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BACKGROUND: Heart failure (HF) is an important risk factor for perioperative morbidity and mortality. While these patients are at high risk for cardiac adverse events, there are few current data describing the types of noncardiac complications that occur in this population.

METHODS: We performed a multicenter cohort study of patients undergoing noncardiac surgery from 2005 to 2010 as part of the American College of Surgeons National Surgical Quality Improvement Program. A HF cohort (HF that is new or worsening within 30 days of surgery) was compared with a control cohort that was matched regarding other surgical risk factors.

RESULTS: Five thousand ninety-four patients with worsening preoperative HF were compared with an otherwise similar cohort of patients without worsening preoperative HF. Worsening preoperative HF was associated with increased risk of 30-day all-cause mortality (relative risk [RR] 2.08; 95% confidence interval [CI], 1.75–2.46; P < 0.001) and increased risk of morbidity (any recorded postoperative complication) (RR 1.54; 95% CI, 1.40–1.69; P < 0.001). HF patients had increased risk of developing renal failure (RR 1.85; 95% CI, 1.37–2.49; P < 0.001), need for mechanical ventilation longer than 48 hours (RR 1.81; 95% CI, 1.52–2.15; P < 0.001), pneumonia (RR 1.73; 95% CI, 1.44–2.08; P < 0.001), cardiac arrest (RR 1.69; 95% CI, 1.52–2.15; P < 0.001), sepsis (RR 1.64; 95% CI, 1.10–2.44; P = 0.014), plasminogen activator inhibitor-1 (PAI-1) (RR 1.43; 95% CI, 1.24–1.64; P < 0.001), and de novo use of mechanical ventilation (RR 1.37; 95% CI, 1.10–1.69; P < 0.001).
1.29–2.21; P < 0.001), unplanned intubation (RR 1.68; 95% CI, 1.41–1.99; P < 0.001), renal insufficiency (RR 1.64; 95% CI, 1.10–2.44; P = 0.014), sepsis (RR 1.43, 95% CI, 1.24–1.64; P < 0.001), and urinary tract infection (RR 1.29; 95% CI, 1.06–1.58; P = 0.011). The incidence of myocardial infarction in the sample was similar between the 2 groups (RR 1.07; 95% CI, 0.75–1.52; P = 0.719).

CONCLUSIONS: Worsening preoperative HF is associated with a significant increase in postoperative morbidity and mortality when controlling for other comorbidities. Although these likely have a multifactorial etiology, patients are much more likely to suffer from respiratory, renal, and infectious complications than cardiac complications.

局部脑血流量在冠状动脉旁路手术后记忆处理过程中减少

Attenuation of Regional Cerebral Blood Flow During Memory Processing After Coronary Artery Bypass Surgery

Badgaiyan, Rajendra D. MD*; Weise, Steven BS†; Wack, David S. PhD‡; Vidal Melo, Marcos F. MD, PhD
Anesthesia & Analgesia 2014 119 550–553

心脏外科术后记忆障碍的报告是有争议的。为了解决这个争议，作者利用正电子发射断层扫描区域脑血流（rCBF）在择期CABG术前、术后记忆处理过程中的变化。在术后的扫描中，作者观察到脑血流量在两个最重要的记忆加工区域明显减少：内侧颞叶（P = 0.023）和前额叶皮层（P = 0.002）。结果表明，CABG术后参与记忆加工的脑区rCBF减少。rCBF的减少可以用于高危患者CABG术后记忆障碍严重程度的评价。

（池晓颖 译 陈杰 校）

Reports of memory impairment after cardiac surgery are controversial. To address this controversy, we used positron emission tomography to examine changes in regional cerebral blood flow (rCBF) during memory processing before and after elective coronary artery bypass grafting surgery. In postoperative scans, we observed significantly reduced rCBF in 2 of the most important memory processing areas: the medial temporal lobe (P = 0.023) and the prefrontal cortex (P = 0.002). The results suggest postoperative attenuation of rCBF in brain areas involved in memory processing. These reductions could be used to evaluate severity of memory impairment after coronary artery bypass grafting surgery in patients at risk.

腹部大手术患者的无创心输出量监测确定目标导向控制围术期血流动力学稳定：一项前瞻性、随机、多中心的实用性实验：POEMAS（腹部大手术围术期目标导向治疗）研究

Perioperative Goal-Directed Hemodynamic Optimization Using Noninvasive Cardiac Output Monitoring in Major Abdominal Surgery: A Prospective, Randomized, Multicenter, Pragmatic Trial: POEMAS Study (PeriOperative goal-directed thErapy in Major Abdominal Surgery)

Pestaña, David PhD*; Espinosa, Elena PhD†; Eden, Arieh MD‡; Nájera, Diana MD*; Collar, Luis MD§; Aldecoa, César MD||; Higuera, Eva MD∥; Escribano, Soledad MD†; Bystritski, Dmitri MD‡; Pascual, Javier PhD§; Fernández-Garijo, Pilar MD||; de Prada, Blanca MD‖; Muriel, Alfonso#; Pizov, Reuven MD‡
Anesthesia & Analgesia 2014 119 579–587

背景：在本研究中，作者主要目的是研究基于无创心输出量监测引导控制血流动力学能否减少需要特殊监护的腹部大手术病人术后并发症的发生率以及住院时
BACKGROUND: In this study, our objective was to determine whether a perioperative hemodynamic protocol based on noninvasive cardiac output monitoring decreases the incidence of postoperative complications and hospital length of stay in major abdominal surgery patients requiring intensive care unit admission. Secondary objectives were to evaluate the time to peristalsis recovery and the incidence of wound infection, anastomotic leaks, and mortality.

METHODS: A randomized clinical trial was conducted in 6 tertiary hospitals. One hundred forty-two adult patients scheduled for open colorectal surgery, gastrectomy, or small bowel resection were enrolled. A hemodynamic protocol including fluid administration and vasoactive drugs based on arterial blood pressure, cardiac index, and stroke volume response was compared with standard practice. Patients were followed until hospital discharge (determined by a surgeon blinded to the study) or death. In contrast to previous studies, we designed a pragmatic trial (as opposed to explanatory trials) to mimic real practice and obtain maximal external validity for the study.

RESULTS: Fluid administration was similar except for the number of colloid boluses (2.4 ± 1.8 [treated] vs 1.3 ± 1.4 [control]; P < 0.001) and packed red blood cell units (0.6 ± 1.3 [treated] vs 0.2 ± 0.6 [control]; P = 0.019). Dobutamine was used in 25% (intraoperatively) and 19.4% (postoperatively) of the treated patients versus 1.4% and 0% in the control group (P < 0.001). We have observed a reduction in reoperations in the treated group (5.6% vs 15.7%; P = 0.049). However, no significant differences were observed in overall complications (40% vs 41%; relative risk 0.99 [0.67–1.44]; P = 0.397), length of stay (11.5 [8–15] vs 10.5 [8–16]; P = 0.874), first flatus time (62 hours [40–76] vs 72 hours [48–96]; P = 0.180), wound infection (7 vs 14; P = 0.085), anastomotic leaks (2 vs 5; P = 0.23), and mortality (4.2% vs 5.7%; P = 0.67). The number of days and the incidence of wound infection, anastomotic leaks, and mortality were not significantly different.

