血压变异系数及其与心脏手术预后的关系

Blood Pressure Coefficient of Variation and Its Association With Cardiac Surgical Outcomes.

Jinadasa SP, Mueller A, Prasad V, Subramaniam K, Heldt T, Novack V, Subramaniam B.

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背景：在门诊非手术环境中完成的多项研究显示，短期和长期血压变异性与不良预后之间存在显着相关性。然而，围手术期血压变异性对手术预后的影响尚未得到很好的研究，尤其是在心脏手术中。在这项研究中，作者试图评估收缩动脉压和平均动脉血压变异是否与需要体外循环的心脏手术患者的30天死亡率和院内肾功能衰竭具有相关性。此外，既往研究没有具体评估在手术的每个阶段，即在术前，术中和术后阶段血压的变异性。因此本研究还旨在评估手术预后是否与阶段特异性的收缩压和平均动脉血压变异性相关。

方法：从2008年1月至2014年6月所有接受心脏手术的患者均纳入这项回顾性、单中心研究。人口统计学，术中和手术预后数据来自该机构的胸外科协会数据库和麻醉信息管理系统。使用变异系数（CV）评估收缩压和平均动脉血压变异性。主要预后指标是与病例的整个病程相关的30天死亡率和院内肾功能衰竭发生率，而次要预后指标评估了各个手术时期的阶段特异性。为了控制整体误差率，P值<0.0125被认为对主要预后指标有重要意义。

结果：在分析的3687名患者中，2.7％的患者在手术后30天内死亡，2.8％的患者发生院内肾功能衰竭。在调整协变量后，作者发现收缩压变异性（CVSBP）的增加与30天死亡率和院内肾功能衰竭之间存在显着统计学相关性。 CVSBP每增加0.10，死亡概率增加150％（优势比，2.50; 95％置信区间，1.60-3.92; P <.0001），发生肾脏衰竭概率增加104％（优势比，2.04; 95％置信区间，1.33-3.14; P = .001）。与死亡率的关系主要发生在体外循环前期，因为CVSBP与死亡率之间的关联在体外循环前期是显着的（P = .01），非体外循环后期（P = .08）。在任何手术阶段，包括体外循环期间，平均动脉血压的变异性与死亡率或肾功能衰竭之间没有显着关联。

结论：收缩压变异率的增加与30天死亡率和肾衰竭的发展存在相关性，并且存在手术阶段相关特异性。进一步的研究需要确定如何前瞻性地发现血压变异性并阐明干预的时机

（蒋长青 译　陈杰 校）

BACKGROUND: Multiple studies completed in the ambulatory nonsurgical setting show a significant association between short- and long-term blood pressure variability and poor outcomes. However, perioperative blood pressure variability outcomes have not been well studied, especially in the cardiac surgical setting. In this study, we sought to assess whether systolic and mean arterial blood pressure variability were associated with 30-day mortality and in-hospital renal failure in patients undergoing cardiac surgery requiring cardiopulmonary bypass. Furthermore, blood pressure variability has not been evaluated specifically during each phase of surgery, namely in the pre-, intra- and postbypass phases;

thus, we aimed also to assess whether outcomes were associated with phase-specific systolic and mean arterial blood pressure variability.
METHODS: All patients undergoing cardiac surgery from January 2008 to June 2014 were enrolled in this retrospective, single-center study. Demographic, intraoperative, and postoperative outcome data were obtained from the institution's Society of Thoracic Surgery database and Anesthesia Information Management System. Systolic and mean arterial blood pressure variability were assessed using the coefficient of variation (CV). The primary outcomes were 30-day mortality and in-hospital renal failure in relation to the entire duration of a case, while the secondary outcomes assessed phase-specific surgical periods. In an effort to control the family-wise error rate, P values <.0125 were considered significant for the primary outcomes.
RESULTS: Of the 3687 patients analyzed, 2.7% of patients died within 30 days of surgery and 2.8% experienced in-hospital renal failure. After adjusting for significant covariates, we found a statistically significant association between increasing CV for systolic blood pressure (CVSBP) and 30-day mortality and in-hospital renal failure. For every 0.10 increase in CVSBP, there was a 150% increase in the odds of death (odds ratio, 2.50; 95% confidence interval, 1.60-3.92; P < .0001) and there was a 104% increase in odds of experiencing renal failure (odds ratio, 2.04; 95% confidence interval, 1.33-3.14; P = .001). The association with mortality was driven primarily by the prebypass period, because the association between CVSBP and mortality during the prebypass phase was significant (P = .01), and not during the postbypass phase (P = .08). There was no significant association between CV for mean arterial blood pressure and either death or renal failure during any period of surgery, including the bypass phase.
CONCLUSIONS: Increasing systolic blood pressure variability was associated with 30-day mortality and development of renal failure, with surgery phase-specific relationships observed. Further research is required to determine how to prospectively detect blood pressure variability and elucidate opportunities for intervention.

肝脏切除术围术期管理：硬膜外阻滞效果的比较以及监护模式的差异

Perioperative Management in Hepatic Resections: Comparative Effectiveness of Neuraxial Anesthesia and Disparity of Care Patterns.

Zerillo J, Agarwal P, Poeran J, Zubizarreta N, Poultsides G, Schwartz M, Memtsoudis S, Mazumdar M, DeMaria S Jr1.
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背景：肝脏切除术后的并发症发生率受到医院监护团队的管理决策和/或监护差异的影响。 在许多其他类型手术中也是如此，但对肝脏切除术后并发症发病率与监护的差异相关性的研究却很少。
方法：研究数据来源于 2006-2014 年度发生理赔事件的国家 Premier Perspective 数据库。分析样本包括接受部分肝切除术和全肝切除术的成人，麻醉监护包括单纯全身麻醉（GA）和全身麻醉联合椎管内阻滞（n = 9442）。该研究关键的自变量是麻醉类型，分为 GA 与 GA +椎管内阻滞。预后指标为临床并发症和医疗资源利用。研究在控制患者和医院层次的特征后，进行未经调整的双变量和调整的多变量分析以期发现不同类型的麻醉对临床并发症和医疗资源利用的影响。
结果：肝脏切除术中约有 9％的患者接受了 GA +椎管内阻滞。在多变量分析中，没有观察到麻醉类型与临床并发症和/或医疗监护利用之间的关联（例如，入重症监护室）。然而，接受输血治疗的患者更易出现术后并发症和进入重症监护室。此外，某些监护差异，包括在乡村医院接受手术，与较差的术后转归相关。
结论：与单纯 GA 的患者相比，联合应用椎管内阻滞与肝脏切除术后患者的转归或医疗成本的改善无关。未来研究将会关注前瞻性数据，并提供有关此类患者的更多临床信息，同时调查 GA +椎管内阻滞麻醉对各种并发症和医疗资源利用的影响。
（张骁 译　陈杰 校）
BACKGROUND: Complication rates after hepatic resection can be affected by management decisions of the hospital care team and/or disparities in care. This is true in many other surgical populations, but little study has been done regarding patients undergoing hepatectomy.
METHODS: Data from the claims-based national Premier Perspective database were used for 2006 to 2014. The analytical sample consisted of adults undergoing partial hepatectomy and total hepatic lobectomy with anesthesia care consisting of general anesthesia (GA) only or neuraxial and GA (n = 9442). The key independent variable was type of anesthesia that was categorized as GA versus GA + neuraxial. The outcomes examined were clinical complications and health care resource utilization. Unadjusted bivariate and adjusted multivariate analyses were conducted to examine the effects of the different types of anesthesia on clinical complications and health care resource utilization after controlling for patient- and hospital-level characteristics.
RESULTS: Approximately 9% of patients were provided with GA + neuraxial anesthesia during hepatic resection. In multivariate analyses, no association was observed between types of anesthesia and clinical complications and/or health care utilization (eg, admission to intensive care unit). However, patients who received blood transfusions were significantly more likely to have complications and intensive care unit stays. In addition, certain disparities of care, including having surgery in a rural hospital, were associated with poorer outcomes.

