Table of Contents
November, 2014

Cardiovascular Anesthesiology

Research Report

Review Article

创伤性出血的处理：目标导向初级治疗概念

(潘志敏 译 陈杰 校)

Trauma Bleeding Management: The Concept of Goal-Directed Primary Care

- Schöchl, Herbert;
- Schlimp, Christoph J.

Anesthesia & Analgesia. 119(5):1064-1073, November 2014.

Anesthetic Pharmacology

Research Report

静脉注射脂肪乳剂在猪身上的超敏反应：脂肪乳剂复苏的相关研究

(潘艳译 薛张纲校)

Hypersensitivity Reactions to Intravenous Lipid Emulsion in Swine: Relevance for Lipid Resuscitation Studies

- Bedocs, Peter;
- Capacchione, John;
- Potts, Lauren;
- Chugani, Ryan;
- Weiszhar, Zsoka;
- Szebeni, Janos;
- Buckenmaier, Chester C

Anesthesia & Analgesia. 119(5):1094-1101, November 2014.

Technology, Computing, And Simulation

Research Report

严重肥胖手术病人胃部超声检查：一项可行性研究

(徐欢 译 陈杰 校)

Gastric Sonography in the Severely Obese Surgical Patient: A Feasibility Study

- Van de Putte, Peter;
- Perlas, Anahi

Anesthesia & Analgesia. 119(5):1105-1110, November 2014.

Patient Safety

Research Report

不同深度神经肌肉阻滞对低腹压腹腔镜胆囊切除术的手术操作空间情况的影响：一项随机的临床试验全关节置换术后防跌倒策略以及患者特征对术后跌倒率的影响

(许红娇 译 李士通 审校)

Fall-Prevention Strategies and Patient Characteristics That Impact Fall Rates After Total Knee Arthroplasty

- Johnson, Rebecca L.;
- Duncan, Christopher M.;
- Ahn, Kyle S.;
- Schroeder, Darrell R.;
- Horlocker, Terese T.;
- Kopp, Sandra L

Anesthesia & Analgesia. 119(5):1113-1118, November 2014.

Critical Care, Trauma, and Resuscitation

Research Report

腹部手术中急性肾损伤的危险因素

(黄文惠译 薛张纲校)

Variations in the Risk of Acute Kidney Injury Across Intraabdominal Surgery Procedures

- Kim, Minjae;
- Brady, Joanne E.;
- Li, Guohua

Anesthesia & Analgesia. 119(5):1121-1132, November 2014

Obstetric Anesthesiology

Research Report

孕妇为何死亡？伯明翰阿拉巴马大学从 **1990** 年至 **2010** 年内孕产妇死亡病例总结

(俞芳 译 陈杰 校)

Why Do Pregnant Women Die? A Review of Maternal Deaths from 1990 to 2010 at the University of Alabama at Birmingham

- Frölich, Michael A.;
- Banks, Catiffaney;
- Brooks, Amber;
- Sellers, Alethia;
- Swain, Ryan;
- Cooper, Lauren

Anesthesia & Analgesia. 119(5):1135-1139, November 2014.

Medical Intelligence Article

产后出血的临床治疗进展

(许红娇 译 李士通 审校)

Medical Advances in the Treatment of Postpartum Hemorrhage

- Ducloy-Bouthors, Anne-Sophie;
- Susen, Sophie;
- Wong, Cynthia A.;
- Butwick, Alex;
- Vallet, Benoit;
- Lockhart, Evelyn

Anesthesia & Analgesia. 119(5):1140-1147, November 2014.

Pediatric Anesthesiology

Research Report

脊柱侧弯儿童术中的丙泊酚血药浓度测量值与预测值的比较

(王嘉兴译 薛张纲校)

Measured Versus Predicted Blood Propofol Concentrations in Children During Scoliosis Surgery

- Panchatsharam, Selvakumar;
- Callaghan, Michael;
- Day, Rachel;
- Sury, Michael R. J.

Anesthesia & Analgesia. 119(5):1150-1157, November 2014.

