仍不清楚。这项研究试图系统地确定和回顾关于RSB的随机对照试验（RCT）和通过一项定量荟萃分析对其有效性进行总体估计。

方法：在MEDLINE，EMBASE和Cochrane中心对照试验注册数据库检索了所有关于评估RSB对开颅术后疼痛效果的随机对照试验。标题，摘要，论文由两个独立的审阅者甄别预定义入选标准而确定。两位作者独立评估相关研究和患者报告疼痛评分所提取数据的质量，镇痛需求和RSB的并发症。疼痛评分用一个通用的0至10的区间来衡量，得分越高表明疼痛越剧烈。通过一个随机-效应、逆方差、加权模型进行汇总疗效的Meta分析；异质性由I^2参数来量化。

结果：文献检索发现了138个独立引文，来自7个随机对照实验总共320名符合纳入标准的患者。所有的研究都使用标准的局麻药物（利多卡因，布比卡因，或罗哌卡因）；其中有

3个研究中的局麻药联合了肾上腺素。在3个研究中，RSB是在术前进行的，其他4个研究中，RSB是在手术切口关闭后进行。归因于RSB的并发症未见报道。Meta分析发现在术后一小时组疼痛评分有总体下降（5项研究；平均差，-1.61；95%可信区间，-2.06至-1.15;p＜0.001; I^2=0%）。术前RSB应用的亚组分析显示手术结束后2、4和6-8h的疼痛评分显著降低，而术后RSB应用可显著降低术后2、4、6-8和12h的疼痛评分。虽然这些研究有明显的异质性，手术后第一个24h对阿片类药物需求量总体减少（ 6项研究；标准平均差，−0.79；95%的可信区间，1.55到—0.03；P = 0.04；I2 =86%）。

结论：已发表的关于RSB的随机对照试验虽然样本量小，且方法学质量有限，但Meta分析显示关于减轻术后疼痛的发现是一致的。这一证据支持了开颅手术的患者使用RSB。

（郑华容 译 陈杰 校）

BACKGROUND: Up to two-thirds of patients report moderate to severe surgical site pain after craniotomy procedures, and there is understandable reluctance to manage these symptoms with systemic opioids that may impair neurological assessment. Furthermore, there is a lack of consensus and evidence concerning alternative analgesia strategies for cranial neurosurgery. Regional scalp block (RSB) is an established technique that involves infiltration of local anesthetic (LA) at well-defined anatomical sites targeting the major sensory innervation of the scalp. However, the efficacy of RSB in reducing postoperative pain remains unclear. In this study, we sought to systematically identify and review randomized controlled trials (RCTs) of RSB and synthesize an overall estimate of efficacy in a quantitative meta-analysis.

METHODS: Medline, EMBASE, and the Cochrane Central Register of Controlled Trials databases were searched for all RCTs evaluating the effect of RSB on postoperative pain after craniotomy. Titles, abstracts, and papers were reviewed independently by 2 authors against predefined inclusion criteria. Two authors independently assessed the quality of included studies and extracted data on patient-reported pain scores, other analgesia requirements, and complications of RSB. Pain scores were scaled to a common 0 to 10 interval with higher scores indicating more severe pain. Meta-analysis of the pooled treatment effect was performed with a random-effects inverse-variance weighted model; heterogeneity was quantified with the I^2 statistic.

RESULTS: The literature search identified 138 unique citations, from which 7 RCTs with a total recruitment of 320 patients met the inclusion criteria. All studies used standard LA drugs (lidocaine, bupivacaine, or ropivacaine); in 3 studies, LA was combined with epinephrine. In 3 studies, RSB was performed preoperatively; in the other 4 studies, it was administered postoperatively after wound closure. No complications attributable to RSB were reported. Meta-analysis found a pooled reduction in pain score at 1 hour postoperatively (N = 5 studies; mean difference, −1.61; 95% confidence interval, −2.06 to −1.15; P < 0.001; I^2 = 0%). Subgroup analysis of preoperative RSB showed significant reduction in pain scores at 2, 4, and 6 to 8 hours after surgery whereas postoperative RSB was associated with significant reduction in pain scores at 2, 4, 6 to 8 and 12 hours assessments. There was also an overall reduction in the opioid requirements over the first 24 hours postoperatively, although with significant heterogeneity among the studies (N = 6 studies; standardized mean difference, −0.79; 95% confidence interval, −1.55 to −0.03; P = 0.04; I^2 = 86%).

CONCLUSION: Published RCTs of RSB are small and of limited methodological quality but meta-analysis shows a consistent finding of reduced postoperative pain. This evidence supports the use of RSB for patients undergoing craniotomy.

特约评论：中世纪的伊斯兰医师对气管切开术的历史贡献

Special Article: Contributions of Medieval Islamic Physicians to the History of Tracheostomy

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气管切开术最早由包括Paulus of Aegina的希腊罗马医师所描述。中世纪的伊斯兰临床医师延伸了希腊罗马医师的想法，在包括气管切开术方面对手术领域有重要贡献。尽管Al-Zahrawi（936-1013 CE）声称他并没有听说或阅读过任何关于伊斯兰医师演示气管切开术，许多显赫的伊斯兰外科医师在中世纪时期确实进行抢救生命的操作。在伊斯兰鼎盛时期，穆斯林医师对气管切开术的操作步骤、仪器以及辅助药物方面进行了改善。

（黄萍　译　陈杰　校）

Tracheostomy was first described by Greco-Roman physicians, including Paulus of Aegina. Medieval Islamic clinicians extended the Greco-Roman ideas with substantial contributions to the field of surgery, including tracheostomy. Although Al-Zahrawi (936–1013 CE) stated that he had not heard or read of any Islamic physicians having performed tracheostomy, there is evidence that many prominent Islamic surgeons did practice this lifesaving procedure during medieval times. Throughout the Islamic Golden Age, Muslim physicians advanced the practice of tracheostomy with many modifications of the procedure, instrumentation, and adjuvant medicinal prescriptions.

SNAP5114--γ氨基丁酸转运体3的抑制剂，在大鼠实验性疼痛模型中的镇痛作用

The Antinociceptive Effect of SNAP5114, a Gamma-Aminobutyric Acid Transporter-3 Inhibitor, in Rat Experimental Pain Models

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背景：γ氨基丁酸（GABA）是哺乳动物中枢神经系统中主要的抑制性神经递质。γ氨基丁酸对调节脊髓背角痛觉有重要作用。通过特定的γ氨基丁酸转运体（GATs），将γ氨基丁

酸这种神经传递介质从突触间隙快速摄取到神经元及胶质细胞中，终止此作用。四种GATs中，GAT-
3的表达量最大，在与痛觉传输密切相关的中枢神经系统区域，包括脊髓。这项研究考察了鞘内注射GAT-3的选择性抑制剂—
SNAP5114,在急性、炎性和神经痛性实验模型中的镇痛作用。
方法：对雄性Sprague-
Dawley大鼠进行甩尾和热板试验、爪压力测试及福尔马林测试来评估其热、机械以及化学痛觉。用旋转试验评估运动功能。在大鼠坐骨神经上诱导出慢性压迫性损伤。接着用电子von
Frey测试和足底测试评估机械性痛觉过敏和热痛觉过敏。行SNAP5114（10，50，100，或200微克）鞘内注射，评估镇痛活性。为了确认SNAP5114的作用是否由γ氨基丁酸能传输介导的，在200ugSNAP5114注射前，行γ氨基丁酸A(GABAA)的受体拮抗剂荷包牡丹碱（0.3ug）或γ氨基丁酸B(GABAB)的受体拮抗剂CGP35348(30ug)鞘内注射，并进行甩尾测试，甲醛测试，以及电子von Frey测试。
结果：行鞘内SNAP5114注射的正常大鼠，在甩尾试验中呈剂量依赖性地延长后撤延迟，在福尔马林测试中呈抑制性迟发相反应。SNAP5114没有影响运动性能。在慢性压迫性损伤大鼠中，SNAP5114剂量依赖性地抑制机械痛。SNAP5114的镇痛作用被荷包牡丹碱或CGP35348部分逆转，而相同剂量下的荷包牡丹碱或CGP35348单独使用并不影响大鼠行为反应的基础值。
结论：这些结果表明SNAP5114是通过激活脊髓内的$GABA_A$受体和$GABA_B$
r受体发挥镇痛作用。对于各种疼痛的治疗，GAT-3抑制剂被证明可能有效。
（王苑　译　陈杰　校）