CONCLUSIONS: Neuraxial anesthesia utilization was not associated with improvement in clinical outcome or cost among patients undergoing hepatic resections when compared to patients receiving GA alone. Future research may focus on prospective data sources with more clinical information on such patients and examine the effects of GA + neuraxial anesthesia on various complications and health care resource utilization.

患者自控与临床医生控制的异丙酚镇静：一项包含试验序贯分析的系统性回顾和 Meta 分析

Patient-Controlled Versus Clinician-Controlled Sedation With Propofol: Systematic Review and Meta-analysis With Trial Sequential Analyses.

Kreienbühl L, Elia N, Pfeil-Beun E, Walder B, Tramèr MR.

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背景：临床诊治操作期间通常使用异丙酚进行镇静。它可以经由患者（患者自控的镇静[PCS]）或临床医生（临床医生控制的镇静[CCS]）给药。本研究目的是比较这两种给药方式的差异。

方法：收集 2017 年 10 月前 PubMed、Embase、CENTRAL 和试验注册网站上有关 PCS 和 CCS 比较的随机对照试验。主要终点是存在一过性氧饱和度降低、低血压和心动过缓的风险，以及发生与镇静相关需要抢救干预（药物治疗或物理操作）的不良事件的风险。次要终点是给予异丙酚的剂量，操作者和患者的满意度以及过度镇静的风险。自始至终使用随机效应模型和取 α=0.02 以调整进行多次分析，并对主要结果进行试验序贯分析。根据推荐等级、评估、开发和评估系统评估证据质量。

结果：本研究纳入了 13 项描述使用异丙酚进行各种诊疗操作镇静的临床试验（1103 名患者，中位年龄 47 岁；ASA I～III 级）。分析发现 PCS 对发生氧饱和度降低的风险没有影响（11 项试验，31/448 例患者[6.9%]使用 PCS 而 46/481 [9.6%]采用 CCS；风险比率为 0.74 [98%置信区间，0.35-1.56]），但降低了对不良事件进行抢救干预的风险（11 项试验，29/449 例患者[6.5%]使用 PCS，而 74/482 [15.4%]采用 CCS；风险比，0.45 [98%置信区间，0.25-0.81]）。对于这两种结果，尽管所有主要结果的证据质量都非常低，但是试验序贯分析表明进一步试验也不太可能改变这个结果。对于低血压和心动过缓的风险，尚未达到确定结论所需的样本量。对次要结果的分析表明 PCS 降低了过度镇静的风险，并且对异丙酚使用剂量、对操作者或患者满意度没有影响。

结论：与 CCS 相比，使用异丙酚进行 PCS 时并未改变氧饱和度下降的风险，但显著降低了发生镇静相关不良事件的抢救干预风险。未来需要进行高质量的临床试验来评估 PCS 的风险和益处。

（周江平 译 陈杰 校）

BACKGROUND: Sedation with propofol is frequently used to facilitate diagnostic and therapeutic procedures. Propofol can be administrated by the patient (patient-controlled sedation [PCS]) or by a clinician

(clinician-controlled sedation [CCS]). We aimed to compare these 2 techniques.

METHODS: PubMed, Embase, CENTRAL, and trial registries were searched up to October 2017 for randomized controlled trials comparing PCS with CCS with propofol. The primary end points were the risks of presenting at least 1 episode of oxygen desaturation, arterial hypotension, and bradycardia, and the risk of requiring a rescue intervention (pharmacologic therapies or physical maneuvers) for sedation-related adverse events. Secondary end points were the dose of propofol administrated, operator and patient satisfaction, and the risk of oversedation. A random-effects model and an α level of .02 to adjust for multiple analyses were used throughout. Trial sequential analyseswere performed for primary outcomes. Quality of evidence was assessed according to the Grades of Recommendation, Assessment, Development, and Evaluation system.

RESULTS: Thirteen trials (1103 patients; median age, 47 years; American Society of Anesthesiologists physical status I-III) describing various diagnostic and therapeutic procedures with propofol sedation were included. PCS had no impact on the risk of oxygen desaturation (11 trials, 31/448 patients [6.9%] with PCS versus 46/481 [9.6%] with CCS; risk ratio, 0.74 [98% confidence interval, 0.35-1.56]) but decreased the risk of requiring a rescue intervention for adverse events (11 trials, 29/449 patients [6.5%] with PCS versus 74/482 [15.4%] with CCS; risk ratio, 0.45 [98% confidence interval, 0.25-0.81]). For both outcomes, Trial sequential analyses suggested that further trials were unlikely to change the results, although the quality of evidence was graded very low for all primary outcomes. For the risk of arterial hypotension and bradycardia, the required sample size for a definitive conclusion had not been reached. Analysis of secondary outcomes suggested that PCS decreased the risk of oversedation and had no impact on propofol dose administrated, or on operator or patient satisfaction.

CONCLUSIONS: PCS with propofol, compared with CCS with propofol, had no impact on the risk of oxygen desaturation, but significantly decreased the risk of rescue interventions for sedation-related adverse events. Further high-quality trials are required to assess the risks and benefits of PCS.

全髋关节和全膝关节置换术术前大剂量甲基强的松龙和术后早期控制血糖：一项随机，双盲，安慰剂对照试验

Preoperative High-Dose Methylprednisolone and Glycemic Control Early After Total Hip and KneeArthroplasty: A Randomized, Double-Blind, Placebo-Controlled Trial.