Pediatric Neuroscience

Research Report

亚低温和七氟醚联合应用能为改良的新生小鼠脑缺血缺氧模型提供长期保护
(柳韶华 译 陈杰 校)

A Combination of Mild Hypothermia and Sevoflurane Affords Long-Term Protection in a Modified Neonatal Mouse Model of Cerebral Hypoxia-Ischemia

- Lin, Erica P.;
- Miles, Lili;
- Hughes, Elizabeth A.;
- McCann, John C.;
- Vorhees, Charles V.;
- McAuliffe, John J.;
- Loepke, Andreas W.

Anesthesia & Analgesia. 119(5):1158-1173, November 2014.

Neuroscience in Anesthesiology and Perioperative Medicine

Research Report

麻醉方案是否会影响全身麻醉过程中产生的无意识记忆？
(李蔚文 译 李士通 审校)

Does Anesthetic Regimen Influence Implicit Memory During General Anesthesia?

- Lequeux, Pierre-Yves;
- Hecquet, Fidelie;
- Bredas, Philippe

Anesthesia & Analgesia. 119(5):1174-1179, November 2014.

Pain Medicine

Research Report

儿茶酚氧位甲基转移酶基因多态性预测阿片类药物术后镇痛的用量
(吴赤译 薛张纲校)

Catechol-O-Methyltransferase Polymorphisms Predict Opioid Consumption in Postoperative Pain

- Candiotti, Keith A.;
- Yang, Zhe;
- Buric, David;
- Arheart, Kris;
- Zhang, Yanping;
- Rodriguez, Yiliam;
- Gitlin, Melvin C.;
- Carvalho, Enisa;
- Jaraba, Isabel;
- Wang, Liyong

Anesthesia & Analgesia. 119(5):1194-1200, November 2014.

关于镰状细胞病中的儿茶酚-o-甲基转移酶(COMT)、Val158Met(rs4680)、多巴胺 D3 受体(DRD3)以及 Ser9Gly(rs6280)多态性和急性疼痛的探讨

(池晓颖 译 陈杰 校)

Dopamine D3 Receptor Ser9Gly and Catechol-O-Methyltransferase Val158Met Polymorphisms and Acute Pain in Sickle Cell Disease

- Jhun, Ellie;
- He, Ying;
- Yao, Yingwei;
- Molokie, Robert E.;
- Wilkie, Diana J.;
- Wang, Zaijie Jim

Anesthesia & Analgesia. 119(5):1201-1207, November 2014.

Pain and Analgesic Mechanisms

Research Report

慢性背根神经节压缩大鼠脊髓水平 NR2B 亚基棕榈酰化的作用。

(李蔚文 译 李士通 审校)

The Effect of NR2B Subunit Palmitoylation at the Spinal Level After Chronic Dorsal Root Ganglia Compression in Rats

- Xia, Tianjiao;
- Cui, Yin; Shi, Han;

- Ma, Zhengliang;
- Gu, Xiaoping

Anesthesia & Analgesia. 119(5):1208-1214, November 2014.

Regional Anesthesia

Research Report

每天三次使用普通肝素预防血栓形成的病人行硬膜外麻醉：活化部分凝血酶时间的测定

(吕越昌译 薛张纲校)

Epidurals in Patients Receiving Thromboprophylaxis with Unfractionated Heparin Three Times a Day: The Value of Activated Partial Thromboplastin Time Testing

- Pace, Meredith;
- Koury, Katharine;
- Gulur, Padma

Anesthesia & Analgesia. 119(5):1215-1218, November 2014.

创伤性出血的处理：目标导向初级治疗概念

Trauma Bleeding Management: The Concept of Goal-Directed Primary Care

Schöchl, Herbert MD*†; Schlimp, Christoph J. MD†

Anesthesia & Analgesia 2014 119 1064–1073

早期并积极大量使用新鲜冰冻血浆，浓缩血小板和红细胞 s (RBCs)及比率主导的大量输血方案，已频繁用于治疗创伤后凝血障碍和失血性休克。然而最佳红细胞比：新鲜冰冻血浆和红细胞与浓缩血小板的比值仍然处于探究中。在一些欧洲创伤中心，诸如浓缩纤维蛋白原、凝血酶原复合物和抗纤溶药物等止血药成为目标导向大量输血方案中不可或缺的成分。比率导向的凝血治疗和基于凝血因子浓度的床旁指导凝血管理均针对同一目标——即快速防治休克和凝血功能障碍以避免因创伤性出血导致的死亡。此文比较了以比率和目标为导向的创伤后凝血障碍方案的有效性和安全性相关证据，以期对两种治疗策略相关的潜在优缺点引起重视。