BACKGROUND: Gamma-aminobutyric acid (GABA) is the primary inhibitory neurotransmitter in the mammalian central nervous system. GABAergic transmission has an important role in regulating nociception at the spinal dorsal horn. It is terminated by rapid uptake of the neurotransmitter from the synaptic cleft into neurons and glial cells, via specific GABA transporters (GATs). Among the 4 GATs, GAT-3 has the greatest expression in central nervous system regions closely associated with nociceptive transmission, including the spinal cord. In this study, we examined the antinociceptive effect of intrathecal administration of a selective GAT-3 inhibitor, SNAP5114, on acute, inflammatory, and neuropathic pain in experimental models.
METHODS: Male Sprague-Dawley rats were used to assess thermal, mechanical, and chemical nociception in the tail flick and hotplate tests, the paw pressure test, and the formalin test. A rotarod test was performed to assess motor function. Chronic constriction injury to the sciatic nerve was induced in the rats. The electronic von Frey test and the plantar test were then performed to assess mechanical allodynia and thermal hyperalgesia. SNAP5114 (10, 50, 100, or 200 μg) was administered intrathecally to examine antinociceptive activity. To confirm whether the action of SNAP5114 was mediated by GABAergic transmission, the $GABA_A$ receptor antagonist bicuculline (0.3 μg) or the $GABA_B$ receptor antagonist CGP35348 (30 μg) was administered intrathecally before 200 μg of SNAP5114 in the tail flick test, the formalin test, and the electronic von Frey test.
RESULTS: Spinally applied SNAP5114 in normal rats dose-dependently prolonged withdrawal latencies in the tail flick test and suppressed the late-phase response in the formalin test. SNAP5114 did not affect motor performance. In the chronic constriction injury rats, SNAP5114

inhibited mechanical allodynia dose-dependently. The antinociceptive action of SNAP5114 was partially reversed by bicuculline or CGP35348 at doses at which the antagonist alone did not affect baseline behavioral responses.
CONCLUSIONS: These results suggest that SNAP5114 exerts antinociceptive effects by activating $GABA_A$ and $GABA_B$ receptors in the spinal cord. The GAT-3 inhibitor may prove useful in treatment of various painful conditions.

低体温对去促食欲神经鼠在异氟醚麻醉苏醒期的影响

The impact of hypothermia on emergence from isoflurane anesthesia in orexin neuron-ablated mice.

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背景：促食欲神经元在日常和全麻状态可调节睡眠/觉醒周期，此观点已经在实验动物中得到证明；而在人类的研究中，其作用存在争议，部分事实证明促食欲神经有多重功能，不仅可调节睡眠/觉醒周期，也可调节体温。假设促食欲神经不是直接调节觉醒周期，而是通过调节体温而影响麻醉苏醒时间。为验证假设，本实验同时测量体温和运动活动。
方法：实验对象：去除促食欲神经元小鼠（ORX-AB）和野生鼠（WT）；实验设备：腹腔植入遥测探头记录体温，使用红外运动传感器和自发活动量。麻醉诱导和苏醒的定义：体动消失和恢复。小鼠接受1.5%异氟醚和纯氧30分钟，分三组试验：第一组麻醉环境温热32度，确保麻醉过程体温恒定；第二组室温25度，允许体温波动；第三组野生鼠低温环境23度。观察目的：室温ORX-AB鼠在室温条件体温下降的比较情况。
结果：温室组，在体温、体动、诱导时间等实验组和对照组无明显差别。室温，实验组诱导所需时间和维持时间更长，苏醒时间延长，而对照组无差别。低温，野生鼠苏醒延长，而诱导时间在体温条件和基因型方面没有差异。
结论：食欲素缺乏的影响，在全麻期间足以损害体温调节机能；因此苏醒期应保持正常体温。
（韩叙译 薛张纲校）

BACKGROUND: Orexin neurons regulate the sleep/wake cycle and are proposed to influence general anesthesia. In animal experiments, orexin neurons have been shown to drive emergence from general anesthesia. In human studies, however, the role of orexin neurons remains controversial, owing at least, in part, to the fact that orexin neurons are multifunctional. Orexin neurons regulate not only the sleep/wake cycle, but also body temperature. We hypothesized that orexin neurons do not directly regulate emergence from anesthesia, but instead affect emergence indirectly through thermoregulation because anesthesia-induced hypothermia can greatly influence emergence time. To test our hypothesis, we used simultaneous measurement of body temperature and locomotor activity.
METHODS: We used male orexin neuron-ablated (ORX-AB) mice and their corresponding wild-type (WT) littermates to investigate the role of orexin neurons in emergence. Body temperature was recorded using an intraperitoneally implanted telemetric probe, and locomotor

activity was measured using an infrared motion sensor. Induction of anesthesia and emergence from anesthesia were defined behaviorally as loss and return, respectively, of body movement. Mice received general anesthesia with 1.5% isoflurane in 100% oxygen for 30 minutes under 3 conditions. In the first experiment, the anesthesia chamber was warmed (32℃), ensuring a constant body temperature of animals during anesthesia. In the second experiment, the anesthesia chamber was maintained at room temperature (25℃), allowing body temperature to fluctuate. In the third experiment in WT mice, the anesthesia chamber was cooled (23℃) so that their body temperature would decrease to the comparable value to that obtained in the ORX-AB mice during room temperature condition.
RESULTS: In the warmed condition, there were no significant differences between the ORX-AB and control mice with respect to body temperature, locomotor activity, induction time, or emergence time. In the room temperature condition, however, anesthesia-induced hypothermia was greater and longer lasting in ORX-AB mice than that in WT mice. Emergence time in ORX-AB mice was significantly prolonged from the warmed condition (14.2 ± 0.8 vs 6.0 ± 1.1 minutes) whereas that in WT mice was not different (7.4 ± 0.8 vs 4.9 ± 0.2 minutes). When body temperature was decreased by cooling in WT mice, emergence time was prolonged to 12.4 ± 1.3 minutes. Induction time did not differ among temperature conditions or genotypes.
CONCLUSIONS: The effect of orexin deficiency to impair thermoregulation during general anesthesia is of sufficient magnitude that body temperature must be appropriately controlled when studying the role of orexin neurons in emergence from anesthesia.

笑气与非心脏手术术后死亡率和发病率之间的关联

The association between nitrous oxide and postoperative mortality and morbidity after noncardiac surgery.

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背景：笑气（N2O）已经被广泛地应用于临床麻醉有150多年的历史了。然而，近年来因为担心它的代谢副作用，N2O的使用有所下降。但是常规使用N2O产生临床严重的毒性的证据仍然不明确。因此，我们评估了一组成人非心脏手术全身麻醉术中使用N2O和30天死亡率以及一组主要住院病人术后并发症（包括死亡）之间的关系。
方法：我们评估了克利夫兰诊所在2005年和2009年之间的49016例非心脏手术的患者。37609合格的患者中有16961例使用氧化亚氮（笑气，45％）20648例没有使用氧化亚氮（非笑气，55％）。近10755的氧化亚氮患者（占总数的63％）倾向与10,755非氧化亚氮患者得分匹配。氧化亚氮和非氧化亚氮的患者相比，30天的死亡率和一组8天住院发病率/死亡率结果相匹配。
结果：术中吸入氧化亚氮术后30天死亡率有所下降（比值比[OR]：97.5％的可信区间，0.67，0.46-0.97，P=0.02）。此外，使用笑气的患者与非使用笑气的（P <0.001）患者相比，主要住院发病率/死亡率大概下降17％（OR：0.83，0.74-

0.92）。在个别发病率中，术中使用N2O只与肺部/呼吸系统并发症显著下降有关（OR，95%Bonferroni-adjusted CI：0.59，0.44-0.78）。
结论：术中使用N2O能减少30天的死亡率和住院死亡率/发病率。除了其具体和众所周知的禁忌症外，这项研究结果不支持从麻醉剂中废除N2O的做法。
（贺盼 译 薛张纲校）