CONCLUSIONS: The results of our pragmatic study indicate that a perioperative hemodynamic protocol guided by a noninvasive cardiac output monitor was not associated with a decrease in the incidence of overall complications or length of stay in major abdominal surgery.

血清维生素 D 浓度与非心脏手术后的严重并发症关系
The Association of Serum Vitamin D Concentration with Serious Complications After Noncardiac Surgery
BACKGROUND: Vitamin D deficiency is a global health problem. Epidemiological studies demonstrate that vitamin D is both cardioprotective and neuroprotective. Vitamin D also plays a substantial role in innate and acquired immunity. Our goal was to evaluate the association of serum vitamin D concentration on serious postoperative complications and death in noncardiac surgical patients.

METHODS: We retrospectively analyzed the data of 3509 patients who had noncardiac surgery at the Cleveland Clinic Main Campus and had a serum vitamin D measurement. The relationship between serum vitamin D concentration and all-cause in-hospital mortality, in-hospital cardiovascular morbidity, and serious in-hospital infections was assessed as a common effect odds ratio (OR) by using a multivariate generalized estimating equation model with adjustment for demographic, medical history variables, and type and duration of surgery.

RESULTS: Higher vitamin D concentrations were associated with decreased odds of in-hospital mortality/morbidity (P = 0.003). There was a linear reduction of the corresponding common effect odds ratio (OR 0.93, 95% confidence interval, 0.88–0.97) for severe in-hospital outcomes for each 5 ng/mL increase in vitamin D concentration over the range from 4 to 44 ng/mL. In addition, we found that the odds versus patients with vitamin D <13 ng/mL (i.e., 1st quintile) were significantly lower in patients with vitamin D 13–20, 20–27, 27–36, and >36 ng/mL (i.e., 2nd–5th quintiles); the corresponding estimated ORs were 0.65 (99% confidence interval, 0.43–0.98), 0.53 (0.35–0.80), 0.44 (0.28–0.70) and 0.49 (0.31–0.78), respectively. However, there was no statistically significant difference among individual quintiles >13 ng/mL.

CONCLUSIONS: Vitamin D concentrations were associated with a composite of in-hospital death, serious infections, and serious cardiovascular events in patients recovering from noncardiac surgery. While causality cannot be determined from our retrospective analysis, the association suggests that a large randomized trial of preoperative vitamin D supplementation and postoperative outcomes is warranted.
C-Reactive Protein Kinetics After Major Surgery

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Anesthesia & Analgesia 2014 119 624–629

BACKGROUND: Diagnosis of sepsis in the postoperative period is a challenge. Measurements of inflammatory markers, such as C-reactive protein (CRP), have been proposed in medical patients, but the interpretation of these values in surgical patients is more difficult. We evaluated the changes in blood CRP levels and white blood cell count in postoperative patients with and without infection.

METHODS: All patients admitted to our 34-bed Department of Intensive Care after major (elective or emergency) cardiac, neuro-, vascular, thoracic, or abdominal surgery during a 4-month period were prospectively included. Patients were screened daily and characterized as infected or noninfected. CRP levels and white blood cell counts were recorded daily in all patients for up to 7 days after the surgical intervention.

RESULTS: Of the 151 patients enrolled, 115 underwent elective surgery and 36 emergency surgery; cardiac surgery was performed in 49 patients, neurosurgery in 65, abdominal surgery in 25, vascular surgery in 7, and thoracic surgery in 5. In noninfected patients (n = 117), mean CRP values increased from baseline to postoperative day (POD) 3 (P < 0.0001, estimated mean difference [EMD] = 99.7 mg/L [95% confidence interval, 85.6–113.8]) and then decreased until POD 7 but remained higher than the level at baseline (P < 0.0001, EMD = 49.2 mg/L [95% confidence interval, 27.1–71.2]). Postoperative infection occurred in 20 patients (13.2%). In these patients, CRP values were already higher on POD 1 than in noninfected patients (P = 0.0054).

CONCLUSIONS: CRP levels increase in the first week after major surgery but to a much larger extent in infected than in noninfected patients. Persistently high CRP levels after POD 4, especially when >100 mg/L, suggest the presence of a postoperative infection.
Background: Observational studies on pediatric anesthesia neurotoxicity have been unable to distinguish long-term effects of general anesthesia (GA) from factors associated with the need for surgery. A recent study on elementary school children who had received a single GA during the first year of life demonstrated an association in otherwise healthy children between the duration of anesthesia and diminished test scores and also revealed a subgroup of children with “very poor academic achievement” (VPAA), scoring below the fifth percentile on standardized testing. Analysis of postoperative cognitive function in a similar cohort of children anesthetized with an alternative to GA may help to begin to separate the effects of anesthesia from other confounders.

Methods: We used a novel methodology to construct a combined medical and educational database to search for these effects in a similar cohort of children receiving spinal anesthesia (SA) for the same procedures. We compared former patients with a control population of students matched by grade, gender, year of testing, and socioeconomic status.

Results: Vermont Department of Education records were analyzed for 265 students who had a single exposure to SA during infancy for circumcision, pyloromyotomy, or inguinal hernia repair. Exposure to SA and surgery had no significant effect on the odds of children having VPAA. (Mathematics: P = 0.18; odds ratio 1.50, confidence interval (CI), 0.83–2.68; reading: P = 0.55; odds ratio = 1.19,
There was no relationship between duration of exposure to SA and surgery and performance on mathematics (P = 0.73) or reading (P = 0.57) standardized testing. There was a small but statistically significant decrease in reading and math scores in the exposed group (mathematics: P = 0.03; reading: P = 0.02).

CONCLUSIONS: We found no link between duration of surgery with infant SA and scores on academic achievement testing in elementary school. We also found no relationship between infant SA and surgery with VPAA on elementary school testing, although the CIs were wide.

**Interleukin 10 Mediated by Herpes Simplex Virus Vectors Suppresses Neuropathic Pain Induced by Human Immunodeficiency Virus gp120 in Rats**

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Anesthesia & Analgesia 2014 119 693–701

BACKGROUND: Human immunodeficiency virus (HIV)–associated sensory neuropathy is a common neurological complication of HIV infection affecting up to 30% of HIV-positive individuals. However, the exact neuropathological mechanisms remain unknown, which hinders our ability to develop effective treatments for HIV-related neuropathic pain (NP). In this study, we tested the hypothesis that inhibition of proinflammatory factors with overexpression of interleukin (IL)-10 reduces HIV-related NP in a rat model.