Lindberg-Larsen V, Kehlet H, Bagger J, Madsbad S.
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背景：评估术前单次给予 125 mg 甲强龙（MP）对全髋关节和全膝关节置换术后早期血糖稳态的影响。
方法：134 名接受单侧全髋关节置换术和全膝关节置换术的患者随机分配（1：1）至术前静脉注射甲强龙 125 mg（MP 组）或术前静脉注射等渗盐水（C 组）。所有操作都是在脊麻下进行，使用标准化的多模式镇痛方案。主要观察指标是术后 2 小时血浆葡萄糖的变化，次要指标包括血浆 C 肽浓度，稳态模型评估（HOMA），HOMA-IR（胰岛素抵抗）和 HOMA-B（β 细胞功能）。收集 122 名禁食患者在基线、术后 2 小时、术后 6 小时（仅限于非禁食患者）、术后 24 小时和术后 48 小时的完整血液样品进行分析。
结果：MP 组术后 2 小时（修正后的均值 [95% CI], 7.4 mmol • L-1 [7.2 - 7.5] vs 6.0 mmol • L-1 [5.9 - 6.2]; P =0 .023）和术后 6 小时（13.9 mmol • L-1 [13.3 - 14.5] vs 8.4 mmol • L-1 [7.8 - 9.0]; P < .001）血浆葡萄糖水平增高，C-肽在术后 24 小时（1675 pmol • L-1 [1573 - 1778] vs 1248 pmol • L-1 [1145 - 1351]; P < .001）增加。如 HOMA-B 所反映的，在 MP 组中也观察到胰岛素反应受损(P <0.001)。此外，与 C 组相比，MP 组术后 24 小时 HOMA-IR 增加(P <0.001)。参数在术后 48 小时恢复正常。
结论：术前给予甲强龙 125 mg 导致术后短暂的血糖增加、胰岛素抵抗以及应对血糖增加的胰岛素分泌受损。
（宋英才 译　陈杰 校）
BACKGROUND: To evaluate the effect of a single preoperative dose of 125 mg methylprednisolone (MP) on glycemic homeostasis early afterfast-track total hip and knee arthroplasty.
METHODS: One-hundred thirty-four patients undergoing elective unilateral total hip arthroplasty and total knee arthroplasty were randomized(1:1) to preoperative intravenous MP 125 mg (group MP) or isotonic saline intravenous (group C). All procedures were performed under spinal anesthesia, using a standardized multimodal analgesic regime. The primary outcome was the change in plasma glucose 2 hours postoperatively, and secondary outcomes included plasma C-peptide concentrations, homeostatic model assessment (HOMA), HOMA-IR (insulin resistance), and HOMA-B (β-cell function). Fasting blood samples were collected at baseline and 2, 6 (nonfasting), 24, and 48 hours after surgery with complete samples from 122 patients (group MP = 62, group C = 60) for analyses.
RESULTS: MP patients had increased plasma glucose levels at 2 hours (adjusted mean [95% CI], 7.4 mmol • L [7.2-7.5] vs 6.0 mmol • L [5.9-6.2]; P = .023) and 6 hours (13.9 mmol • L [13.3-14.5] vs 8.4 mmol • L [7.8-9.0]; P < .001), and in plasma C-peptide 24 hours postoperatively (1675 pmol • L

[1573-1778] vs 1248 pmol • L [1145-1351]; P < .001). An impaired insulin response was also observed in group MP as reflected by HOMA-B (P < .001). Additionally, HOMA-IR increased 24 hours postoperatively in group MP compared to group C (P < .001). Parameters were normalized 48 hours postoperatively.

CONCLUSIONS: Preoperative administration of MP 125 mg resulted in a transient postoperative increase in plasma glucose and insulin resistance and impaired insulin secretion in response to hyperglycemia.

胸主动脉瘤及夹层动脉瘤出血患者的复苏

Resuscitation of Endotheliopathy and Bleeding in Thoracic Aortic Dissections: The VIPER-OCTA Randomized Clinical Pilot Trial

Stensballe, Jakob, PhD*,†; Ulrich, Annette G., MD‡; Nilsson, Jens C., PhD‡; Henriksen, Hanne H., MD*; Olsen, Peter S., DMSc§; Ostrowski, Sisse R., DMSc*; Johansson, Pär I., DMSc, MPA*,//,

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胸主动脉夹层是一种与休克引起的血管内皮细胞病、凝血病、大出血以及严重的发病率和死亡率相关的急性危重病症。我们的目的是比较经 S/D 处理法处理的冰冻健康人血混合血浆（OctaplasLG）对比标准新鲜冰冻血浆（FFP）对多糖-蛋白质复合物和内皮损伤、出血和输血的要求进行比较。由研究者发起的单中心盲法随机临床试验，对接受胸主动脉夹层手术的成人患者进行临床试验。患者被随机分配接受 OctaplasLG 或标准 FFP 作为与出血有关的凝血替代因子。主要的结果是多糖-蛋白质复合物和内皮损伤，其他的结果包括在 24 小时出血、输血和止血、器官衰竭，在重症监护室和医院的停留时间，安全性以及死亡时间分别为 30 天和 90 天。 其中 57 名患者内有 44 名获得了可评估的主要结果。与标准 FFP 相比，OctaplasLG 组在血管内皮细胞损伤（粘结合蛋白多糖-1）和内皮细胞的紧密连接损伤（人可溶性血管内皮钙粘附素）方面有着明显的降低。OctaplasLG 组与标准 FFP 组相比，呼吸机使用天数（1 天 [四分差，0-1] vs 2 天 [1-3]； P = .013），术中出血（2150 [1600-3087] vs 2750 [2130-6875]； P = .046），24 小时总输血量和血小板输血量（3975 mL [2640-6828 mL] vs 6220 mL [4210-10,245 mL]; P = .040，和 1400 mL [1050-2625 mL] vs 2450 mL [1400-3500 mL]; P = .027），且止血药的有意使用(7/23 [30.4%] vs 13/21 [61.9%]; P = .036) 都明显降低。在随机分组的 57 例患者中，OctaplasLG 组 30 天死亡率为 20.7%（6/29），标准 FFP 组为 30%（7/28）（P = .760）。没有提出任何安全性问题。在这项针对接受胸主动脉夹层急诊手术的患者的随机临床试验中，我们发现相较于标准 FFP，OctaplasLG 可减少多糖-蛋白质复合物和内皮损伤，减少出血、输血、使用止血药的频率，以及手术后呼吸机的使用时间。为了证实临床重要性发现，必须进行一个充分的多中心试验。（符奕青译 潘艳、薛张纲校）

Thoracic aorta dissection is an acute critical condition associated with shock-induced endotheliopathy, coagulopathy, massive bleeding, and significant morbidity and mortality. Our aim was to compare the effect of coagulation support with solvent/detergent-treated pooled plasma (OctaplasLG) versus standard fresh frozen plasma (FFP) on glycocalyx and endothelial injury, bleeding, and transfusion

requirements.Investigator-initiated, single-center, blinded, randomized clinical pilot trial of adult patients undergoing emergency surgery for thoracic aorta dissection. Patients were randomized to receive OctaplasLG or standard FFP as coagulation factor replacement related to bleeding. The primary outcome was glycocalyx and endothelial injury. Other outcomes included bleeding, transfusions and prohemostatics at 24 hours, organ failure, length of stay in the intensive care unit and in the hospital, safety, and mortality at 30 and 90 days.Fifty-seven patients were included to obtain 44 evaluable on the primary outcome. The OctaplasLG group displayed significantly reduced damage to the endothelial glycocalyx (syndecan-1) and reduced endothelial tight junction injury (sVE-cadherin) compared to standard FFP. In the OctaplasLG group compared to the standard FFP, days on ventilator (1 day [interquartile range, 0-1] vs 2 days [1-3]; P = .013), bleeding during surgery (2150 [1600-3087] vs 2750 [2130-6875]; P = .046), 24-hour total transfusion and platelet transfusion volume (3975 mL [2640-6828 mL] vs 6220 mL [4210-10,245 mL]; P = .040, and 1400 mL [1050-2625 mL] vs 2450 mL [1400-3500 mL]; P = .027), and goal-directed use of prohemostatics (7/23 [30.4%] vs 13/21 [61.9%]; P = .036) were all significantly lower. Among the 57 patients randomized, 30-day mortality was 20.7% (6/29) in the OctaplasLG group and 25% (7/28) in the standard FFP group (P = .760). No safety concern was raised.In this randomized, clinical pilot trial of patients undergoing emergency surgery for thoracic aorta dissections, we found that OctaplasLG reduced glycocalyx and endothelial injury, reduced bleeding, transfusions, use of prohemostatics, and time on ventilator after surgery compared to standard FFP. An adequately powered multicenter trial is warranted to confirm the clinical importance of the findings.