BACKGROUND: Nitrous oxide (N2O) has been widely used in clinical anesthesia for >150 years. However, use of N2O has decreased in recent years because of concern about the drug's metabolic side effects. But evidence that routine use of N2O causes clinically important toxicity remains elusive. We therefore evaluated the relationship between intraoperative N2O administration and 30-day mortality as well as a set of major inpatient postoperative complications (including mortality) in adults who had general anesthesia for noncardiac surgery.
METHODS: We evaluated 49,016 patients who had noncardiac surgery at the Cleveland Clinic between 2005 and 2009. Among 37,609 qualifying patients, 16,961 were given N2O ("nitrous," 45%) and 20,648 were not ("nonnitrous," 55%). Ten thousand seven hundred fifty-five nitrous patients (63% of the total) were propensity score-matched with 10,755 nonnitrous patients. Matched nitrous and nonnitrous patients were compared on 30-day mortality and a set of 8 in-hospital morbidity/mortality outcomes.
RESULTS: Inhalation of N2O intraoperatively was associated with decreased odds of 30-day mortality (odds ratio [OR]: 97.5% confidence interval, 0.67, 0.46-0.97; P = 0.02). Furthermore, nitrous patients had an estimated 17% (OR: 0.83, 0.74-0.92) decreased odds of experiencing major in-hospital morbidity/mortality than nonnitrous (P < 0.001). Among the individual morbidities, intraoperative N2O use was only associated with significantly lower odds of having pulmonary/respiratory morbidities (OR, 95% Bonferroni-adjusted CI: 0.59, 0.44-0.78).
CONCLUSIONS: Intraoperative N2O administration was associated with decreased odds of 30-day mortality and decreased odds of in-hospital mortality/morbidity. Aside from its specific and well-known contraindications, the results of this study do not support eliminating N2O from anesthetic practice.

地塞米松预防接受剖腹手术的子宫内膜癌患者术后恶心呕吐对术后伤口并发症的影响

The impact of postoperative nausea and vomiting prophylaxis with dexamethasone on postoperative wound complications in patients undergoing laparotomy for endometrial cancer.

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背景：地塞米松被广泛用于预防术后的恶心和呕吐。然而，也有有限的数据显示单剂量地塞米松使用会产生伤口并发症的风险。我们进行了回顾性研究，来确认是否术中使用地塞米松预防术后恶心呕吐会产生或加重术后伤口并发症的风险。
方法：从肿瘤登记处选定了在2002年到2007年期间接受了剖腹手术的子宫内膜癌女性。围手术期的记录进行了审查，使用了地塞米松。对医疗记录进行了审查，以确定包括浅表手术部位感染，蜂窝组织炎，伤口分离，筋膜裂开的伤口并发症。伤口护理需求和伤口完

全愈合时间被比较基于地塞米松的使用与否。伤口并发症的发生率也被比较基于地塞米松的使用剂量。基线特征和围手术期的细节被伤口并发症的独立协会进行了评估。回归分析进行预测伤口并发症的发生。
结果：431例符合纳入标准，192例（44.6％）接受地塞米松（4-12毫克）而且31.1％产生了伤口并发症。在未经调整的数据分析中看出，地塞米松并的使用与否在产生术后并发症的风险上无显着差异；192例中的53例（占27.6％）使用了地塞米松并产生了伤口并发症，相比239例中的81例（占33.9％）没有使用地塞米松：可能比（95％可信区间[CI]）= 0.74（0.49，1.13），P = 0.16。伤口并发症的类型无显著差异在使用地塞米松的基础上（P = 0.71），或在伤口并发症的发生率基于地塞米松的使用剂量（P = 0.48）。发生伤口并发症的患者，需要静脉使用抗生素，真空辅助伤口闭合，或筋膜裂开率在地塞米松使用与否无显着差异。伤口愈合的时间无差异（P = 0.48）。进行单因素分析，较高的体重指数，较高的预估失血量，吸烟，且持续时间较长的是产生手术伤口并发症的预测因素。在多变量模型中，吸烟（OR [95％CI]：2.0 [1.3，3.2]，P = 0.003）和体重指数（OR [95％CI]：1.2 [1.1，1.3]，P = 0.0003）是最显著的可能发生伤口并发症的因素，而地塞米松依然是不显着的预测（OR [95％CI]：0.7 [0.5，1.1]，P = 0.12）。
结论：术中使用地塞米松预防术后恶心呕吐似乎并不增加接受开腹手术治疗子宫内膜癌的术后并发症比率或术后伤口并发症的严重程度。体重指数和吸烟是这个病患族群的伤口并发症的显著预测影响因子。
（胡晓清译 薛张纲校）
BACKGROUND: Dexamethasone is widely used for postoperative nausea and vomiting (PONV) prophylaxis. However, there are limited data on the risk of wound complications associated with single-dose dexamethasone use for this purpose. We performed this retrospective study to determine whether intraoperative dexamethasone for PONV prevention increases the risk or severity of postoperative wound complications.
METHODS: Women who underwent laparotomy for endometrial cancer between 2002 and 2007 were identified from a tumor registry. Perioperative records were reviewed to determine dexamethasone administration. Medical records were reviewed to identify wound complications including cellulitis, superficial surgical site infection, wound separation, and fascial dehiscence. Wound care needs and time to complete wound healing were compared based on dexamethasone exposure. The rate of wound complications was also compared based on dexamethasone dose. Baseline characteristics and perioperative details were evaluated for independent associations with wound complications. Logistic regression analyses were performed to predict the occurrence of wound complications.
RESULTS: Four hundred thirty-one patients met inclusion criteria; 192 (44.6%) received dexamethasone (4-12 mg) and 31.1% developed a wound complication. In unadjusted analysis, there was no difference in the risk of developing a wound complication based on dexamethasone exposure; 53 of 192 patients (27.6%) who received dexamethasone developed a wound complication, compared with 81 of 239 (33.9%) who did not receive dexamethasone: odds ratio (OR) (95% confidence interval [CI]) = 0.74 (0.49, 1.13), P = 0.16. There was no difference in the distribution of wound complication types based on receipt of dexamethasone (P = 0.71), or in the incidence of wound complications based on the dose of dexamethasone (P = 0.48). Of patients who developed a wound complication, there was no difference in the need for IV antibiotics,

vacuum-assisted wound closure, or in the rate of fascial dehiscence based on dexamethasone exposure. The time to complete wound healing was not different between the 2 cohorts (P = 0.48). In univariate analysis, higher body mass index (BMI), higher estimated blood loss, smoking, and longer duration of surgery were predictors of wound complications. Smoking (OR [95% CI]: 2.0 [1.3, 3.2], P = 0.003) and BMI (OR [95% CI]: 1.2 [1.1, 1.3], P = 0.0003) were the only significant predictors of wound complications in the multivariate model, whereas dexamethasone remained a nonsignificant predictor (OR [95% CI]: 0.7 [0.5, 1.1], P = 0.12).
CONCLUSION: Intraoperative dexamethasone for PONV prophylaxis does not seem to increase the rate or severity of postoperative wound complications in women undergoing laparotomy for endometrial cancer. BMI and smoking were significant predictors of wound complications in this patient population.