METHODS: NP was induced by the application of recombinant HIV-1 envelope protein gp120 into the sciatic nerve. The hindpaws of rats were inoculated with nonreplicating herpes simplex virus (HSV) vectors expressing anti-inflammatory cytokine IL-10 or control vector. Mechanical threshold was tested using von Frey
filaments before and after treatments with the vectors. The mechanical threshold response was assessed over time using the area under curves. The expression of phosphorylated p38 mitogen-activated kinase, tumor necrosis factor-α, stromal cell-derived factor-1α, and C-X-C chemokine receptor type 4 in both the lumbar spinal cord and the L4/5 dorsal root ganglia (DRG), was examined at 14 and 28 days after vector inoculation using Western blots.

RESULTS: We found that in the gp120-induced NP model, IL-10 overexpression mediated by the HSV vector resulted in a significant elevation of the mechanical threshold that was apparent on day 3 after vector inoculation compared with the control vector (P < 0.001). The antiallodynic effect of the single HSV vector inoculation expressing IL-10 lasted >28 days. The area under curve in the HSV vector expressing IL-10 was increased compared with that in the control vector (P < 0.0001). HSV vectors expressing IL-10 reversed the upregulation of phosphorylated p38 mitogen-activated kinase, tumor necrosis factor-α, stromal cell-derived factor-1α, and C-X-C chemokine receptor type 4 expression at 14 and/or 28 days in the DRG and/or the spinal dorsal horn.

CONCLUSIONS: Our studies demonstrate that blocking the signaling of these proinflammatory molecules in the DRG and/or the spinal cord using the HSV vector expressing IL-10 is able to reduce HIV-related NP. These results provide new insights on the potential mechanisms of HIV-associated NP and a proof of concept for treating painful HIV sensory neuropathy with this type of gene therapy.

超声引导下腭大神经阻滞:一系列病例的解剖描述和临床评价
Ultrasound-Guided Greater Palatine Nerve Block: A Case Series of Anatomical Descriptions and Clinical Evaluations
Hafeez, Najmus Sahar MD*; Sondekoppam, Rakesh V. MD†; Ganapathy, Sugantha FRCP, FRCA†; Armstrong, Jerrold E. BSc, DDS, MSc, FRCD(C)‡; Shimizu, Michael DDS, PhD‡; Johnson, Marjorie PhD*; Merrifield, Peter PhD*; Galil, Khadry A. DDS, PhD*
Anesthesia & Analgesia 2014 119 726–730

背景：腭大神经（GPN）阻滞通过骨性标志常用于上颌和上腭麻醉。超声（US）常用于当骨腭显示不易时连续鉴别腭大孔（GPF）以便超声引导下大孔周围注射。

方法：作者检查并注射16例在排除显著解剖畸形的防腐良好未分割半切除尸体的头。高频曲线探头（7–13 MHz）定位硬腭长轴平面直视GPN。超声引导下注射0.1ml印度墨。标本注射后立即解剖并染色。记录GPN定位成功率、尝试次数及成功注射数。临床上7例患者牙科操作应用此技术。5例超声引导下注射，2例接受超声辅助腭大腔阻滞。

结果：GPN成功用于16例部分切除的头。16例中7例尸体标本，超声下能看到穿刺针进路并在腭大孔和翼腭窝见到印度墨。另9例染色能在硬腭前到GPN粘膜组织或软腭见到。临床上7例中6例GPN能成功定位，超声引导下8例尝试阻滞中6例成功，尝试中位数为2（1-4）。2例超声辅助注射均成功。

结论：在正常人及无齿骨超声均能成功定位GPN。超声引导GPN阻滞技术上能挑战。超声引导或辅助GPN阻滞需大样本进一步评估。

BACKGROUND: Greater palatine nerve (GPN) block is commonly performed for maxillary and palatal anesthesia by using bony landmarks. Ultrasound (US) can be used to consistently identify greater palatine foramen (GPF) as a defect in the bony palate enabling US-guided injections near the foramen.

METHODS: We scanned and injected 16 undissected well-embalmed hemisectioned cadaveric heads after excluding major anatomical malformations. A linear high-frequency hockey stick probe (7–13 MHz) positioned in long axis to the hard
palate visualized GPF as a discontinuity in the hard palate. US-guided injections of 0.1 mL India ink were made in an oblique plane. Specimens were dissected immediately after injection, and dye distribution was noted. The success rate of identification of GPF, number of attempts, and number of successful injections were recorded. The technique was evaluated clinically in 7 patients undergoing dental procedures. Five patients had US-guided injections, and 2 patients received US-assisted greater palatine canal blocks.

RESULTS: GPF was successfully identified in 16 hemisectioned heads (n = 16). In 7 of 16 hemisectioned cadaveric specimens (n = 7/16), needle pass was seen on the US and traces of India ink were found within the greater palatine canal and pterygopalatine fossa. In the remaining heads (n = 9/16), the dye was observed in the mucosal tissue of the hard palate anterior to the GPF or in the soft palate. Clinical evaluation reconfirmed successful identification of GPF by US in 6 of 7 patients (n = 6/7). US-guided injections were successful in 6 of the 8 attempted blocks (n = 6/8) with median number (range) of attempts being 2 (1–4). US-assisted injections were successful in 2 patients (n = 2/2).

CONCLUSIONS: US has the potential to successfully locate and characterize GPF in normal and edentulous maxilla. US-guided GPN blocks can be technically challenging. The clinical applicability of US guidance or assistance for GPN block needs further evaluation in a larger sample of patients.

在纤维蛋白溶解快速检测的外在活性实验中,有无抑肽酶对早期的血栓弹性测定评估有差异
Assessment of early thromboelastometric variables from extrinsically activated assays with and without aprotinin for rapid detection of fibrinolysis.

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背景：尽管血栓弹力图可以用在纤维蛋白溶解的床旁诊断上，但是所需要的时间很长。未治疗的纤维蛋白溶解能引起凝血因子的消耗和出血，因此有必要做早期的诊断和决策。因此，我们在外在活性实验中对血栓弹力图进行评估，用抑肽酶可以快速识别出纤维蛋白溶解。我们假设，凝血时间延长、血栓块形成时间、血栓块强度降低、α角、A5、A10、A15、A20和最大血栓块强度MCF降低等在有无抑肽酶试验中的不同可以预测纤维蛋白溶解。

方法：我们采用受试者工作特征来评估与分析352个病人的411份出现纤维蛋白溶解的血栓弹性测定结果和1605个病人的2537份没有纤维蛋白溶解的结果。以一种混合队列来分析这些数据，同时进一步分析与血栓溶解时间相关的纤维蛋白溶解的数据，即分别在30分钟、45分钟和60分钟内血栓块强度降低到小于最大血栓块强度的15%。受试者工作特征曲线的曲线下面积的95%可信区间降低大体上说明不能改善逐渐增加的纤维蛋白溶解的检测。曲线下面积的可变性可以很好的预测纤维蛋白溶解，作为一个次要结局终点，用对应于最大约登指数的最优截点估计值来估算出各自的敏感性和特异性。