门诊手术中 2 型糖尿病患者持续与中断口服降糖药的比较：一项随机对照实验
Preoperative Continuation Versus Interruption of Oral Hypoglycemics in Type 2 Diabetic Patients Undergoing Ambulatory Surgery: A Randomized Controlled Trial.

Gasanova I1, Meng J1, Minhajuddin A2, Melikman E1, Alexander JC1, Joshi GP1
1 From the Departments of Anesthesiology and Pain Management.
2 Clinical Sciences, University of Texas Southwestern Medical Center, Dallas, Texas.
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2 型糖尿病患者在术前经常被叮嘱停止口服降糖药物，我们假设术前持续口服降糖药物的患者将导致围术期血糖水平降低，将门诊手术中口服降糖药物的 2 型糖尿病患者随机分为两组，分别为术前继续口服降糖药组（n=69）和中止口服降糖药组（n=73），分析术前、术中和术后的血糖（对数转换后）水平。持续口服降糖药物组的术中血糖水平（$\bar{x}$=156mg/dL；95%CI，130-146mg/dL）明显低于中断口服降糖药物组（$\bar{x}$=138mg/dL；95%CI，146-167mg/dL；P<0.001）。
（杨雨迎 译 潘艳、薛张纲校）

Patients with type 2 diabetes mellitus receiving oral hypoglycemic drugs (OHDs) are usually instructed to stop them before surgery. We hypothesize that continuing OHD preoperatively should result in lower perioperative blood glucose (BG) levels.

Ambulatory surgery patients with type 2 diabetes mellitus on OHDs were randomized to continue (n = 69) or withhold (n = 73) OHDs preoperatively. Log-transformed BG levels at pre-, intra-, and postoperative periods were analyzed. Perioperative BG levels were significantly lower (mean, 138 mg/dL; 95% confidence interval, 130-146 mg/dL) in the group that continued versus the group that discontinued OHDs (mean, 156 mg/dL; 95% confidence interval, 146-167 mg/dL; P < .001).

常规术前血液检查时机与术后 30 天围术期发病率和死亡率之间的关系

The Association Between Timing of Routine Preoperative Blood Testing and a Composite of 30-Day Postoperative Morbidity and Mortality.

Ruetzler K1,2, Lin P3,4, You J1,5, Schacham Y1, Naylor AJ3, Sessler DI1, Saager L3,6.

1From the Departments of Outcomes Research.

2General Anesthesiology, Anesthesiology Institute, Cleveland Clinic, Cleveland, Ohio.

3Outcomes Research Consortium, Cleveland, Ohio.

4Center for Anesthesia, Beijing Anzhen Hospital Capital Medical University, Beijing, China.

5Department of Quantitative Health Sciences, Cleveland Clinic, Cleveland, Ohio.

6Department of Anesthesiology, University of Michigan, Ann Arbor, Michigan.

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背景：实验室检查是麻醉前评估的一个常见部分，其目的是识别可能不能通过检查以外的手段发现的医学上的异常状态。虽然血液检查最好在手术前的短时间内完成，但出于实际原因，它通常进行的更早。本文旨在验证这样一个假设：术前实验室检查和手术之间相隔的时间越长，术后 30 天并发症发病率和死亡率越高。

方法：我们从美国外科医师学会国家外科质量改进计划中收集了 2005 年至 2012 年间共 2,320,920 名患者的术前数据。我们在分析数据时仅纳入了 ASA 分级 I-II 级的相对健康的患者，这些患者进行的是择期手术，并且血液检查结果都是正常的（n=235,010）。我们感兴趣的主要指标是术后 30 天发病率和死亡率，与术前检查和手术开始的延迟时间之间的函数关系。我们采用了多变量 logistic 回归模型，就 30 天发病率对 5 个实验室检查时间组（术前 1 周内进行血实验室检查；1-2 周；2-4 周；1-2 月；2-3 月）的 10 组数据进行成对比较，并调整了所有基线不平衡的共变量和手术类型。

结果：共有 4082 名患者（1.74%）发生了至少一种并发症，或在术后 30 天内死亡。最近一次进行血液实验室检查的时间是术前 1 周内时，观察到的发病率（未调整）是 1.7%；时间是 1-2 周时，发病率是 1.7%；2-4 周，发病率 1.8%；1-2 月，发病率 1.7%；当最近一次进行血液实验室检查的时间是术前 2-3 个月时，发病率是 2.0%。2 个月内的所有数值无统计学意义：与 1-2 周时间组相比，1 周内接受血液检查的患者的估计比值比为 1.00（99.5%置信区间，0.89-1.12），2-4 周时间组的比值比为 0.88（0.77-1.00），1-2 月内的比值比为 0.95（0.79-1.14）。以 1-2 周时间组为对照，2-4 周和 1-2 月的估计比值比分别为 0.88（0.76-1.03）和 0.95（0.78-1.16）。与那些最近一次完成血液检查的时间是术前 1 周内或 1-2 周内的患者相比，术前 2-3 月接受血液检查与结局比值的增加有关（P=.002）。

结论：在 ASA 分级 I-II 级的患者中，实验室检查延长至术前 2 月的 30 天发病率与死亡率的风险没有显著差异，说明没有必要在术前短时间内重新进行检查。（陈莹 译 潘艳、薛张纲校）

BACKGROUND: Laboratory testing is a common component of preanesthesia evaluation and is designed to identify medical abnormalities that might otherwise remain undetected. While blood testing might optimally be performed shortly before surgery, it is often done earlier for practical reasons. We tested the hypothesis that longer periods between preoperative laboratory testing and surgery are associated with increased odds of having a composite of 30-day morbidity and mortality.
METHODS: We obtained preoperative data from 2,320,920 patients in the American College of Surgeons National Surgical Quality Improvement Program who were treated between 2005 and 2012. Our analysis was restricted to relatively healthy patients with American Society of Anesthesiology physical status I-II who had elective surgery and normal blood test results (n = 235,010). The primary relationship of interest was the odds of 30-day morbidity and mortality as a function of delay between preoperative testing and surgery. A multivariable logistic regression model was used for the 10 pairwise comparisons among the 5 laboratory timing groups (laboratory blood tests within 1 week of surgery; 1-2 weeks; 2-4 weeks; 1-2 months; and 2-3 months) on 30-day morbidity, adjusting for any imbalanced baseline covariables and type of surgery.
RESULTS: A total of 4082 patients (1.74%) had at least one of the component morbidities or died within 30-days after surgery. The observed incidence (unadjusted) was 1.7% when the most recent laboratory blood tests measured within 1 week of surgery, 1.7% when it was within 1-2 weeks, 1.8% when it was within 2-4 weeks, 1.7% when it was between 1 and 2 months, and 2.0% for patients with most recent laboratory blood tests measured 2-3 months before surgery. None of the values within 2 months differed significantly: estimated odds ratios for patients within blood tested within 1 week were 1.00 (99.5% confidence interval, 0.89-1.12) as compared to 1-2 weeks, 0.88 (0.77-1.00) for 2-4 weeks, and 0.95 (0.79-1.14) for 1-2 months, respectively. The estimated odds ratio comparing 1-2 weeks to each of 2-4 weeks and 1-2 months were 0.88 (0.76-1.03) and 0.95 (0.78-1.16), respectively. Blood testing 2-3 months before surgery was associated with increased odds of outcome compared to patients whose most recent test was within 1 week (P = .002) and 1-2 weeks of the date of surgery.
CONCLUSIONS: In American Society of Anesthesiologists physical status I and II patients, risk of 30-day morbidity and mortality was not different with blood testing up to 2 months before surgery, suggesting that it is unnecessary to retest patients shortly before surgery.