美国恶性高热易感人群中斯里兰卡肉毒碱受体1基因发生变易

Ryanodine Receptor Type 1 Gene Variants in the Malignant Hyperthermia-Susceptible Population of the United States

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背景：编码骨骼肌特异性胞内钙离子通道的斯里兰卡肉毒碱受体1基因（）RYR1的突变是引起恶性高热（MH）的原因之一。本研究中，我们检测到了大量没有事先进行基因诊断的北美洲恶性高热易感人群中RYR1的突变。
方法：在120个恶性高热非易感人群中用分层的方法检测了RYR1。二氢吡啶受体基因（CACNA1S）的α-
1亚基作为变异被筛选，在受试者RYR1中大于等于100个外显子中没有发现异常。
结果：在26个受试者中十大已知的MH致病突变基因被发现。
在36例受试者中发现不确定的R
YR1突变，其中16个是新的突变。在一例死于恶性高热的受试者中发现RYR1和CACNA1S都发生了新的变异。在四个受试者中发现存在两种RYR1变异。不确定的变异被发现有内外两个RYR1 热点。在咖啡因-
氟烷收缩试验中那些具有已知的恶性高热相关基因突变或具有不确定类型的基因突变的受试者比那些没有突变的受试者产生更强的最大收缩。
结论：在独立的恶性高热家族中识别新型的RYR1突变和以前观察到的意义不明确的RYR1突变在证明这些突变对恶性高热易感性意义上及支持这些基因突变功能研究的需要上是十分必要的。恶性高热临床表型的后续报道对于遗传研究结果的解释是必要的，特别是因为大多数的与恶性高热相关的基因突变的致病性仍有待进一步阐明。

（李丽红译 薛张纲校）

BACKGROUND: Mutations in the ryanodine receptor type 1 gene (RYR1) that encodes the skeletal muscle-specific intracellular calcium (Ca(2+)) release channel are a cause of malignant hyperthermia (MH). In this study, we examined RYR1 mutations in a large number of North American MH-susceptible (MHS) subjects without prior genetic diagnosis.
METHODS:RYR1 was examined in 120 unrelated MHS subjects from the United States in a tiered manner. The α-1 subunit of the dihydropyridine receptor gene (CACNA1S) was screened for 4 variants in subjects in whom no abnormality was found in ≥100 exons of RYR1.
RESULTS: Ten known causative MH mutations were found in 26 subjects. Variants of uncertain significance in RYR1 were found in 36 subjects, 16 of which are novel. Novel variants in both RYR1 and CACNA1S were found in the 1 subject who died of MH. Two RYR1 variants were found in 4 subjects. Variants of uncertain significance were found outside and inside the hotspots of RYR1. Maximal contractures in the caffeine-halothane contracture test were greater in those who had a known MH mutation or variant of uncertain significance in RYR1 than in those who did not.
CONCLUSIONS: The identification of novel RYR1 variants and previously observed RYR1 variants of uncertain significance in independent MHS families is necessary for demonstrating the significance of these variants for MH susceptibility and supports the need for functional studies of these variants. Continued reporting of the clinical phenotypes of MH is necessary for interpretation of genetic findings, especially because the pathogenicity of most of these genetic variants associated with MHS remains to be elucidated.

文献综述：评估外科手术持续时间和设施间的比较：识别较低麻醉专业收费设施

Review article: estimating surgical case durations and making comparisons among facilities: identifying facilities with lower anesthesia professional fees.

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消费者驱动的医疗依赖于外科手术成本估算的透明度，包括麻醉专业的费用。使用系统的综述，我们展示了提供麻醉成本要求估计统计每个设施，合理地，平均和90%以上预测限制了手术时间和过程。预算限制需要计算出，对于很多过程，使用贝叶斯方法基于符合对数正态分布。保险公司和/或政府缺乏预算时间和过程，实际上因为设施很大的异构性问题的手段和系数变化的持续时间不能够推断这些估计。因此，保险业不能够从公共和私有的数据库中提供准确的成本信息。反而保险公司和/或政府能够通过明显比平均值更简短的时间来评估设施。这种设施间时间的比较应该通过校正效果的多重比较表现出来。我们的综述也直接影响到潜在的更重要的如何研究麻醉时间和病人的发病率和死亡率的问题。当联营设施时间的数据，应该考虑到大型异构性的手段和设施持续时间的系数变化。（比如：应用“多级”或“层次”模型）
（孙莉萍译 薛张纲校）

Consumer-driven health care relies on transparency in cost estimates for surgery, including anesthesia professional fees. Using systematic narrative review, we show that providing anesthesia costs requires that each facility (anesthesia group) estimate statistics, reasonably the mean and the 90% upper prediction limit of case durations by procedure. The prediction limits need to be calculated, for many procedures, using Bayesian methods based on the log-normal distribution. Insurers and/or governments lack scheduled durations and procedures and cannot practically infer these estimates because of the large heterogeneities among facilities in the means and coefficients of variation of durations. Consequently, the insurance industry cannot provide the cost information accurately from public and private databases. Instead, the role of insurers and/or governments can be to identify facilities with significantly briefer durations (costs to the patient) than average. Such comparisons of durations among facilities should be performed with correction for the effects of the multiple comparisons. Our review also has direct implications to the potentially more important issue of how to study the association between anesthetic durations and patient morbidity and mortality. When pooling duration data among facilities, both the large heterogeneity in the means and coefficients of variation of durations among facilities need to be considered (e.g., using "multilevel" or "hierarchical" models).

腰神经内侧支射频消融的另一种远端途径方法：一项前瞻性随机对照研究

An Alternative Distal Approach for the Lumbar Medial Branch Radiofrequency Denervation: A Prospective Randomized Comparative Study

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背景：腰神经内侧支射频消融（LMBRFD）可采于包括“远端途径”的另一项技术。我们在一项前瞻性随机试验中通过与传统的隧道视觉方法的比较来描述和评估这种技术。
方法：82位进行腰神经内侧支射频消融的病人，其中41位采用远端途径，41位采用隧道视觉方法。主要评定点是腰痛的11点数字评定量表（NRS）平均差异的比较，从入组到1个月时的分数（NRS基数-在1个月时的NRS）和到6个月时的分数（NRS基数-在6个月时的NRS），比较远端途径组的隧道视觉方法组的差别。次要评定点是随着时间的推移NRS和Oswestry伤残指数的变化。
结果：各组有34例完成全部试验。NRS评分变化在各组之间无显着统计学差异，在1个月时（校正P =0.19; 97.5%的双相可信区间[CI]：-1.37至0.37）和在6个月时（校正P =0.53;97.5%CI：-1.36至0.77）。两组患者在NRS和Oswestry伤残指数得分从基数到1个月和6个月的分数均显示显着降低（P <0.0001，Bonferroni纠正）。手术相关的疼痛评分的在远端途径组显着降低（P = 0.001，99%CI： -2.00至-0.23）。

结论：采用隧道视觉方法或远端途径的腰神经内侧支射频消融的病人在6个月的随访中表现出显着的疼痛缓解。远端途径组围手术期疼痛较少。我们认为，远端途径提供了一个改良的腰神经内侧支射频消融方法。
（郁玲玲译 薛张纲校）

BACKGROUND: An alternative technique involving a “distal approach” can be used for lumbar medial branch radiofrequency denervation (LMBRFD). We described and assessed this technique by comparing it with a conventional tunnel vision approach in a prospective randomized trial.
METHODS: Eighty-two patients underwent LMBRFD by a distal (n = 41) or a tunnel vision approach (n = 41). The primary end point was a comparison of the mean difference in the change of 11-point numeric rating scale (NRS) scores of low back pain from entry to the scores at 1 month (NRS at baseline—NRS at 1 month) and at 6 months (NRS at baseline—NRS at 6 months) between the distal approach group and the tunnel vision approach group. The secondary end points were a change of NRS and the Oswestry disability index over time.
RESULTS: Thirty-four patients in each group had complete time courses. There were no statistically significant differences in the change of NRS scores between the groups at 1 month (corrected P = 0.19; 97.5% 2-sided confidence interval [CI], −1.37 to 0.37) and 6 months (corrected P = 0.53; 97.5% CI, −1.36 to 0.77). Patients in both groups showed a statistically significant reduction in NRS and Oswestry disability index scores from baseline to that of the scores at 1 and 6 months (all P < 0.0001, Bonferroni corrected). The procedure-related pain score was significantly lower in the distal approach group (P = 0.001; 99% CI, −2.00 to −0.23).
CONCLUSIONS: Patients who underwent LMBRFD by the tunnel vision or distal approaches showed significant pain relief at the 6-month follow-up. Less periprocedural pain was reported in the distal approach group. We consider that the distal approach provides an improved option for LMBRFD.

腘坐骨神经分支及分支远端神经阻滞效果的随机试验

A randomized comparison between bifurcation and prebifurcation subparaneural popliteal sciatic nerve blocks.