结果：在混合队列中，血栓块形成时间(AUC: 0.652 [0.016])、α角(AUC: 0.675 [0.015])、A5 (AUC: 0.718 [0.013])、A10 (AUC: 0.734 [0.013])、A15 (AUC: 0.752 [0.013])、A20 (AUC: 0.771 [0.013])和最大血栓块强度(AUC: 0.799 [0.012])预测到纤维蛋白溶解。ΔA15 (AUC: 0.675 [0.016])、ΔA20 (AUC: 0.719 [0.015])，和ΔMCF (AUC: 0.812 [0.013])也提示纤维蛋白溶解。曲线下面积随时间而增加。在试验早期，血栓弹力图预测随后发生的纤维蛋白溶解的能力比试验晚期更强。尽管如此，在纤维蛋白溶解晚期，仅仅最大血栓块强度显示可能有临床价值。

结论：在外在活性血栓弹性测定试验中，血栓块强度在纤维蛋白溶解诊断中有较
BACKGROUND: Although thromboelastometry (ROTEM®) and thrombelastography can be used for bedside diagnosis of fibrinolysis, the time needed for detection is often prolonged. Since untreated fibrinolysis can result in consumption of coagulation factors and bleeding, early diagnosis and decision making are desirable. Accordingly, we assessed ROTEM variables from extrinsically activated assays with (APTEM) and without (EXTEM) addition of aprotinin for their ability to rapidly identify fibrinolysis. Specifically, we tested the hypotheses that prolonged clotting time, clot formation time, low clot firmness (at 5, 10, 15, and 20 minutes, designated A5, A10, A15, and A20, respectively), low maximum clot firmness (MCF) in EXTEM assays, and differences in these variables from parallel APTEM and EXTEM assays (designated as Δvariables) predict fibrinolysis.

METHODS: Data from 411 thromboelastometric measurements (obtained from 352 patients) with fibrinolysis and from 2537 measurements without fibrinolysis (obtained from 1605 patients) were assessed and analyzed using receiver operating characteristics. Data were analyzed as a pooled fibrinolysis cohort, and subanalyses were performed from sets assigned to categories of fibrinolysis related to the timing of thrombus lysis (i.e., a decrease of clot firmness to <15% of MCF within 30, 45, and 60 minutes, respectively). A lower 95% confidence limit of the area under the receiver operating characteristic curve (AUC [SE] <0.6) was considered a failure to substantially improve detection of increased fibrinolysis. AUCs were compared to identify the variable providing the best predictive association with fibrinolysis. As a secondary end point, optimum cutoff values at the point estimate corresponding to the greatest Youden index were calculated along with the respective sensitivities and specificities.

RESULTS: In the pooled cohort, clot formation time (AUC: 0.652 [0.016]), α-angle (AUC: 0.675 [0.015]), A5 (AUC: 0.718 [0.013]), A10 (AUC: 0.734 [0.013]), A15 (AUC: 0.752 [0.013]), A20 (AUC: 0.771 [0.013]), and MCF (AUC: 0.799 [0.012]) predicted fibrinolysis. Fibrinolysis was also predicted by ΔA15 (AUC: 0.675 [0.016]), ΔA20 (AUC: 0.719 [0.015]), and ΔMCF (AUC: 0.812 [0.013]). AUCs increased in a time-related fashion. The ability to predict subsequent fibrinolysis based on thromboelastometry was higher when it occurred early rather than later during testing. However, for prediction of late fibrinolysis, only MCF (AUC: 0.655 [0.025]) appears to be potentially clinically useful.

CONCLUSIONS: Low early values of clot firmness in extrinsically activated thromboelastometric assays are associated with fibrinolysis and improve its early detection. Additional assays with aprotinin fail to improve the early diagnosis of fibrinolysis compared with assays without aprotinin.

麻醉剂特有的突触抑制作用

Anesthetic Agent-Specific Effects on Synaptic Inhibition

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背景：麻醉剂可以加强γ-氨基丁酸（GABA）介导的中枢神经系统抑制作用。不同的麻醉剂已被证明可不同程度地影响突触及突触外的GABA受体，但是否通过不同的机制介导不同形式的突触抑制尚不明确。基于此观点，我们检验不同类型的突触GABA受体对麻醉剂表现出不同的敏感性的假说。现有研究对比了异
BACKGROUND: Anesthetics enhance γ-aminobutyric acid (GABA)-mediated inhibition in the central nervous system. Different agents have been shown to act on tonic versus synaptic GABA receptors to different degrees, but it remains unknown whether different forms of synaptic inhibition are also differentially engaged. With this in mind, we tested the hypothesis that different types of GABA-mediated synapses exhibit different anesthetic sensitivities. The present study compared effects produced by isoflurane, halothane, pentobarbital, thiopental, and propofol on paired-pulse GABAA receptor-mediated synaptic inhibition. Effects on glutamate-mediated facilitation were also studied.

METHODS: Synaptic responses were measured in rat hippocampal brain slices. Orthodromic paired-pulse stimulation was used to assess anesthetic effects on either glutamate-mediated excitatory inputs or GABA-mediated inhibitory inputs to CA1 neurons. Antidromic stimulation was used to assess anesthetic effects on CA1 background excitability. Agents were studied at equieffective concentrations for population spike depression to compare their relative degree of effect on synaptic inhibition.

RESULTS: Differing degrees of anesthetic effect on paired-pulse facilitation at excitatory glutamate synapses were evident, and blocking GABA inhibition revealed a previously unseen presynaptic action for pentobarbital. Although all 5 anesthetics depressed synaptically evoked excitation of CA1 neurons, the involvement of enhanced GABA-mediated inhibition differed considerably among agents. Single-pulse inhibition was enhanced by propofol, thiopental, and pentobarbital, but only marginally by halothane and isoflurane. In contrast, isoflurane enhanced paired-pulse inhibition strongly, as did thiopental, but propofol, pentobarbital, and halothane were less effective.

CONCLUSIONS: These observations support the idea that different GABA synapses use receptors with differing subunit compositions and that anesthetics exhibit differing degrees of selectivity for these receptors. The differing anesthetic sensitivities seen in the present study, at glutamate and GABA synapses, help explain the unique behavioral/clinical profiles produced by different classes of anesthetics and indicate that there are selective targets for new agent development.

Clinical Evaluation of a Novel System for Monitoring Surgical Hemoglobin Loss
Background: Accurate measurement of intraoperative blood loss is an important clinical variable in managing fluid resuscitation and avoiding unnecessary transfusion of blood products. In this study, blood lost onto laparotomy sponges during surgical cases was measured using a tablet computer programmed with a unique algorithm modeled after facial recognition technology. In this study, we assessed the accuracy and performance of the system in surgical cases.

Methods: In this prospective, multicenter study, 46 patients undergoing surgery with anticipated significant blood loss contributed laparotomy sponges for hemoglobin (Hb) loss measurement using the Triton System with Feature Extraction Technology (Gauss Surgical, Inc., Los Altos, CA). The Hb loss measured by the new system was compared with that measured by manual rinsing of the sponges. Accuracy was evaluated using linear regression and Bland-Altman analysis. In addition, the new system's calculation of blood volume loss was compared with the gravimetric method of estimating blood loss from intraoperative sponge weights.