针对肥胖患者效应室靶控输注的模型推导及效果评价

Effect-Site Target-Controlled Infusion in the Obese: Model Derivation and Performance Assessment

Cortínez, Luis I., MD[*]; Sepúlveda, Pablo, MD[†]; Rolle, Augusto, MD[*]; Cottin, Pauline, PharmD[‡]; Guerrini, Alexandre, PhD[‡]; Anderson, Brian J., PhD, FANZCA[§]

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背景：本研究的目的是建立一个异丙酚的药代（PK）药效（PD）动力学模型用以推导肥胖患者的效应室靶控输注（TCI），并与其它现有的药代动力学模型进行性能比较。
方法：在研究的第一步，将三室模型通过一阶速率常数(keo)代入 s 曲线抑制最大效应的药效模型，来拟合异丙酚浓度-脑电双频指数(BIS)的数据。我们在 NONMEM (ICON, 都柏林, 爱尔兰)采用非线性混合效应回归分析进行群体模型的分析。汇总并同时分析之前 3 项针对成年肥胖患者的研究的药代数据(n=47)，包括其中一项研究的药效数据(BIS) (n=20)。NONMEM 目标变应量下降(ΔOBJ) 3.84 分,作为一个附加参数,被认为显著差异在 0.05 水平。在研究的第二步，我们使用独立的数据集(n = 14)分析了当前模型和其他可用模型的预测性能(中位数预测误差[MDPE]和中位数绝对预测误差[MDAPE])。
结果：第一部分：选定药代药效动力学模型对数据进行适当拟合。总体重推算最合适的剂量和清除率 (ΔOBJ，−18.173)。凭经验变异的总体重关系并没有改善模型的拟合（ΔOBJ, 0.309）。BIS 响应的延迟时间参数提高了拟合度(ΔOBJ,89.593)。没有观察到年龄或性别的影响。第二部分：当前模型中位数预测误差和中位数绝对预测误差在药代学部分为 11.5%(3.7-25.0)和 26.8%(20.7-32.6)，在药效学部分为 0.4%(10.39-3.85)和 11.9%(20.7-32.6)。由 Eelveld 等人开发的药代学模型得到了最小药代学预测误差（中位数预测误差小于等于 10%以及中位数绝对预测误差小于等于 25%）。
结论：我们推导并验证了一个针对肥胖患者的异丙酚药代药效的效应室靶控输注模型。仅从肥胖患者的数据中导出的这个模型不推荐用于瘦的患者，因为具有剂量不足的风险。
(李艾伦 译 潘艳、薛张纲校)

BACKGROUND: The aim of this study is to derive a propofol pharmacokinetic (PK) pharmacodynamic (PD) model to perform effect-site target-controlled infusion (TCI) in obese patients, and to analyze its performance along with that of other available PK models.
METHODS: In the first step of the study, a 3-compartment PK model linked to a sigmoidal inhibitory E_{max} PD model by a first-order rate constant (keo) was used to fit propofol concentration–bispectral index (BIS) data. Population modeling analysis was performed by nonlinear mixed effects regression in NONMEM (ICON, Dublin, Ireland). PK data from 3 previous studies in obese adult patients (n = 47), including PD (BIS) data from 1 of these studies (n = 20), were pooled and simultaneously analyzed. A decrease in NONMEM objective function (ΔOBJ) of 3.84 points, for an added parameter, was considered significant at the 0.05 level. In the second step of the study, we analyzed the predictive performance (median predictive errors [MDPE] and median absolute predictive errors [MDAPE]) of the current model and of other available models using an independent data set (n = 14).
RESULTS: Step 1: The selected PKPD model produced an adequate fit of the data. Total body weight resulted in the best size scalar for volumes and clearances (ΔOBJ, −18.173). Empirical allometric total body weight relationships did not improve model fit (ΔOBJ, 0.309). A lag time parameter for BIS response

improved the fit (ΔOBJ, 89.593). No effect of age or gender was observed. Step 2: Current model MDPE and MDAPE were 11.5% (3.7–25.0) and 26.8% (20.7–32.6) in the PK part and 0.4% (−10.39 to 3.85) and 11.9% (20.7–32.6) in the PD part. The PK model developed by Eleveld et al resulted in the lowest PK predictive errors (MDPE = <10% and MDAPE = <25%).
CONCLUSIONS: We derived and validated a propofol PKPD model to perform effect-site TCI in obese patients. This model, derived exclusively from obesepatient's data, is not recommended for TCI in lean patients because it carries the risk of underdosing.

有害的还是生理性的：旋转血栓弹力图用于诊断纤溶关闭的创伤队列研究
Harmful or Physiologic: Diagnosing Fibrinolysis Shutdown in a Trauma Cohort With Rotational Thromboelastometry

Gomez-Builes, J. Carolina, MD[*,†]; Acuna, Sergio A., MD, PhD[‡,§,‖]; Nascimento, Bartolomeu, MD, MSc[‖,¶]; Madotto, Fabiana, PhD[#]; Rizoli, Sandro B., MD, PhD, FRCP[*,†,‡,‖]