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背景：在此前瞻、 随机、
双盲观察试验中，我们比较了超声引导下腘坐骨神经分支神经(B)或其远端阻滞的效果。我们假设分支远端神经阻滞(PB)技术将减少麻醉相关的总时间
（性能和发病时间的总和）。
方法：68 患者进行了超声引导下后腘坐骨神经阻滞。所有受试对象均给予标准剂量（30 毫升）的麻药剂 (1 %利多卡因-0.25%布比卡因 5 微克/毫升肾上腺素） 的组合。PB
组中，局部麻醉解决方案被存放在常见坐骨神经树干，向其圆形和椭圆形的超声表现，腘神经鞘内之间的交集只是远端的一级。B
组中，在胫骨和腓骨各部门之间鞘内进行了注射。一名双盲的观察员记录的成功率

（完整胫骨和腓骨的感觉消失在 30 分钟）和发病时间。性能时，针刀路和不良事件（异感，神经水肿）数目也录得。所有科目都联系了 7
天后的手术，询问持久性麻木或运动不能的存在。
结果:这两种技术得到类似的成功率 (85%-88%； 95%可信区间 [CI] 的组间差异，-14%至 19%) 和所需时间性能相似（8.1 分钟 ； 95 %ci 的差别，-1.65 到 1.71
几分钟），起效时间（15.0-17.7 分钟 ； 95 %ci 的差异，-7.65 到 2.31
几分钟），和总麻醉相关的时间和(23.4-26.0 分钟; 95 %ci 的差异，-7.83 到 2.74
分钟)。针刀路的数目和异感（25%-34%）的发生率在2 组之间也是类似的。PB 组和 B 组中各有2名和3名病人出现神经肿胀的症状，在检测到。这 5
例病人均小心进针和注射。术后一周随访患者，2名
病人尚有下肢麻木。最终在之后的一个月内症状均消失。
结论：当腘神经鞘内注射局麻药后，B 和 PB
后腘坐骨神经阻滞均能得到类似的成功与麻醉相关的总次数。然而，由于95％可信区间较大，我们不能排除组间差异的 19%和 7.83
分钟可能未被检测到的成功率和总时间的可能性。
（杨琰译 薛张纲校）

BACKGROUND: In this prospective, randomized, observer-blinded trial, we compared ultrasound-guided subparaneural popliteal sciatic nerve blocks performed either at or proximal to the neural bifurcation (B). We hypothesized that the total anesthesia-related time (sum of performance and onset times) would be decreased with the prebifurcation (PB) technique.
METHODS: Ultrasound-guided posterior popliteal sciatic nerve block was performed in 68 patients. All subjects received an identical volume (30 mL) and mix of local anesthetic agent (1% lidocaine-0.25% bupivacaine-5 μg/mL epinephrine). In the PB group, the local anesthetic solution was deposited at the level of the common sciatic trunk, just distal to the intersection between its circular and elliptical sonographic appearances, inside the paraneural sheath. In the B group, the injection was performed inside the sheath between the tibial and peroneal divisions. A blinded observer recorded the success rate (complete tibial and peroneal sensory block at 30 minutes) and onset time. The performance time, number of needle passes, and adverse events (paresthesia, neural edema) were also recorded. All subjects were contacted 7 days after the surgery to enquire about the presence of persistent numbness or motor deficit.
RESULTS: Both techniques resulted in comparable success rates (85%-88%; 95% confidence interval [CI] of the intergroup difference, -14% to 19%) and required similar performance times (8.1 minutes; 95% CI of the difference, -1.65 to 1.71 minutes), onset times (15.0-17.7 minutes; 95% CI of the difference, -7.65 to 2.31 minutes), and total anesthesia-related times (23.4-26.0 minutes; 95% CI of the difference, -7.83 to 2.74 minutes). The number of needle passes and incidence of paresthesia (25%-34%) were also similar between the 2 groups. Sonographic neural swelling was detected in 2 and 3 subjects in the PB and B groups, respectively. In all 5 cases, the needle was carefully withdrawn and the injection completed uneventfully. Patient follow-up 1 week after the surgery revealed 2 patients with residual numbness. In both instances, the latter had resolved by 1 month.
CONCLUSION: When local anesthetic is injected inside the paraneural sheath, B and PB posterior popliteal sciatic nerve blocks result in comparable success and total anesthesia-related times. However, in light of the 95% CIs, we cannot exclude the possibility that an intergroup

difference of 19% and 7.83 minutes might have gone undetected for success rate and total time, respectively.

输血后红细胞变形性的下降以及红细胞保存时间对其的影响

Decreased Erythrocyte Deformability After Transfusion and the Effects of Erythrocyte Storage Duration

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背景：红细胞在储存时细胞膜会发生形态学上的改变，但不清楚这种改变是否可逆。我们评估患者输血前后红细胞膜的变形性来判定储存时间的影响以及变形性的改变能否在输血后可逆转。

方法：16个进行后路脊椎融合术的病人纳入本研究中。我们对那些需要中等输血量（≥5个单位红细胞）的病人和那些需要少量输血（0—4个单位红细胞）的病人进行红细胞变形性的比较。分别测定输血前直接从储血袋中取出来的血样本、病人的血样本以及病人输血后的血样本（术后3天）的红细胞变形性。对于从储血袋中提取的血样本，我们比较了长时间储存的红细胞 (≥21天)、短时间储存的红细胞(<21天)以及自体血回收的红细胞的变形性。变形能力是使用细胞变形计量法测出的延伸指数定量评估的，这是一种测定细胞在剪切应力下延伸能力的方法。

结果：病人在输入中等血量之后，其红细胞变形性较术前基线显著下降 (EI 下降了 12% ± 4% 到 20% ± 6%; $P = 0.03$)，但输小量血后无变化(EI下降了3% ± 1%到 4% ± 1%; $P = 0.68$)。且此些改变术后3天不能恢复。保存时间≥21天的红细胞变形性(EI = 0.28 ± 0.02)明显差于保存时间<21天的(EI = 0.33 ± 0.02; $P = 0.001$)或是病人术前采集的红细胞变形性(EI = 0.33 ± 0.02; $P = 0.001$)。回收血红细胞变形性处于中间水平(EI = 0.30 ± 0.03)，好于保存时间≥21天的储存血($P = 0.047$)，但差于保存时间<21天的储存血($P = 0.03$)。

结论：本研究证实红细胞保存时间的延长与其细胞膜变形性的下降相关，并且这种改变在输血后很难逆转。

（王慧娟 译 马皓琳 李士通 校）

BACKGROUND: Erythrocyte cell membranes undergo morphologic changes during storage, but it is unclear whether these changes are reversible. We assessed erythrocyte cell membrane deformability in patients before and after transfusion to determine the effects of storage duration and whether changes in deformability are reversible after transfusion.

METHODS: Sixteen patients undergoing posterior spinal fusion surgery were studied. Erythrocyte deformability was compared between those who required moderate transfusion (≥5 units erythrocytes) and those who received minimal transfusion (0–4 units erythrocytes).

Deformability was measured in samples drawn directly from the blood storage bags before transfusion and in samples drawn from patients before and after transfusion (over 3 postoperative days). In samples taken from the blood storage bags, we compared deformability of erythrocytes stored for a long duration (≥21 days), those stored for a shorter duration (<21 days), and cell-salvaged erythrocytes. Deformability was assessed quantitatively using the elongation index (EI) measured by ektacytometry, a method that determines the ability for the cell to elongate when exposed to shear stress.

RESULTS: Erythrocyte deformability was significantly decreased from the preoperative baseline in patients after moderate transfusion (EI decreased by 12% ± 4% to 20% ± 6%; P = 0.03) but not after minimal transfusion (EI decreased by 3% ± 1% to 4% ± 1%; P = 0.68). These changes did not reverse over 3 postoperative days. Deformability was significantly less in erythrocytes stored for ≥21 days (EI = 0.28 ± 0.02) than in those stored for <21 days (EI = 0.33 ± 0.02; P = 0.001) or those drawn from patients preoperatively (EI = 0.33 ± 0.02; P = 0.001). Cell-salvaged erythrocytes had intermediate deformability (EI = 0.30 ± 0.03) that was greater than that of erythrocytes stored ≥21 days (P = 0.047), but less than that of erythrocytes stored <21 days (P = 0.03).

CONCLUSIONS: The findings demonstrate that increased duration of erythrocyte storage is associated with decreased cell membrane deformability and that these changes are not readily reversible after transfusion.