Results: A significant positive linear correlation was noted between the new system's measurements and the rinsed Hb mass ($r = 0.93, P < 0.0001$). Bland-Altman analysis revealed a bias of 9.0 g and narrow limits of agreement (-7.5 to 25.5 g) between the new system's measures and the rinsed Hb mass. These limits were within the clinically relevant difference of ±30 g, which is approximately half of the Hb content of a unit of allogeneic whole blood. Bland-Altman analysis of the estimated blood loss on sponges using the gravimetric method demonstrated a bias of 466 mL (overestimation) with limits of agreement of -171 and 1103 mL, due to the presence of contaminants other than blood on the laparotomy sponges.

Conclusions: The novel mobile monitoring system provides an accurate measurement of Hb mass on surgical sponges as compared with that of manual rinsing measurements and is significantly more accurate than the gravimetric method. Further study is warranted to assess the clinical use of the technology.
Hypovitaminosis D in Hospitalized Patients: A Marker of Frailty or a Disease Requiring Treatment?

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In this issue of Anesthesia & Analgesia, Turan et al. report on vitamin D levels in adult patients undergoing noncardiac surgery and relate these levels to postoperative complications and death. Despite the methodological issues with retrospective cohort analysis, this study draws attention to the high prevalence of hypovitaminosis D in hospitalized patients and the association of hypocitaminosis D with nonskeletal complications and mortality. These findings raise a number of questions: Is vitamin D deficiency an underappreciated condition responsible for poor outcomes in surgical patients? Is vitamin D deficiency in surgical patients a cause or just a consequence of poor outcomes? Is surveillance for vitamin D deficiency useful in patients undergoing surgery, and should these patients receive vitamin D supplementation? Unfortunately, there are no simple answers to these questions, but the scientific literature of the last 15 years offers some suggestions about how to conceptualize perioperative vitamin D deficiency. We conducted a narrative review of English-language papers indexed in PubMed from 1999 to 2014 to explore the role of vitamin D in surgical outcomes.
方法：本前瞻性、观察性研究的研究对象为39名行引产术或成功经阴道分娩的单胎足月产妇或过月产妇。在产前进行四种有效的心理学问卷（焦虑敏感指数量表[ASI]、惧痛量表[FQIII]、疼痛灾难性感觉量表[PCS]以及简式艾森克人格问卷）和对焦虑、自信和镇痛期望的分级调查。主要观察指标有开始需要进行硬膜外镇痛的时间长短、需要进行硬膜外镇痛的疼痛程度、疼痛-时间曲线下面积、每小时硬膜外局麻药用量以及对产后镇痛的满意程度。心理学预测与临床反应之间的关系用双变量相关与回归模型描述。

结果：临床上产后疼痛的曲线下面积（R = 0.45，P = 0.006）、硬膜外局麻药的使用（R = 0.45，P = 0.019）以及开始需要进行硬膜外镇痛的时间长短（R = 0.36，P = 0.015）与心理学预测结果相一致。ASI、PCS、人格特征（撒谎、外向、精神质）以及对焦虑、自信和镇痛期望的分级均对结果预测有帮助。在应用多变量线性回归模型进行筛选以后，惧痛量表[FQIII]和疼痛灾难性感觉量表[PCS]均不适合应用于疼痛曲线下面积的预测，而疼痛灾难性感觉量表[PCS]则可以（P=0.022）。ASI和自我报告的焦虑无明显相关性（r = 0.03，P = 0.91）。

总结：人格特征（撒谎、外向、精神质）以及对焦虑、自信和镇痛期望的分级对产痛、硬膜外局麻药的应用以及开始需要进行硬膜外镇痛的时间长短的预计有帮助。尽管ASI包含在预测产后疼痛的曲线下面积的最终模型中（惧痛量表[FQIII]和疼痛灾难性感觉量表[PCS]没有），ASI在预测疼痛的方面是否优于惧痛量表[FQIII]和疼痛灾难性感觉量表[PCS]尚需要进一步研究证实。

（郝光伟译 薛张纲校）

BACKGROUND: Psychological characteristics may affect interpretation and expression of pain. In this study, we sought to determine whether validated psychological tests predict the labor pain experience.

METHODS: Thirty-nine women with singleton term or post-term pregnancies undergoing induction of labor and successful vaginal delivery comprised the study population for this prospective observational study. Four validated psychological questionnaires (Anxiety Sensitivity Index [ASI], Fear of Pain [FPQIII], Pain Catastrophizing Scale [PCS]), and Eysenck Personality Questionnaire-Short Scale) and 3-scaled ratings of anxiety, confidence, and analgesic expectations were completed before onset of labor. Outcome measures included time to epidural analgesia request, pain at request for epidural analgesia, area under the pain × time curve (AUC), epidural local anesthetic use per hour, and maternal satisfaction with analgesia. The relationship between psychological predictors and clinical responses was assessed using bivariate correlations and regression modeling.

RESULTS: Labor pain AUC (R = 0.45, P = 0.006), epidural local anesthetic use (R = 0.45, P = 0.019), and time to epidural analgesia request (R = 0.36, P = 0.015) were predicted with models incorporating some of the prelabor predictors. ASI, PCS, personality traits (lying, extroversion, psychoticism), and scaled ratings of anxiety, confidence, and analgesic expectations were completed before onset of labor. Outcome measures included time to epidural analgesia request, pain at request for epidural analgesia, area under the pain × time curve (AUC), epidural local anesthetic use per hour, and maternal satisfaction with analgesia. The relationship between psychological predictors and clinical responses was assessed using bivariate correlations and regression modeling.

CONCLUSIONS: Personality traits (psychoticism, extroversion, and lying), as well as scaled ratings of anxiety, confidence, and analgesia expectations, show some potential to predict labor pain, epidural local anesthetic use, and time to epidural analgesia request. Although ASI was included in the final model for labor pain AUC, and FPQ and PCS were not, further study is required to determine whether ASI is a better predictor than FPQ or PCS.
Preclinical studies have established that anesthesia is toxic to the brain in neonatal animals, but scant research investigates the neurodevelopmental effects of exposure to anesthesia. In this article, we discuss the issue of outcome measurement of children after anesthesia administered between infancy and approximately 4 years of age. Recent studies are reviewed with the goal of understanding the contributions and limitations of the extant literature with respect to neurodevelopmental outcome. A review of school-based information (academic achievement and learning disability characterization), which are most frequently applied to measure cognitive outcome in cohort studies, is provided. The strengths and limitations of this literature is reviewed, followed by a discussion of how future trials investigating neurodevelopmental outcome after anesthesia might be improved by procedures designed specifically to assess the status of the central nervous system. Neuropsychological assessment is described and proposed as a way to increase the validity and sensitivity of forthcoming studies that intend to evaluate the short- and long-term effects of exposure to anesthesia during infancy and early childhood.