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尽管异常的纤维蛋白溶解在早期创伤性凝血功能障碍中起重要作用，但对其仍知之甚少。过量的纤维蛋白溶解是最终导致死亡的已知因素。最近的血栓弹力图（TEG）研究表明，纤维蛋白溶解的减少（或关闭）可能同样有害。考虑到广泛使用的不可互换的 2 种不同的粘弹性试验，我们首次提出使用旋转血栓弹力图（ROTEM）来定义和表征纤维蛋白溶解终止。使用旋转血栓弹力图对严重创伤患者进行回顾性队列研究。纤溶关闭由最大溶解的最佳 Youden 指数值定义。纤维蛋白溶解表现为生理学，纤溶亢进和关闭。多元逻辑回归分析了创伤严重程度评分与纤维蛋白溶解表型之间，以及纤溶关闭表型与死亡率，输血和血栓形成事件之间的关联。550 名患者入选实验。最大溶解<3.5％即定义为纤溶关闭。主要表现为生理性（70.7％），其次是纤溶关闭（25.6％）和纤溶亢进（3.6％）。纤溶关闭患者的创伤严重程度评分较高，碱剩余值较低，并且较生理组需要更多的输血量。纤溶关闭与酸中毒有关（碱剩余：优势比[OR]为增加 1 mEq / L，0.93; 95％置信区间[CI]为 0.88-0.98; P =0.0094），合并凝血功能紊乱，血凝块硬度更高（最大凝块形成：凝块每增加 2 mm 的 OR 值为 1.8; 95％CI 值为 1.5-2.27; P <0.0001），纤维蛋白原降低（每降低 0.5 g / dL OR 值为 1.47; 95％CI 值为 1.18-1.84 ; P =0.0006），并且凝块形成动力学差（凝块形成时间增加 5 秒 OR 值为 1.25; 95％CI 值为 1.15-1.36; P <0.0001）。纤维蛋白溶解关闭不是与死亡率相关的独立因素（OR 值为 0.61; 95％CI 为 0.28-1.33; P =0.21），大量输血（OR 值为 2.14; 95％CI 为 0.79-5.74; P =0.1308）或血栓形成事件（OR 值为 1.08; 95％CI 值为 0.37-3.15; P =0.874）。纤溶关闭与 24 小时输血量增加有关（OR 值为 2.24; 95％CI 值为 1.24-4.04; P =0.007）。尽管伤害负担较高，有休克证据，输血需求较大，但早期纤维蛋白溶解关闭与死亡率无关，表明它可能代表对危及生命的创伤的适应性生理反应。

（刘琨译 李士通校）

Despite its central role in early trauma coagulopathy, abnormal fibrinolysis continues to be poorly understood. Excessive fibrinolysis is a known contributor to mortality. Recent studies with thromboelastography (TEG) suggest decreased fibrinolysis (or shutdown) may be just as harmful. Considering the broad use of 2 different viscoelastic assays, which are not interchangeable, we proposed for the first time to define and characterize fibrinolysis shutdown using rotational thromboelastometry (ROTEM). Retrospective cohort study of severely injured patients with admission ROTEM. Shutdown was defined by the best Youden index value of the maximum lysis. Fibrinolysis phenotypes were physiologic, hyperfibrinolysis, and shutdown. Multivariable logistic regression evaluated association between Injury Severity Score and the fibrinolysis phenotypes, and the association among shutdown phenotype with mortality, blood transfusion, and thrombotic events. Five hundred fifty patients were included. Maximum lysis <3.5% was selected to define shutdown. Predominant phenotype was physiologic (70.7%), followed by shutdown (25.6%) and hyperfibrinolysis (3.6%). Shutdown patients had higher Injury Severity Score, lower base excess, and required more transfusions than physiologic group. Shutdown was associated with acidosis (base excess: odds ratio [OR] for a 1 mEq/L increase, 0.93; 95% confidence interval [CI], 0.88-0.98; P = .0094) and the combination of clotting derangements, higher clot firmness (maximum clot formation: OR for a 2 mm increase, 1.8; 95% CI, 1.5-2.27; P < .0001), lower fibrinogen (OR for a 0.5 g/dL decrease, 1.47; 95% CI, 1.18-1.84; P = .0006), and poor clot formation dynamics (clot formation time: OR for a 5 seconds increase, 1.25; 95% CI, 1.15-1.36; P < .0001). Fibrinolysis shutdown was not independently associated with mortality (OR, 0.61; 95% CI, 0.28-1.33; P = .21), massive transfusion (OR, 2.14; 95% CI, 0.79-5.74; P = .1308), or thrombotic events (OR, 1.08; 95% CI, 0.37-3.15; P = .874). Shutdown was associated with increased 24-hour transfusion (OR, 2.24; 95% CI, 1.24-4.04; P = .007). Despite higher injury burden, evidence of shock, and greater need for blood transfusions, early fibrinolysis shutdown was not associated with mortality, suggesting that it could represent an adaptive physiologic response to life-threatening trauma.

肥胖患者靶控输注的效应室：模型推导及效果评价

Effect-Site Target-Controlled Infusion in the Obese: Model Derivation and Performance Assessment

Cortínez, Luis I., MD[*]; Sepúlveda, Pablo, MD[†]; Rolle, Augusto, MD[*]; Cottin, Pauline, PharmD[‡]; Guerrini, Alexandre, PhD[‡]; Anderson, Brian J., PhD, FANZCA[§]

Anesthesia & Analgesia: 2018 127 865–872

本研究的目的是设计异丙酚药代（PK）药效（PD）动力学模型，对肥胖患者实施效应室靶控输注（TCI），并分析其与其他可用的 PK 模型性能的差别。研究的第一步，用一阶速率常数（keo）与反曲抑制性 Emax PD 模型相连的三室 PK 模型拟合异丙酚浓度-双谱指数（BIS）数据。用 NOMEM(ICON, Dublin, Ireland)中非线性混合效应回归进行群体建模分析。收集来自之前针对肥胖成年患者的 3

个研究（n=47）的 PK 数据，包括其中一项研究（n=20）的 PD（BIS）数据，汇总并同时进行分析。NONMEM 目标函数（ΔOBJ）下降 3.84 点，作为附加参数，在 0.05 水平被认为有显著性意义。研究的第二步，我们使用独立数据集（n=14）分析了当前模型和其他可用模型的预测性能（中位数预测误差[MDPE]和中值绝对预测误差[MDAPE]）。步骤 1：所选择的 PK、PD 模型产生了足够的数据拟合。总体重得出体积和清除的最佳规格梯度(ΔOBJ, -18.173)。经验性异速生长的总体重关系并没有改善模型的契合度(ΔOBJ, 0.309)。BIS 响应的滞后时间参数改善了这个契合度(ΔOBJ, 89.593)。没有观察到年龄或性别的影响。步骤 2：当前模型的 MDPE 和 MDAPE 在 PK 部分分别为 11.5%（3.7-25.0）和 26.8%（20.7-32.6），PD 部分中分别为 0.4%（-10.39 到 3.85）和 11.9%（20.7-32.6）。Eleveld 等人建立的 PK 模型产生了最小的 PK 预测误差(MDPE = <10% 和 MDAPE = <25%)。我们推导并验证了一种异丙酚 PKPKD 模型在肥胖患者中的效应室靶控输注。仅从肥胖患者的数据中得出结论：因为存在剂量不足的风险，这个模型不推荐用于消瘦患者的 TCI。

（魏兰译 李士通校）

The aim of this study is to derive a propofol pharmacokinetic (PK) pharmacodynamic (PD) model to perform effect-site target-controlled infusion (TCI) in obese patients, and to analyze its performance along with that of other available PK models. In the first step of the study, a 3-compartment PK model linked to a sigmoidal inhibitory Emax PD model by a first-order rate constant (keo) was used to fit propofol concentration-bispectral index (BIS) data. Population modeling analysis was performed by nonlinear mixed effects regression in NONMEM (ICON, Dublin, Ireland). PK data from 3 previous studies in obese adult patients (n = 47), including PD (BIS) data from 1 of these studies (n = 20), were pooled and simultaneously analyzed. A decrease in NONMEM objective function (ΔOBJ) of 3.84 points, for an added parameter, was considered significant at the 0.05 level. In the second step of the study, we analyzed the predictive performance (median predictive errors [MDPE] and median absolute predictive errors [MDAPE]) of the current model and of other available models using an independent data set (n = 14). Step 1: The selected PKPD model produced an adequate fit of the data. Total body weight resulted in the best size scalar for volumes and clearances (ΔOBJ, -18.173). Empirical allometric total body weight relationships did not improve model fit (ΔOBJ, 0.309). A lag time parameter for BIS response improved the fit (ΔOBJ, 89.593). No effect of age or gender was observed. Step 2: Current model MDPE and MDAPE were 11.5% (3.7-25.0) and 26.8% (20.7-32.6) in the PK part and 0.4% (-10.39 to 3.85) and 11.9% (20.7-32.6) in the PD part. The PK model developed by Eleveld et al resulted in the lowest PK predictive errors (MDPE = <10% and MDAPE = <25%).We derived and validated a propofol PKPD model to perform effect-site TCI in obese patients. This model, derived exclusively from obese patient's data, is not recommended for TCI in lean patients because it carries the risk of underdosing.