基于主动脉流速度和外周动脉压力分布图的一种微创心输出量监测系统

A Minimally Invasive Monitoring System of Cardiac Output Using Aortic Flow Velocity and Peripheral Arterial Pressure Profile

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背景：在对血流动力学不稳定的患者管理中，心输出量（CO）的监测可以提供关键诊断数据。然而传统的CO检测方法是有创伤的、不连续的，和/或错误的。本文旨在验证我们新开发的CO监测系统。

方法：本系统应用连续波多普勒心超心动图自动测定升主动脉流量的流速峰值，并用桡动脉压的脉搏轮廓线估算心脏射血时间及主动脉横截面积。连续处理这些参数来估算CO（CO_{est}）。在用大动脉流量探测器测量参考CO（CO_{ref}）的10个麻醉的闭胸狗中，输注心血管药物或随机心房起搏，使的血流动力学情况在大范围内变化。在每个情况下，测定CO_{ref}和CO_{est}。对于每一个动物，测定CO_{ref}和CO_{est}相对于对应基线值绝对变化值ΔCO_{ref}和ΔCO_{est}及相对变化值$\%\Delta CO_{ref}$和$\%\Delta CO_{est}$。用CO_{ref}校准CO_{est}以获取相应的按比例分级的CO_{est}（CO_{est}^{N}）。

结果：共获取1335组CO_{ref} 及 CO_{est}数据，其中CO_{ref}的范围为0.17 到 5.34 L/min。比较CO_{ref}和CO_{est}的Bland–Altman分析表明，一致限（偏差± 1.96 × 差异的SD）为−1.01~1.13 L/min (95% 置信区间, −1.76 ~ 1.88 L/min)，百分误差（1.96 × 差异的SD /[平均CO] × 100）为43%。CO_{ref} 与 CO_{est}^{N}的一致改善，其一致限为−0.53 ~ 0.49 L/min (95% 置信区间, −0.62 ~ 0.59

L/min)，百分误差为20%。比较ΔCO_{ref}及ΔCO_{est}的极性图分析表明极角的平均值± 1.96 × SD为−2° ± 22°。四象限图分析表明$\%\Delta CO_{est}$与 $\%\Delta CO_{ref}$ 有较大的相关性(R^2 = 0.93)。95%的数据组表明$\%\Delta CO_{est}$与 $\%\Delta CO_{ref}$变化方向相同。在连续方式及随机心房起搏的情况下系统保留了较好的可靠性。**结论：**在大范围的血液动力学条件下，不考虑心脏跳动的不规则性，本系统能具微创监测CO，并有较好的趋向能力。这些结果表明，需要对该系统做进一步的研究和开发，以便将来的临床应用。

（赵晓 译　马皓琳 李士通 校）

BACKGROUND: In managing patients with unstable hemodynamics, monitoring cardiac output (CO) can provide critical diagnostic data. However, conventional CO measurements are invasive, intermittent, and/or inaccurate. The purpose of this study was to validate our newly developed CO monitoring system.

METHODS: This system automatically determines peak velocity of the ascending aortic flow using continuous-wave Doppler transthoracic echocardiography and estimates cardiac ejection time and aortic cross-sectional area using the pulse contour of the radial arterial pressure. These parameters are continuously processed to estimate CO (CO_{est}). In 10 anesthetized closed-chest dogs instrumented with an aortic flowprobe to measure reference CO (CO_{ref}), hemodynamic conditions were varied over wide ranges by infusing cardiovascular drugs or by random atrial pacing. Under each condition, CO_{ref} and CO_{est} were determined. Absolute changes of CO_{ref} (ΔCO_{ref}) and CO_{est} (ΔCO_{est}), and relative changes of CO_{ref} ($\%\Delta CO_{ref}$) and CO_{est} ($\%\Delta CO_{est}$) from the corresponding baseline values were determined in each animal. We calibrated CO_{est} against CO_{ref} to obtain proportionally scaled CO_{est} (CO_{est}^{N}).

RESULTS: A total of 1335 datasets of CO_{ref} and CO_{est} were obtained, in which CO_{ref} ranged from 0.17 to 5.34 L/min. Bland–Altman analysis between CO_{ref} and CO_{est} indicated that the limits of agreement (the bias ± 1.96 × SD of the difference) and the percentage error (1.96 × [SD of the difference]/[mean CO] × 100) were from −1.01 to 1.13 L/min (95% confidence interval, −1.76 to 1.88 L/min) and 43%, respectively. The agreement between CO_{ref} and CO_{est}^{N} was improved, with limits of agreement from −0.53 to 0.49 L/min (95% confidence interval, −0.62 to 0.59 L/min) and the percentage error of 20%. Polar plot analysis between ΔCO_{ref} and ΔCO_{est} indicated that mean ± 1.96 × SD of polar angle was −2° ± 22°. Four quadrant plot analysis indicated that $\%\Delta CO_{est}$ correlated tightly with $\%\Delta CO_{ref}$ (R^2 = 0.93). The $\%\Delta CO_{est}$ and $\%\Delta CO_{ref}$ changed in the same direction in 95% of the datasets. Reliability of this system was well preserved under conditions of random atrial pacing and also in a continuous manner.

CONCLUSION: Over a wide range of hemodynamic conditions, irrespective of cardiac beat irregularity, this system may allow minimally invasive monitoring of CO with a good trending ability. The present results warrant further research and development of this system for future clinical application.

POISE试验中氧化亚氮与严重的发病率及死亡率

Nitrous Oxide and Serious Morbidity and Mortality in the POISE Trial

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背景：在对围术期缺血评估（POISE）试验的析因亚分析中，我们想阐明氧化亚氮是否与随机化的30天内心血管性死亡、非致命性的心肌梗塞（MI）及非致命性的心脏骤停的的主要复合预后有关。
方法：围术期服用β阻滞剂的POISE试验共纳入了8351名患者。氧化亚氮麻醉被定义为在全麻（无论是否合用椎管内阻滞或外周神经阻滞）复合使用氧化亚氮。使用评估倾向评分的反概率权重逻辑回归分析来衡量氧化亚氮与患者主要预后、心肌梗塞、脑卒中、死亡及有临床意义的低血压之间的关系。
结果：在本研究纳入的5133名患者中有1489名（29%）实施了氧化亚氮麻醉。氧化亚氮对主要预后（112 [7.5%] vs 248 [6.9%]; 比值比[OR], 1.08; 95%可信区间 [CI], 0.82–1.44; 99% CI, 0.75–1.57; *P* = 0.58) 、心肌梗塞（89 [6.0] vs 204 [5.6]; OR, 0.99; 95% CI, 0.75–1.31; 99% CI, 0.69–1.42; *P* = 0.94）、脑卒中（6 [0.4%] vs 28 [0.8%]; OR, 0.85; 95% CI, 0.26–2.82; 99% CI, 0.17–4.11; *P* = 0.79）、死亡（40 [2.7%] vs 100 [2.8%]; OR, 1.04; 95% CI, 0.6–1.81; 99% CI, 0.51–2.15; *P* = 0.88）及临床有意义的低血压（219 [14.7%] vs 544 [15.0%]; OR, 0.92; 95% CI, 0.74–1.15; 99% CI, 0.70–1.23; *P* = 0.48）的风险均无显著影响。

结论：在POISE试验的这个析因亚分析中，氧化亚氮与不良预后风险的增加无关。该分析的不足在于：原始数据观察性质及氧化亚氮的给予浓度和持续时间的信息缺失。需要进一步进行随机对照试验证据。
（王赟译，马皓琳、李士通校）

BACKGROUND: In this post hoc subanalysis of the Perioperative Ischemic Evaluation (POISE) trial, we sought to determine whether nitrous oxide was associated with the primary composite outcome of cardiovascular death, nonfatal myocardial infarction (MI), and nonfatal cardiac arrest within 30 days of randomization.
METHODS: The POISE trial of perioperative β-blockade was undertaken in 8351 patients. Nitrous oxide anesthesia was defined as the coadministration of nitrous oxide in patients receiving general anesthesia, with or without additional neuraxial blockade or peripheral nerve blockade. Logistic regression, with inverse probability weighting using estimated propensity scores, was used to determine the association of nitrous oxide with the primary outcome, MI, stroke, death, and clinically significant hypotension.
RESULTS: Nitrous oxide was administered to 1489 (29%) of the 5133 patients included in this analysis. Nitrous oxide had no significant effect on the risk of the primary outcome (112 [7.5%] vs 248 [6.9%]; odds ratio [OR], 1.08; 95% confidence interval [CI], 0.82–1.44; 99% CI, 0.75–1.57; *P* = 0.58), MI (89 [6.0] vs 204 [5.6]; OR, 0.99; 95% CI, 0.75–1.31; 99% CI, 0.69–1.42; *P* = 0.94), stroke (6 [0.4%] vs 28 [0.8%]; OR, 0.85; 95% CI, 0.26–2.82; 99% CI, 0.17–4.11; *P* = 0.79), death (40 [2.7%] vs 100 [2.8%]; OR, 1.04; 95% CI, 0.6–1.81; 99% CI, 0.51–2.15; *P* = 0.88) or clinically significant hypotension (219 [14.7%] vs 544 [15.0%]; OR, 0.92; 95% CI, 0.74–1.15; 99% CI, 0.70–1.23; *P* = 0.48).
CONCLUSIONS: In this post hoc subanalysis, nitrous oxide was not associated with an increased risk of adverse outcomes in the POISE trial patients. This analysis was limited by the observational nature of the data and the lack of information on the concentration and duration of nitrous oxide administration. Further randomized controlled trial evidence is required.