**Acute Resistance Exercise Induces Antinociception by Activation of the Endocannabinoid System in Rats**

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BACKGROUND: Resistance exercise (RE) is also known as strength training, and it is performed to increase the strength and mass of muscles, bone strength, and metabolism. RE has been increasingly prescribed for pain relief. However, the endogenous mechanisms underlying this antinociceptive effect are still largely unexplored. Thus, we investigated the involvement of the endocannabinoid system in RE-induced antinociception.

METHODS: Male Wistar rats were submitted to acute RE in a weight-lifting model. The nociceptive threshold was measured by a mechanical nociceptive test (paw pressure) before and after exercise. To investigate the involvement of cannabinoid receptors and endocannabinoids in RE-induced antinociception, cannabinoid receptor inverse agonists, endocannabinoid metabolizing enzyme inhibitors, and an anandamide reuptake inhibitor were injected before RE. After RE, CB1 cannabinoid receptors were quantified in rat brain tissue by Western blot and immunofluorescence. In addition, endocannabinoid plasma levels were measured by isotope dilution-liquid chromatography mass spectrometry.

RESULTS: RE-induced antinociception was prevented by preinjection with CB1 and CB2 cannabinoid receptor inverse agonists. By contrast, preadministration of metabolizing enzyme inhibitors and the anandamide reuptake inhibitor prolonged and enhanced this effect. RE also produced an increase in the expression and activation of CB1 cannabinoid receptors in rat brain tissue and in the dorsolateral and ventrolateral periaqueductal regions and an increase in endocannabinoid plasma levels.

CONCLUSIONS: The present study suggests that a single session of RE activates the endocannabinoid system to induce antinociception.
侧和颈部的两侧，放置于前额的表皮温度探头和零热通量的温度探头紧临。温度间隔1分钟测量一次，但是不包括心肺旁路的时间和术后4小时以内的时间。然后将零热通量温度计的测量值和肺动脉的温度进行偏差分析，若偏差超过0.5°C则认为有潜在的临床意义。

结果：在手术室的平均持续时间在279 ± 75分钟，平均横跨钳闭时间在118 ± 50分钟。所有病人都在重症监护病房观察了另外4小时。总的来说，放置于前额的零热通量温度计测的温度和肺动脉导管温度的平均偏差(即：前额温度减去肺动脉导管温度)在−0.23°C（95%的可信区间在±0.82）；78%的偏差≤0.5°C。平均的术中温度偏差为−0.08°C（95%的可信区间在±0.88）；84%的偏差≤0.5°C。平均的术后温度偏差为−0.32°C（95%的可信区间在±0.75）；84%的偏差≤0.5°C。颈部的测量偏差和精确度与前额的数值相似，未校正的前额皮肤温度体现了随着中心温度的降低而不断增加的消极偏差。

结论：中心温度可以通过零热通量温度计的方法测量，偏差很小，但是准确度和肺动脉导管的温度相比，稍微低了特定的0.5°C的可信度。

（李蔚文 译，李士通 审校）

BACKGROUND: Although core temperature can be measured invasively, there are currently no widely available, reliable, noninvasive thermometers for its measurement. We thus compared a prototype zero-heat-flux thermometer with simultaneous measurements from a pulmonary artery catheter. Specifically, we tested the hypothesis that zero-heat-flux temperatures are sufficiently accurate for routine clinical use.

METHODS: Core temperature was measured from the thermistor of a standard pulmonary artery catheter and with a prototype zero-heat-flux deep-tissue thermometer in 105 patients having nonemergent cardiac surgery. Zero-heat-flux probes were positioned on the lateral forehead and lateral neck. Skin surface temperature probes were attached to the forehead just adjacent to the zero-heat-flux probe. Temperatures were recorded at 1-minute intervals, excluding the period of cardiopulmonary bypass, and for the first 4 postoperative hours. Zero-heat-flux and pulmonary artery temperatures were compared with bias analysis; differences exceeding 0.5°C were considered to be potentially clinically important.

RESULTS: The mean duration in the operating room was 279 ± 75 minutes, and the mean cross-clamp time was 118 ± 50 minutes. All subjects were monitored for an additional 4 hours in the intensive care unit. The average overall difference between forehead zero-heat-flux and pulmonary artery temperatures (i.e., forehead minus pulmonary artery) was −0.23°C (95% limits of agreement of ±0.82); 78% of the differences were ≤0.5°C. The average intraoperative temperature difference was −0.08°C (95% limits of agreement of ±0.88); 84% of the differences were ≤0.5°C. The average postoperative difference was −0.32°C (95% limits of agreement of ±0.75); 84% of the differences were ≤0.5°C. Bias and precision values for neck site were similar to the forehead values. Uncorrected forehead skin temperature showed an increasing negative bias as core temperature decreased.

CONCLUSIONS: Core temperature can be noninvasively measured using the zero-heat-flux method. Bias was small, but precision was slightly worse than our designated 0.5°C limits compared with measurements from a pulmonary artery catheter.

羟乙基淀粉分子的大小和起源不会影响其对体外的近端小管细胞的有害副作用
Molecular Size and Origin Do Not Influence the Harmful Side Effects of Hydroxyethyl Starch on Human Proximal Tubule Cells (HK-2) In Vitro
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BACKGROUND: Recently, clinical trials revealed renal impairment induced by hydroxethyl starch (HES) in septic patients. In prior studies, we managed to demonstrate that HES accumulated in renal proximal tubule cells (PTCs). The related pathomechanism has not yet been discovered. To validate our hypothesis that the HES molecule itself is harmful, regardless of its molecule size or origin, we conducted a comprehensive study to elucidate the influences of different HES preparations on PTC viability in vitro.

METHODS: Cell viability of human PTC was measured with a cytotoxicity assay, quantifying the reduction of tetrazolium salt to colored formazan. Experiments were performed by assessing the influence of different carrier solutions of HES (balanced, nonbalanced, culture medium), different average molecular weights (70, 130, 200 kDa), different origins (potato or corn derived), and various durations of incubation (2–21 hours). Furthermore, HES 130/0.4 was fractionated by ultrafiltration, and the impact on cell viability of average single-size fractions with <3, 3 to 10, 10 to 30, 30 to 50, 50 to 100, and >100 kDa was investigated. We also tested the possible synergistic effects of inflammation induced by tumor necrosis factor-α.

RESULTS: All tested HES solutions, regardless of origin or carrier matrix, decreased cell viability in an equivalent, dose-dependent manner. Coincubation with tumor necrosis factor-α did not reduce HES-induced reduction of cell viability. Minor differences were detected comparing 70, 130, and 200 kDa preparations. Analysis of fractionated HES revealed that each fraction decreased cell viability. Even small HES molecules (10–30 kDa) were significantly deleterious.

CONCLUSIONS: For the first time, we were able to show that only the total mass of HES molecules applied is responsible for the harmful impact on renal PTC in vitro. Neither molecular size nor their origin showed any relevance.