丙泊酚用于患者自控镇静与医师使用镇静效果对比：通过序贯试验分析进行系统回顾和 Meta 分析

Patient-Controlled Versus Clinician-Controlled Sedation With Propofol:

Systematic Review and Meta-analysis With Trial Sequential Analyses

Kreienbühl, Lukas, MD[*]; Elia, Nadia, MD, MSc[*,†‡]; Pfeil-Beun, Elvire, MD[*]; Walder, Bernhard, MD[*,†]; Tramèr, Martin R., MD, DPhil[*,†]

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使用丙泊酚镇静经常被用于诊断和治疗过程的顺利进行。丙泊酚可以通过患者自控（patient-controlled sedation，PCS）或者临床医生使用（clinician-controlled sedation，CCS）。我们的目的是比较此两种技术的不同。搜索了截至于 2017 年 10 月在 PubMed、Embase、CENTRAL 以及注册实验的，对比使用丙泊酚的 PCS 和 CCS 的随机对照研究。主要观察指标是至少出现 1 次氧饱和度降低、动脉血压降低、心动过缓以及需要针对镇静相关不良事件进行急救干预（包括药物治疗或物理治疗）的风险。次要观察指标为丙泊酚的注射剂量，操作者和患者的满意度以及存在过度镇静的风险。始终使用随机效应模型和调整显著性水平 α 到 0.02 用于多重分析。对主要结果进行试验序贯分析。根据证据治疗评价系统对证据质量进行评估。13 个试验（包含 1103 名患者；年龄中位数 47 岁；ASA I-III 级）在不同的诊断和治疗过程中使用丙泊酚镇静被纳入本研究中。PCS 对氧饱和度降低的风险没有影响（包含 11 个试验，PCS 组 31/448 名患者[6.9%]vs. CCS 组 46/481 名患者 [9.6%]；风险比 0.74 [98%可信区间为 0.35-1.56]），但是 PCS 降低了需要针对镇静相关的不良事件进行救援干预的风险（包含 11 个试验，PCS 组 29/449 名患者[6.5%]vs. CCS 组 74/482 名患者 [15.4%]；风险比 0.45 [98%可信区间为 0.25-0.81]）。对所有的结果进行试验序贯分析发现进一步试验不太可能改变结果，尽管主要观察指标的证据质量都很低。由于样本数量不够无法得出确定性的结论，因此没有针对动脉血压降低和心动过缓进行评价。对次要观察指标进行分析发现 PCS 降低了过度镇静的风险，并且其对丙泊酚输注剂量和操作者或患者的满意度没有影响。与使用丙泊酚进行 CCS 相比，使用丙泊酚进行 PCS 对氧饱和度降低的风险没有影响，但是其能显著性地降低需要针对镇静相关的不良事件进行救援干预的风险。未来需要进一步高质量的试验来评估 PCS 的风险和收益。

（黄勇译 李士通校）

Sedation with propofol is frequently used to facilitate diagnostic and therapeutic procedures. Propofol can be administrated by the patient (patient-controlled sedation [PCS]) or by a clinician (clinician-controlled sedation [CCS]). We aimed to compare these 2 techniques. PubMed, Embase, CENTRAL, and trial registries were searched up to October 2017 for randomized controlled trials comparing PCS with CCS with propofol. The primary end points were the risks of presenting at least 1 episode of oxygen desaturation, arterial hypotension, and bradycardia, and the risk of requiring a rescue intervention (pharmacologic therapies or physical maneuvers) for sedation-related adverse events. Secondary end points were the dose of propofol administrated, operator and patient satisfaction, and the risk of oversedation. A random-effects model and an α level of .02 to adjust for multiple analyses were used throughout. Trial sequential analyses were performed for primary outcomes. Quality of evidence was assessed according to the Grades of Recommendation, Assessment, Development, and Evaluation system. Thirteen trials (1103 patients; median age, 47 years; American Society of Anesthesiologists physical status I-III) describing various diagnostic and therapeutic procedures with propofol sedation were included. PCS had

no impact on the risk of oxygen desaturation (11 trials, 31/448 patients [6.9%] with PCS versus 46/481 [9.6%] with CCS; risk ratio, 0.74 [98% confidence interval, 0.35-1.56]) but decreased the risk of requiring a rescue intervention for adverse events (11 trials, 29/449 patients [6.5%] with PCS versus 74/482 [15.4%] with CCS; risk ratio, 0.45 [98% confidence interval, 0.25-0.81]). For both outcomes, Trial sequential analyses suggested that further trials were unlikely to change the results, although the quality of evidence was graded very low for all primary outcomes. For the risk of arterial hypotension and bradycardia, the required sample size for a definitive conclusion had not been reached. Analysis of secondary outcomes suggested that PCS decreased the risk of oversedation and had no impact on propofol dose administrated, or on operator or patient satisfaction.PCS with propofol, compared with CCS with propofol, had no impact on the risk of oxygen desaturation, but significantly decreased the risk of rescue interventions for sedation-related adverse events. Further high-quality trials are required to assess the risks and benefits of PCS.

在气道管理训练中，一种新型尸体固定模型（固定生命）和福尔马林固定尸体模型以及人体模型之间适用性和实用性的比较

Comparison of a Novel Cadaver Model (Fix for Life) With the Formalin-Fixed Cadaver and Manikin Model for Suitability and Realism in Airway Management Training

van Emden, Michael W., MD[*]; Geurts, Jeroen J., PhD[*]; Schober, Patrick, MD, PhD[†]; Schwarte, Lothar A., MD, PhD[†]