妊娠期高血压患者的动脉顺应性改变与先兆子痫相关

Altered Arterial Compliance in Hypertensive Pregnant Women Is Associated with Preeclampsia

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背景：血管改变存在于患有先兆子痫的孕妇中。这项研究中，我们评估了妊娠期高血压患者的动脉顺应性。我们假设先兆子痫孕妇的动脉顺应性降低。
方法：43名进行先兆子痫评估的妊高症患者参与了研究。收集有关每位患者和妊娠的临床资料。通过桡动脉张力测量法来评估大动脉的顺应性（C1）和小动脉的顺应性（C2），同时患者进行实验室检查来诊断先兆子痫。我们记录了分娩时的孕龄以及新生儿的资料。
结果：18名患者诊断为先兆子痫。先兆子痫患者较高血压无蛋白尿患者的C2水平低（均数± 标准差，4.5 ± 1.3比5.9 ± 2.3 mL/mm Hg ·100，*P* = 0.013，差异的95%可信区间[CI]

0.32–
2.55），但是C1水平没有差异。在先兆子痫患者组，C2水平与同一天测得的尿总蛋白含量（Spearman ρ = −0.4，*P* = 0.047，95% CI上限
−0.01）和首次出现高血压的孕龄（Spearman ρ = 0.59， *P* = 0.010，95% CI下限
0.17）相关。单胎妊娠中，C2同时与分娩时测得的新生儿体重相关（Spearman ρ =
0.43，*P* = 0.009，95% CI下限
0.11）。在评估顺应性时患高血压但无蛋白尿，但是后来发展为先兆子痫的患者（*n*=6），其C2水平与较早诊断为先兆子痫的患者相似（平均差异0.37 mL/mm Hg ·100，95% CI −2.42 至1.67），与诊断为妊娠期高血压患者相比（*P* = 0.019，95% CI 0.33–4.42 mL/mm Hg ·100），其C2水平较低。
结论：动脉弹性的无创评估可促进有关妊娠导致高血压病的病理生理状态的特征描述。通过C2评估的小动脉血管改变，可以反映先兆子痫患者的血管改变程度。
（张怡 译 马皓琳 李士通 校）

BACKGROUND: Vascular alterations are present in pregnant women affected by preeclampsia. In this study, we assessed arterial compliance in women affected by hypertensive disorders of pregnancy. We hypothesized that arterial compliance is reduced in women affected by preeclampsia.
METHODS: Forty-three hypertensive pregnant women undergoing evaluation for preeclampsia were studied. Clinical data about each patient and pregnancy were collected. Large (C1) and small (C2) artery compliance were assessed by radial tonometry, while the patients underwent laboratory tests to diagnose preeclampsia. At the time of delivery, gestational age and newborn data were recorded.
RESULTS: Eighteen women were diagnosed with preeclampsia. C2 levels were lower among preeclamptic versus hypertensive aproteinuric women (mean ± SD, 4.5 ± 1.3 vs 5.9 ± 2.3 mL/mm Hg ·100, *P* = 0.013, 95% confidence interval [CI] of difference 0.32–2.55), whereas C1 levels did not differ. In the preeclampsia group, C2 levels correlated with urine total protein concentrations measured the same day (Spearman ρ = −0.49, *P* = 0.047, upper 95% CI −0.01) and with gestational age at first occurrence of hypertension (Spearman ρ = 0.59, *P* = 0.010, lower 95% CI 0.17). Among singleton gestations, C2 also correlated with newborn birth weight measured at delivery (Spearman ρ = 0.43, *P* = 0.009, lower 95% CI 0.11). Women who were hypertensive but aproteinuric at the time of compliance assessment, but who subsequently developed preeclampsia (*n* = 6), had C2 levels similar to those with an early diagnosis of preeclampsia (mean difference 0.37 mL/mm Hg ·100, 95% CI −2.42 to 1.67) and lower C2 levels than women diagnosed with gestational hypertension (*P* = 0.019, 95% CI 0.33–4.42 mL/mm Hg ·100).
CONCLUSIONS: The noninvasive assessment of arterial elasticity may contribute toward characterization of the nature of the pathophysiology in pregnancy-induced hypertensive disorders. The vascular alterations of the small arteries, as assessed by C2, may reflect the extent of vascular alterations present with preeclampsia.

在预料静脉通路开放困难的婴儿和儿童中，静脉可视血管成像系统使有经验护士的首次尝试置管成功率降低

The VeinViewer Vascular Imaging System Worsens First-Attempt Cannulation Rate for Experienced Nurses in Infants and Children with Anticipated Difficult Intravenous Access

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背景：静脉可视装置（Luminetx，田纳西州孟菲斯）通过在皮肤表面突出显示皮下血管成像来帮助确认静脉。我们测试了这样一个主要的假设，即静脉可视装置提高了熟练护士对预料静脉通路开放困难的儿科病人的置套成功率。另一个目标是评估肥胖和置管成功率之间的关系。
方法：纳入了0-18岁的病人。由困难静脉通路分数来评估预计的置管困难程度。所有的置管均由进行静脉通路组成员操作。随机把病人分组：（1）常规的静脉内置管和（2）静脉可视装置帮助下置管。主要的观察结果是首次尝试置管成功。用Cochran-Mantel-Haenszel卡方分析评估成功置管的比例来调整任何不平衡的基线变量。用多元逻辑回归来评估肥胖对置管成功的影响。
结果：299个病人（49%）随机分组到静脉可视装置，301个病人（51%）则分组到普通的置管。在用静脉可视装置的病人中首次置管的成功率是47%，而普通的置管组病人中的成功率是62%，有一个可调的相对"风险"（95%可信区间）为0.76（0.63-0.91）。Z统计量为−3.6超过了"有害"边界（Z < −2.41），对应的*P*值为0.0003。试验在统计层面被停止，因为主要观察指标超过了"有害"边界。在调整了基线变量后初次置管成功和4种肥胖分类水平之间没有关系（*P* = 0.94）。
结论：静脉可视装置使经验护士的初次静脉置管成功率下降。奇怪的是，肥胖未使静脉置管的首次尝试成功率下降。
(王晓莉译 马皓琳 李士通校)
BACKGROUND: The VeinViewer (Luminetx, Memphis, TN) helps identify veins by projecting an image of subcutaneous vasculature on the skin surface. We tested the primary hypothesis that VeinViewer use improves cannulation success by skilled nurses in pediatric patients with anticipated difficult IV access. A secondary goal was to evaluate the relationship between obesity and cannulation success.
METHODS: Patients aged 0 to 18 years were included. Anticipated cannulation difficulty was evaluated with the difficult IV access score. All cannulations were performed by members of the Intravenous Access Team. Patients were randomized to: (1) routine IV catheter insertion; or (2) insertion facilitated by the VeinViewer. The primary outcome was first-attempt insertion success. The proportion of successful insertions was evaluated using Cochran-Mantel-Haenszel χ^2 analysis to adjust for any imbalanced baseline variables. The effect of obesity on cannulation success was evaluated with multivariable logistic regression.
RESULTS: Two hundred ninety-nine patients (49%) were randomly assigned to VeinViewer and 301 (51%) to routine cannulation. First-attempt cannulation success was 47% in patients assigned to VeinViewer vs 62% in patients assigned to routine cannulation, with an adjusted relative "risk" (95% confidence interval), of 0.76 (0.63–0.91). The Z-statistic of −3.6 crossed the "harm" boundary (Z < −2.41), with corresponding *P* value of 0.0003. The trial was stopped on statistical grounds since the harm boundary for the primary outcome was crossed. There was no

association between first-attempt success and the 4-level categorization of obesity after adjusted for baseline variables ($P = 0.94$).
CONCLUSIONS: The VeinViewer worsened first-attempt IV insertion success by skilled nurses. Surprisingly, first-attempt success for IV cannulation was not worsened by obesity.