对用于检测术中血红蛋白流失的新系统的体外评估

In Vitro Evaluation of a Novel System for Monitoring Surgical Hemoglobin Loss
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背景：精确测量术中出血量是麻醉后液体复苏的一个重要的临床变量，同时可以减少临床中不必要的血制品输入。在这项研究中，我们运用了一种特殊的仿造脸部识别系统的计算技术，通过平板电脑来统计患者术中的失血量。该研究目的在于评估该系统在统计体外手术巾留存血量方面的性能及准确性。

方法：预先测定好血红蛋白含量及体积的全血样本被重组成人类红细胞悬液及血浆，同时倾倒于手术铺巾上。加入常规生理盐水以在不同程度稀释血液，同时进行冲洗。在手术室内，通过使用 Triton 系统结合特征提取技术，在3种不同背景光的环境下，对来自四大制造厂商的手术铺巾进行扫描测定。血红蛋白损失量的统计测量结果的准确性，与线性回归分析技术及 Bland-Altman 系统分析技术密切相关。通过非参数检验对于已知变量与测量偏倚有无相关性进行判定。

结果：在测量血红蛋白损失量的过程中产生的平均百分误差为 12.3%（信任区间为 95%）。在大范围的不同程度的术中照明条件下，预测量好的血红蛋白含量与实际血红蛋白聚集量呈明显的线性相关。不同程度的术中照明条件包括术中环境光线充足、光线中等、光线较弱等三种。Bland-Altman 分析结果表明：在上述 2 种测定方式中存在 0.01g 的偏差。经测定，每块手术铺巾上的血红蛋白含量高低的一致性界线为 1.16g 到 1.19g。使用新系统来检测估计的失血量及血红蛋白聚集量中的测量偏倚与使用的用于稀释血液的生理盐水的体积不相关。同时表明对于在较大范围内有不同饱和度的手术铺巾，该系统的使用依然可靠。

结论：通过使用 Triton 系统来进行动态失血量监控，在评估血红蛋白体外（手术铺巾）聚集量方面得到的结果是很精确的，同时适用于不同程度的外界光线条件、不同饱和度的手术铺巾、盐分稀释、以及最初失血量的多少。该项技术的使用可以极大的提高估算术中失血量的准确性。

（田园 译，李士通 审校）

BACKGROUND: Accurate measurement of intraoperative blood loss is an important clinical variable in managing fluid resuscitation and avoiding unnecessary transfusion of blood products. In this study, we measured surgical blood loss using a tablet computer programmed with a unique algorithm modeled after facial recognition technology. The aim of the study was to assess the accuracy and performance of the system on surgical laparotomy sponges in vitro.

METHODS: Whole blood samples of premeasured hemoglobin (Hb) and volume were reconstituted from units of human packed red blood cells and plasma and distributed across surgical laparotomy sponges. Normal saline was added to simulate the presence of varying levels of hemodilution and/or irrigation use. Soaked sponges from 4 different manufacturers were scanned using the Triton System with Feature Extraction Technology (Gauss Surgical, Inc., Palo Alto, CA) under 3 different ambient light conditions in an operating room. Accuracy of Hb loss measurement was evaluated relative to the premeasured values using linear regression and Bland-Altman analysis. Correlations between studied variables and measurement bias were analyzed using nonparametric tests.

RESULTS: The overall mean percent error for measure of Hb loss for the Triton System was 12.3% (95% confidence interval [CI], 8.2%-16.4%). A strong positive linear correlation between the premeasured and actual Hb masses was noted across the full range of intraoperative lighting conditions, including (A) high (r = 0.95 [95% CI, 0.93-0.96]), (B) medium (r = 0.94 [95% CI, 0.93-0.96]), and (C) low (r = 0.90 [95% CI, 0.87-0.93]) mean ambient light intensity. Bland-Altman analysis revealed a bias of 0.01 g [95% CI, -0.03 to 0.06 g] of Hb per sponge between the 2 measures. The corresponding lower and upper limits of agreement were -1.16 g (95% CI, -1.21 to -1.12 g) per sponge and 1.19 g (95% CI, 1.15-1.24 g) per sponge, respectively. Measurement bias of estimated blood loss and Hb mass using the new system were not associated with the volume of saline used to reconstitute the samples (P = 0.506
CONCLUSIONS: Mobile blood loss monitoring using the Triton system is accurate in assessing Hb mass on surgical sponges across a range of ambient light conditions, sponge saturation, saline contamination, and initial blood Hb. Utilization of this tool could significantly improve the accuracy of blood loss estimates.

Positive End-Expiratory Pressure to Increase Internal Jugular Vein Size Is Poorly Tolerated in Obese Anesthetized Adults

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BACKGROUND: Central venous cannulation is technically challenging in obese patients. We hypothesized that positive end-expiratory pressure (PEEP) increases the size of the internal jugular vein (IJV) in obese adults.

METHODS: The circumference and cross-sectional area of the IJV were measured in obese patients under general anesthesia at PEEP 0, 5, and 10 cm H$_2$O. Results are reported as means ± SE.

RESULTS: PEEP at 10 cm H$_2$O was tolerated by 18 of 24 obese patients. Each 5 cm H$_2$O of PEEP increased the cross-sectional area by 0.16 ± 0.02 cm$^2$ (P < 0.0001) and the circumference by 0.23 ± 0.03 cm (P < 0.0001).

CONCLUSIONS: PEEP modestly increases the size of the IJV in obese adults but was poorly tolerated because of hypotension.

Development of a Short Version of the Modified Yale Preoperative Anxiety Scale

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BACKGROUND: The Modified Yale Preoperative Anxiety Scale (mYPAS) is currently used to assess anxiety in children during anesthesia induction, and the mYPAS has been applied in more than 100 studies. This instrument contains 5 questions and is commonly used in 4 perioperative time points. However, this complex assessment tool in a busy operating room environment is challenging. In this study, we aimed to identify whether this assessment tool can be simplified and used in the operating room environment.
mYPAS-ShortForm (mYPAS-SF) 和减少评估的时间点。获得的数据来自多个患者 (总数 = 3798; 男= 5.63%)，他们是 15 年前在之前的调查中被招募使用 mYPAS。

结果：定性分析后，由于与其他内容重叠“父母使用”的这项内容被消除。在孩子产生焦虑差异方面，这项减少内容占 82% 或更多，并且克伦巴赫系数至少在 0.92。为减少评估的时间点数量，mYPAS 在时间点方面的评分，产生 Cohen D 效应量标准 0.48 的改变被应用。这导致手术室通道和手术室入口两项时间点的消除。

结论：减少 mYPAS 到 4 项内容，创建 mYPAS-SF 可以应用在 2 个时间点，这保留了测量的准确性，同时使临床研究设置管理的手段更容易应用。

（李婷婷 译，李士通 审校）

BACKGROUND: The modified Yale Preoperative Anxiety Scale (mYPAS) is the current "criterion standard" for assessing child anxiety during induction of anesthesia and has been used in >100 studies. This observational instrument covers 5 items and is typically administered at 4 perioperative time points. Application of this complex instrument in busy operating room (OR) settings, however, presents a challenge. In this investigation, we examined whether the instrument could be modified and made easier to use in OR settings.