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背景：虽然人体模型广泛运用于气道管理的培训，但是在模拟人工气道的真实感以及病人个体差异方面仍显不足。我们研究发现：与人体模型（第三代模拟人）和福尔马林固定尸体相比，利用新型防腐方法（F4L）处理的尸体，用于三种基础气道管理（面罩通气、气管插管、喉罩置入）教学方面更具适用性及实用性。
方法：30 名麻醉医生和有经验的住院医生（作为操作者）分别在 10 具 F4L 模型、10 具福尔马林尸体模型和 1 具模拟人模型中实施三项建立气道管理的方法。每一操作者被随机分配给任一模型类型。得出如下主要结果：根据教学模型的类型排名（总排名），根据每种技术利用的模型类型和操作者对模型在技能操作的适用性和实用性方面的口头评价的平均分进行排名。次要结果：根据每种技术在每一模型上成功操作的百分比（完成各自气道操作的成功率）排名。对于各种气道技术而言，利用 Friedman 方差分析法比较三种模型操作者的平均等级以及其口头评价平均分。
结果： 30 名中有 27 名操作者（90%）完成了在所有可用模型上建立所有气道技术，而其余 3 名操作者完成大部分的操作但因某种原因未能完成所有气道操作。对于不同模型每种技术操作的尝试次数总计不同，人体模型 30 次，F4L 模型 292 次，福尔马林固定尸体模型 282 次。作为操作模型，每种类型的模型操作者的等级中位数分别是：:F4L 为 1，人体模型为 2，福尔马林固定尸体为 3 (P < .001) 。所以，F4L 被认为是面罩通气最佳模型(P = .029)并且在喉罩置入的实用性上具有较高的口头评价分数(P = .043)。 F4L 和人体模型在适用性和实用性方面的分数没有显著差异。福尔马林固定尸体模型在所有操作过程中被评为最低等级和最低

分数 。操作成功率最高的是人体模型。

总结：F4L 模型在面罩通气方面排名最高，并被认为是训练喉罩置入最具真实性的模型。而福尔马林固定尸体模型不适合进行气道管理训练。

（肖蕴誉译 李士通校）

BACKGROUND: Manikins are widely used in airway management training; however, simulation of realism and interpatient variability remains a challenge. We investigated whether cadavers embalmed with the novel Fix for Life (F4L) embalmment method are a suitable and realistic model for teaching 3 basic airway skills: facemask ventilation, tracheal intubation, and laryngeal mask insertion compared to a manikin (SimMan 3G) and formalin-fixed cadavers.

METHODS: Thirty anesthesiologists and experienced residents ("operators") were instructed to perform the 3 airway techniques in 10 F4L, 10 formalin-fixed cadavers, and 1 manikin. The order of the model type was randomized per operator. Primary outcomes were the operators' ranking of each model type as a teaching model (total rank), ranking of the model types per technique, and an operator's average verbal rating score for suitability and realism of learning the technique on the model. Secondary outcomes were the percentages of successfully performed procedures per technique and per model (success rates in completing the respective airway maneuvers). For each of the airway techniques, the Friedman analysis of variance was used to compare the 3 models on mean operator ranking and mean verbal rating scores.

RESULTS: Twenty-seven of 30 operators (90%) performed all airway techniques on all of the available models, whereas 3 operators performed the majority but not all of the airway maneuvers on all models for logistical reasons. The total number of attempts for each technique was 30 on the manikin, 292 in the F4L, and 282 on the formalin-fixed cadavers. The operators' median total ranking of each model type as a teaching model was 1 for F4L, 2 for the manikin and, 3 for the formalin-fixed cadavers ($P < .001$). F4L was considered the best model for mask ventilation ($P = .029$) and had a higher mean verbal rating score for realism in laryngeal mask airway insertion ($P = .043$). The F4L and manikin did not differ significantly in other scores for suitability and realism. The formalin-fixed cadaver was ranked last and received lowest scores in all procedures (all $P < .001$). Success rates of the procedures were highest in the manikin.

CONCLUSIONS: F4L cadavers were ranked highest for mask ventilation and were considered the most realistic model for training laryngeal mask insertion.
Formalin-fixed cadavers are inappropriate for airway management training.

喉罩与其他气道装置用于上呼吸道感染患儿麻醉的比较：呼吸系统并发症的系统回顾和Meta分析

Laryngeal Mask Airway Versus Other Airway Devices for Anesthesia in Children With an Upper Respiratory Tract Infection: A Systematic Review and Meta-analysis of Respiratory Complications

de Carvalho, Ana Lygia R., MD, PhD[*]; Vital, Roberto B., MD, PhD[*]; de Lira, Carlos C. S., MD[†]; Magro, Igor B., MD[†]; Sato, Patrícia T. S., MD[*]; Lima, Laís H. N., MD,

PhD*; Braz, Leandro G., MD, PhD*; Módolo, Norma S. P., MD, PhD*
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上呼吸道感染（URTI）与围手术期呼吸道不良事件（PRAE）发生率增加有关，这是小儿麻醉过程中的主要危险因素。本研究的目的是比较不同气道装置用于上呼吸道感染患儿麻醉期间发生围手术期呼吸道不良事件的风险。根据 Cochrane 手册和 Meta 分析指南的优先报告项目进行了系统性评价并制定出 Meta 分析指南。只有随机临床试验评估了包括使用任何气道装置的上呼吸道感染患儿的麻醉情况。从确定的 1030 项研究中，最终有 5 项随机临床试验纳入分析。喉罩气道（LMA®）和气管导管（ETT）之间在保持呼吸屏气或窒息（风险比[RR]为 0.82; 95％置信区间[CI]为 0.41-1.65），喉痉挛（RR 为 0.74; 95％CI 为 0.18-2.95）和动脉氧饱和度降低（RR，0.44; 95％CI，0.16-1.17）没有统计学差异。第一个结果的证据质量较低，另外两个结果的证据质量更低。与气管导管相比，使用 LMA 可以显着降低咳嗽（RR 为 0.75; 95％CI 为 0.58-0.96，证据质量低）的发生。由于麻醉期间围手术期呼吸系统并发症的数据过少，导致上呼吸道感染患儿的理想气道管理方式仍不明确。该系统回顾表明，上呼吸道感染患儿麻醉期间使用 LMA 并未减少最令人担心的围手术期呼吸道不良事件的发生。然而，在减少咳嗽方面 LMA 优于 ETT。需要进一步研究以更明确地定义风险，因为咳嗽和喉痉挛存在相似的触发因素，支气管痉挛和喉痉挛均可引起咳嗽。
（唐佳雯译 李士通校）

There is an association between upper respiratory tract infection (URTI) and an increased incidence of perioperative respiratory adverse events (PRAEs), which is a major risk for morbidity during pediatric anesthesia. The aim of the present study was to compare the risk of PRAEs among different airway devices during anesthesia in children with a URTI. A systematic review according to the Cochrane Handbook and Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines was conducted. Only randomized clinical trials evaluating anesthesia in children with a URTI and who were submitted to any of the airway devices were included. From 1030 studies identified, 5 randomized clinical trials were included in the final analysis. There were no statistical differences between laryngeal mask airway (LMA®) and endotracheal tube (ETT) regarding breath holding or apnea (risk ratio [RR], 0.82; 95% confidence interval [CI], 0.41-1.65), laryngospasm (RR, 0.74; 95% CI, 0.18-2.95), and arterial oxygen desaturation (RR, 0.44; 95% CI, 0.16-1.17). The quality of evidence was low for the first outcome and very low for the 2 other outcomes, respectively. The LMA use produced a significant reduction of cough (RR, 0.75; 95% CI, 0.58-0.96, low quality of evidence) compared with ETT. The ideal airway management in children with a URTI remains obscure given that there are few data of perioperative respiratory complications during anesthesia. This systematic review demonstrates that LMA use during anesthesia in children with URTI did not result in decrease of the most feared PRAEs. However, LMA was better than ETT in reducing cough. Further research is needed to define the risks more clearly because cough and laryngospasm have similar triggers, and both bronchospasm and laryngospasm trigger cough.