糖尿病和非糖尿病患者在非心脏大手术中的高血糖反应和甾类药物的附加作用

The Hyperglycemic Response to Major Noncardiac Surgery and the Added Effect of Steroid Administration in Patients With and Without Diabetes

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背景：目前尚不清楚手术应激所致高血糖反应的模式和程度、低剂量甾类药物的附加作用、以及这些情况在糖尿病和非糖尿病患者中是否存在差异。因此，本研究旨在验证如下两个假说：（1）糖尿病患者从术前到术中的血糖浓度升高比非糖尿病患者更明显；（2）给予甾类药物增进了术中血糖升高，在糖尿病患者比非糖尿病患者更明显。
方法：研究纳入对象为择期在全麻下行非心脏大手术的患者，根据糖尿病诊断分层，随机接受术前8mg地塞米松或安慰剂静脉注射。患者为一项更大型试验（地塞米松、浅麻醉和严格血糖控制[DeLiT]试验）的一部分。当血糖浓度大于215 mg/dL时给予静脉胰岛素注射。主要测量指标为从术前到术中最大血糖浓度时的血糖变化。本研究也报道了术中血糖升高的时间依赖性模式。
结果：患者随机分组，90例患者（23%患有糖尿病）给予地塞米松，95例患者（29%患有糖尿病）给予安慰剂。从术前血糖浓度到术中最大血糖浓度的变化均数±标准差在糖尿病患者中为63 ± 69 mg/dL，在非糖尿病患者中为72 ± 45 mg/dL。非糖尿病患者的平均变量调整后变化值（95%可信区间）比糖尿病患者高29 (13, 46) mg/dL（$P < 0.001$）。对所有患者而言，平均血糖在从术前至切皮时升高轻微，从切皮至手术中点升高显著，此后维持在高水平且在苏醒过程中相当稳定，非糖尿病患者血糖升高更明显（$P < 0.001$）。非糖尿病患者给予地塞米松后平均血糖浓度增加值（97.5%可信区间）比给予安慰剂后高29 (9, 49) mg/dL ($P = 0.0012$)。但糖尿病患者中无地塞米松效应。
结论：对于术中高血糖的治疗，应考虑不同手术阶段的高血糖手术应激反应趋势和甾类药物的附加效应。为了避免高血糖反应而拒绝使用甾体药物预防术后恶心呕吐的行为，必须根据甾体类药物对术中血糖浓度的有限作用而重新考虑。
（陈彬彬 译， 马皓琳、李士通 审校）

BACKGROUND: The pattern and magnitude of the hyperglycemic response to surgical stress, the added effect of low-dose steroids, and whether these differ in diabetics and nondiabetics remain unclear. We therefore tested 2 hypotheses: (1) that diabetics show a greater increase from preoperative to intraoperative glucose concentrations than nondiabetics; and (2) that steroid administration increases intraoperative hyperglycemia more so in diabetics compared with nondiabetics.

METHODS: Patients scheduled for major noncardiac surgery under general anesthesia were enrolled and randomized to preoperative IV 8 mg dexamethasone or placebo, stratified by diagnosis of diabetes. Patients were part of a larger underlying trial (the Dexamethasone, Light Anesthesia and Tight Glucose Control [DeLiT] Trial). IV insulin was given when glucose concentration exceeded 215 mg/dL. The primary outcome measure was the change in glucose from the preoperative to maximal intraoperative glucose concentration. We also report the time-dependent pattern of intraoperative hyperglycemia.
RESULTS: Ninety patients (23% with diabetes) were randomized to dexamethasone, and 95 (29% with diabetes) were given placebo. The mean ± SD change from preoperative to maximal intraoperative glucose concentration was 63 ± 69 mg/dL in diabetics and 72 ± 45 mg/dL in nondiabetics. The mean covariable-adjusted change (95% confidence interval) in nondiabetics was 29 (13, 46) mg/dL more than in diabetics ($P < 0.001$). For all patients combined, mean glucose increased slightly from preoperative to incision, substantially from incision to surgery midpoint, and then remained high and fairly stable through emergence, with nondiabetic patients showing a greater increase ($P < 0.001$). For nondiabetics, the mean increase in glucose concentration (97.5% CI) was 29 (9, 49) mg/dL more in patients given dexamethasone than placebo ($P = 0.0012$). However, there was no dexamethasone effect in diabetics ($P = 0.99$).
CONCLUSIONS: Treatment of intraoperative hyperglycemia should account for the hyperglycemic surgical stress response trend depending on the stage of surgery as well as the added effects of steroid administration. Denying steroid prophylaxis for postoperative nausea and vomiting for fear of hyperglycemic response should be reconsidered given the limited effect of steroids on intraoperative blood glucose concentrations.

局麻药的预防性镇痛：周围神经阻滞和静脉用药降低术后疼痛

Preventive Analgesia by Local Anesthetics: The Reduction of Postoperative Pain by Peripheral Nerve Blocks and Intravenous Drugs

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局麻药应用于减轻术后急性疼痛已有很长的历史，但是近期并没有系统回顾的报导。此外，入选的临床试验必须符合随机和盲法的最低标准。在这篇综述中，我们应用了严格的临床研究设计标准来鉴别关于围手术期局麻药应用的文献。我们首先检验了适用于不同外科手术的几种外周神经阻滞方法，然后我们检验了计划性地给予静脉注射局麻药（利多卡因）以减轻术后疼痛的效果。最后，我们检验了在周围神经阻滞操作后不同时间节点血管内局麻药的浓度，并标明血管内药物浓度水平达到计划性静脉注射给药浓度时的发生率的文献。重要的是，在这篇综述中不包含应用了椎管内神经阻滞方法（硬膜外和脊麻）的大量研究，此类研究将在今后的综述中单独探讨。总的结果显示了不论哪种途径，局麻药的应用对术后疼痛评分的下降和镇痛药（阿片类）用量减少都有强阳性的效果。仅在少数情况下影响不明显。添加辅助用药的效应增强作用也并非都明显。手术前、术中或者术后即刻用局麻药的效果没有明显差别。总的结论是：在术后急性期应用局麻药有显著抗痛觉过敏效应，术中使用局麻药对于此效应来说没有必要。

（盛嘉君 译 马皓琳 李士通校）

The use of local anesthetics to reduce acute postoperative pain has a long history, but recent reports have not been systematically reviewed. In addition, the need to include only those clinical studies that meet minimum standards for randomization and blinding must be adhered to. In this review, we have applied stringent clinical study design standards to identify publications on the use of perioperative local anesthetics. We first examined several types of peripheral nerve blocks, covering a variety of surgical procedures, and second, we examined the effects of intentionally administered IV local anesthetic (lidocaine) for suppression of postoperative pain. Thirdly, we have examined publications in which vascular concentrations of local anesthetics were measured at different times after peripheral nerve block procedures, noting the incidence when those levels reached ones achieved during intentional IV administration. Importantly, the very large number of studies using neuraxial blockade techniques (epidural, spinal) has not been included in this review but will be dealt with separately in a later review. The overall results showed a strongly positive effect of local anesthetics, by either route, for suppressing postoperative pain scores and analgesic (opiate) consumption. In only a few situations were the effects equivocal. Enhanced effectiveness with the addition of adjuvants was not uniformly apparent. The differential benefits between drug delivery before, during, or immediately after a surgical procedure are not obvious, and a general conclusion is that the significant antihyperalgesic effects occur when the local anesthetic is present during the acute postoperative period, and its presence during surgery is not essential for this action.