METHODS: This study used qualitative methods, principal component analyses, Cronbach αs, and effect sizes to create the mYPAS-Short Form (mYPAS-SF) and reduce time points of assessment. Data were obtained from multiple patients (N = 3798; Mage = 5.63) who were recruited in previous investigations using the mYPAS over the past 15 years.

RESULTS: After qualitative analysis, the "use of parent" item was eliminated due to content overlap with other items. The reduced item set accounted for 82% or more of the variance in child anxiety and produced the Cronbach α of at least 0.92. To reduce the number of time points of assessment, a minimum Cohen d effect size criterion of 0.48 change in mYPAS score across time points was used. This led to eliminating the walk to the OR and entrance to the OR time points.

CONCLUSIONS: Reducing the mYPAS to 4 items, creating the mYPAS-SF that can be administered at 2 time points, retained the accuracy of the measure while allowing the instrument to be more easily used in clinical research settings.

超声引导下脉冲射频刺激肩胛上神经治疗粘连性关节囊炎: 一项前瞻性、随机、对照试验

Ultrasound-Guided Pulsed Radiofrequency Stimulation of the Suprascapular Nerve for Adhesive Capsulitis: A Prospective, Randomized, Controlled Trial

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背景：粘连性关节囊炎 (AC) 的治疗是一个众所周知的、复杂和漫长的过程。最近的研究表明，在荧光透视或 CT 引导下使用脉冲射频 (PRF) 损毁肩胛上神经 (SSN)，可以减轻肩痛。然后目前并没有关于在超声引导 (UG) 下使用 PRF 损毁 SSN 的研究，仅只有两例病例报道。在本研究中，我们比较了单纯物理治疗与在 UG 引导下使用 PRF 损毁 SSN 与理疗联合治疗的效果。

方法：研究共纳入六十例 AC 患者。随机分为以下 2 组：干预组患者在一疗程的 PRF 损毁 SSN 治疗后接受了 12 周的理疗，对照组患者只接受 12 周理疗。所有的结果测量包括为治疗后 1，4，8，12 周的视觉模拟评分 (VAS)，肩部疼痛和残疾指数，以及被动运动范围 (PROM)。

结果：42 例患者（每组 21 例）完成了研究。干预组明显缩短了疼痛显著缓解的
BACKGROUND: The treatment of adhesive capsulitis (AC) is a well-known, complicated, and long process. Recent studies have shown that pulsed radiofrequency (PRF) lesioning of the suprascapular nerve (SSN) using a fluoroscopy- or computed tomography-guided technique can alleviate shoulder pain. However, there are no studies of PRF lesioning of the SSN in patients with AC using ultrasound-guided (UG) techniques, except for 2 case reports. In this study, we compared the effect of physical therapy alone with physical therapy and PRF lesioning of the SSN using a UG technique.

METHODS: Sixty patients with AC were included in the study. Patients were randomized into the following 2 groups: the intervention group containing patients who received 12 weeks of physical therapy after 1 treatment of PRF lesioning of the SSN, and the control group containing patients who received 12 weeks of physical therapy alone. All outcome measurements including visual analog scale (VAS), shoulder pain and disability index, and passive range of motion (PROM) were performed at 1, 4, 8, and 12 weeks after treatment.

RESULTS: Forty-two patients (21 patients in each group) completed the study. The intervention group had a notably shorter time to onset of significant pain relief (6.1 ± 3.4 vs 28.1 ± 9.2 days; P < 0.001) and noticeable reduction of VAS score at week 1 (40% vs 4.7%) than the control group (P < 0.001). All measured variables in the intervention group and most variables in the control group showed significant improvement from the baseline (P < 0.05). A comparison of the 2 groups indicated significantly greater improvement in the intervention group at all times in VAS and shoulder pain and disability index scores (all P < 0.05), and for most gain of PROM (P < 0.05). There were no serious adverse effects or complications in either group.

CONCLUSIONS: This study indicates that the application of PRF lesioning of the SSN using a UG technique combined with physical therapy provided better and faster relief from pain, reduced disability, and improved PROM when compared with physical therapy alone in patients with AC, an effect that persisted for at least 12 weeks.
BACKGROUND: This analysis summarized Cochrane reviews that assess the effects of neuraxial anesthesia on perioperative rates of death, chest infections, and myocardial infarction.

METHODS: A search was performed in the Cochrane Database of Systematic Reviews on July 13, 2012. We have included all Cochrane systematic reviews that examined subjects of any age undergoing any type of surgical (open or endoscopic) procedure, compared neuraxial anesthesia to general anesthesia alone for the surgical anesthesia, or neuraxial anesthesia plus general anesthesia to general anesthesia alone for the surgical anesthesia, and included death, chest infections, myocardial infarction, and/or serious adverse events as outcomes. Studies included in these reviews were selected on the same criteria.

RESULTS: Nine Cochrane reviews were selected for this overview. Their scores on the Overview Quality Assessment Questionnaire varied from 4 to 6 of a maximal possible score of 7. Compared with general anesthesia, neuraxial anesthesia reduced the 0- to-30-day mortality (risk ratio [RR] 0.71; 95% confidence interval [CI], 0.53-0.94; I = 0%) based on 20 studies that included 3006 participants. Neuraxial anesthesia also decreased the risk of pneumonia (RR 0.45; 95% CI, 0.26-0.79; I = 0%) based on 5 studies that included 400 participants. No difference was detected in the risk of myocardial infarction between the 2 techniques (RR 1.17; 95% CI, 0.57-2.37; I = 0%) based on 6 studies with 849 participants. Compared with general anesthesia alone, adding neuraxial anesthesia to general anesthesia did not affect the 0- to 30-day mortality (RR 1.07; 95% CI, 0.76-1.51; I = 0%) based on 18 studies with 3228 participants. No difference was detected in the risk of myocardial infarction between combined neuraxial anesthesia-general anesthesia and general anesthesia alone (RR 0.69; 95% CI, 0.44-1.09; I = 0%) based on 8 studies that included 1580 participants. Adding a neuraxial anesthesia to general anesthesia reduced the risk of pneumonia (RR 0.69; 95% CI, 0.49-0.98; I = 9%) after adjustment for publication bias and based on 9 studies that included 2433 participants. The quality of the evidence was judged as moderate for all 6 comparisons. The quality of the reporting score of complications related to neuraxial blocks was 9 (4 to 12 [median {range}]) for a possible maximum score of 14.

CONCLUSIONS: Compared with general anesthesia, neuraxial anesthesia may reduce the 0- to-30-day mortality for patients undergoing a surgery with an intermediate-to-high cardiac risk (level of evidence moderate). Large randomized
controlled trials on the difference in death and major outcomes between regional and general anesthesia are required.