（潘志敏 译 陈杰 校）

The early and aggressive high-volume administration of fresh frozen plasma, platelet concentrates, and red blood cells (RBCs), using ratio-driven massive transfusion protocols, has been adopted by many for the treatment of trauma-induced coagulopathy and hemorrhagic shock. However, the optimal ratio of RBC: fresh frozen plasma and RBC:platelet concentrate is still under investigation. In some European trauma centers, hemostatic agents such as fibrinogen concentrate, prothrombin complex concentrates, and antifibrinolytics are integral parts of goal-directed massive transfusion protocols. Both a ratio-driven coagulation therapy and a point-of-care–guided coagulation management based on coagulation factor concentrates aim for the same target—the rapid prevention and treatment of shock and coagulopathy to prevent death from traumatic hemorrhage. In this review, we compare the evidence relating to the effectiveness and safety of the ratio-driven and goal-directed approaches to trauma-induced coagulopathy to draw attention to the potential benefits and drawbacks associated with these management strategies.

严重肥胖手术病人胃部超声检查：一项可行性研究

Gastric Sonography in the Severely Obese Surgical Patient: A Feasibility Study

Van de Putte, Peter MD*; Perlas, Anahi MD, FRCPC†‡

Anesthesia & Analgesia 2014 119 1105–1110

背景：胃部超声能定性和定量评估非肥胖者的胃内容物及容量。此项研究试图确定在严重肥胖患者（体重指数[BMI]≥35 kg/m2）实施胃部超声的可行性。可行性定义为在至少80%的受试者右侧卧位显像时，能辨别胃窦整个横切面的能力。

方法：这是一项关于 BMI 大于 35 kg/m2 的禁食手术患者的前瞻性队列研究。主要预后指标为胃部超声检查的可行性。次要结果包括参照已有的 3 分等级系统对胃窦分级。此外将这个队列中胃窦横截面积（CSA）和胃容量与已发表的非肥胖个体研究的历史数据作比较。同时报道图像捕捉时间，窦壁厚度和胃窦深度。

结果：对 60 名患者（BMI 范围为 35.1–68.7）进行研究。95%的受试者在右侧卧位（95% CI，0.86–0.99）和 90%的受试者在仰卧位情况下能识别胃窦。在 88.3%（95% CI，0.77–0.95）情况下，可以确定胃窦等级（0–2）。正如预期的那样，胃窦等级与 CSA 和胃容量相关（P＜0.0001）。与历史数据相比，本研究结果表明，严重肥胖患者 CSA 和胃容量的基线比非肥胖患者更大（P＜0.001），但每单位重量的胃容量相似（P = 0.141）。

结论：胃部超声评估在禁食的严重肥胖者中是可行的。数据还表明肥胖者的胃窦的大小和胃容量较非肥胖者相比更大。

（徐欢 译 陈杰 校）

BACKGROUND: Gastric ultrasonography allows qualitative and quantitative assessment of gastric contents and volume in nonobese subjects. In this study, we sought to determine the feasibility of gastric ultrasound in severely obese patients (body mass index [BMI] ≥35 kg/m2). We defined feasibility as the ability to identify a full cross section of the gastric antrum in at least 80% of subjects when imaged in the right lateral decubitus position.

METHODS: This was a prospective cohort study on fasted surgical patients with BMI >35 kg/m2. The primary outcome measure was the feasibility of gastric sonography. Secondary outcomes included the distribution of antral grade following an existing 3-point grading system. In addition, the antral cross-sectional area (CSA) and gastric volumes in this cohort were compared with historical data from a published study in nonobese individuals. Time to image capture, antral wall thickness, and depth of the antrum are also reported.

RESULTS: Sixty patients (BMI range 35.1–68.7) were studied. The antrum was identified in 95% of subjects in the right lateral decubitus (95% CI, 0.86–0.99) and 90% of subjects in the supine position. Definition of antral grade (0–2) was possible in 88.3% (95% CI, 0.77–0.95) of cases. As expected, antral grade correlated with antral CSA and gastric volumes (P < 0.0001). When compared with historical data, our results suggest that severely obese patients have a larger baseline CSA and gastric volume than nonobese patients (P < 0.001) but a similar gastric volume per unit of weight (P = 0.141).

CONCLUSIONS: Gastric ultrasound assessment is feasible in fasted severely obese subjects. Our data also suggest that obese individuals present larger antral size and gastric volume than their nonobese counterparts.

孕妇为何死亡？伯明翰阿拉巴马大学从 1990 年至 2010 年内孕产妇死亡病例总结

Why Do Pregnant Women Die? A Review of Maternal Deaths from 1990 to 2010 at the University of Alabama at Birmingham

Frölich, Michael A. MD, MS*; Banks, Catiffaney BS*; Brooks, Amber MD†; Sellers, Alethia MD*; Swain, Ryan PhD, MD‡; Cooper, Lauren*

Anesthesia & Analgesia 2014 119 1135–1139

背景：在美国，被报道的妊娠相关死亡数量自近年来持续上升，从 1987 年的 7.8/100，000 上升至 2009 年的 17.8/100，000。和高加索妇女相比，非洲裔美国女性在分娩期的死亡率是前者的近 4 倍。为了更好地理解这一趋势，在伯明翰阿拉巴马大学（UAB）医院开展了这项调查研究。主要研究假设为，与对照组正常分娩未死亡的妇女相比较，在 UAB 死亡的妇女更趋向于是非洲裔美国女性。预期会找到种族间的差异性以及其他患者因素，以帮助进一步明白种族差异在妊娠妇女死亡中的作用。

方法：调查了从 1990 年 1 月至 2010 年 12 月在 UAB 医院的所有孕妇死亡病例，这些死亡判断是根据电子表格以及 ICD-9 号码判断的。每个孕妇死亡都符合 2 步判断标准（电子设备判断以及人工判断）。孕妇的其他比较指标，包括合并症、住院时间、死亡原因、种族、家与医院间的距离、收入、产前护理、体重指数、产次、保险种类、分娩方式以及婚姻状况。计算产妇参数和病例/对照状态单因素联系的强度。病例/对照状态和种族联系在距家距离因素控制后也被检验。

结果：种族分布因素与孕妇死亡关系的证据并不充分。在死亡组中非洲裔美国女性的比例为 57%，而在对照组中为 61%（P=0.23）。非洲裔美国女性对高加索族女性围产期死亡的单因素比值比为 0.66 （95%可信区间为 0.37-1.19）；调整后比值比为 1.46 （95%可信区间为 0.37-3.01）。距医院的距离远相比较于近距离是孕产妇死亡的重要预测指标（P < 0.001）。

总结：在 UAB 医院死亡的孕产妇中，种族因素并非起作用。建议今后的工作应该进一步研究在一般的健康中心而非三级医院条件下的美国围产期孕妇中的种族因素在死亡中的关系，以消除孕妇在获得医疗时存在的空间障碍。

（俞芳 译 陈杰 校）

BACKGROUND: The number of reported pregnancy-related deaths in the United States steadily increased from 7.2 deaths per 100,000 live births in 1987 to a high of 17.8 deaths per 100,000 live births in 2009. Compared to Caucasian women, African American women were nearly 4 times as likely to die from childbirth. To better understand the reason for this trend, we conducted a case-control study at University of Alabama at Birmingham (UAB) Hospital. Our primary study hypothesis was that women who died at UAB were more likely to be African American than women in a control group who delivered an infant at UAB and did not die. We expected to find a difference in race proportions and other patient characteristics that would further help to elucidate the cause of a racial disparity in maternal deaths.

METHODS: We reviewed all maternal deaths (cases) at UAB Hospital from January 1990 through December 2010 identified based on electronic uniform billing data and ICD-9 codes. Each maternal death was matched 2:1 with women who delivered at a time that most closely coincided with the time of the maternal death in 2-step selection process (electronic identification and manual confirmation). Maternal variables obtained were comorbidities, duration of hospital stay, cause of death, race, distance from home to hospital, income, prenatal care, body mass index, parity, insurance type, mode of delivery, and marital status. The strength of univariate associations of maternal variables and case/control status was calculated. The association of case/control status and race was also examined after controlling for residential distance from the hospital.

RESULTS: There was insufficient evidence to suggest racial disparity in maternal death. The proportion of African American women was 57% (42 of 77) in the maternal death group and 61% (94 of 154) in the control group (P = 0.23). The univariate odds ratio for maternal death for African American to Caucasian race was 0.66 (95% confidence interval [CI], 0.37–1.19); the adjusted odds ratio was 1.46 (95% CI, 0.73–3.01). Longer compared with shorter distance of residence to the hospital was a highly significant predictor (P < 0.001) of maternal death.

CONCLUSIONS: We did not observe a racial disparity in maternal deaths at UAB Hospital. We suggest that the next step toward understanding racial differences in maternal deaths reported in the United States should be directed at the health care delivery outside the tertiary care hospital setting, particularly at eliminating access barriers to health care for all women.

亚低温和七氟醚联合应用能为改良的新生小鼠脑缺血缺氧模型提供长期保护

A Combination of Mild Hypothermia and Sevoflurane Affords Long-Term Protection in a Modified Neonatal Mouse Model of Cerebral Hypoxia-Ischemia

Lin, Erica P. MD*†§; Miles, Lili MD‡; Hughes, Elizabeth A. BS*; McCann, John C. BS*; Vorhees, Charles V. PhD§; McAuliffe, John J. MD, MBA*†§; Loepke, Andreas W. MD, PhD*†§

Anesthesia & Analgesia 2014 119 1158–1173

背景： 缺氧缺血（HI）引起的婴儿脑损伤会导致终身残疾， 但尚缺乏保护策略。已证明 Rice-Vannucci 新生儿脑缺血模型（RVM）在 HI 前给予吸入麻醉药暴露有短期而非长期的保护作用，然而 HI 期间使用药物暴露尚未得到验证。本研究通过对 RVM 行插管和机械通气，评估七氟醚和亚低温联合应用在 HI 期间的短/长期保护作用。

方法： 10 日龄小鼠在七氟烷短暂麻醉时结扎右颈总动脉，随后为期 2 小时恢复。小鼠随机分为：HI 组，自主呼吸 10% 氧持续 60 分钟（经典的 RVM）；HI 保护组，亚低温和气管插管，用 3.5%七氟醚麻醉，并在 10%氧中机械通气持续 60 分钟；或自主呼吸室内空气持续 60 分钟联合应用。 在非存活队列，HI 组或 HI 保护组使用可见光光谱 （Spectros Corp 公司）监测危险区域和对侧半球的脑氧合情况。测量平均动脉血压和心率，并采集动脉血气。HI 一周后确定左/右大脑半球的重量比和脑损伤评分。在另一组中，应用了自发性运动，Morris 水迷宫和脱水吗啡注射来评估进评估青年期小鼠（9 周龄）的学习和行为。

结果： HI 期间，缺血两组的同侧和对侧的脑氧合、动脉血 压、血气、血糖水平是相似的，而 HI 保护组的心率更慢。 缺血一周后，相对于 HI 保护组，脑半球的重量比和不同脑区域损伤评分在 HI 后显著恶化。HI 后九周，HI 保护组的 Morris 水迷宫隐匿平台和反转平台的逃亡潜伏期、 空间记忆功能测量均优于 HI 组 （$P < 0.0001$）。作为对纹状体完整性的测量，HI 保护组动物的旋转行为在脱水吗啡负荷后显著减少（$P < 0.0001$)。

结论： 为验证新生儿脑缺血试验期间挥发性麻醉剂的神经保护作用，研发了一种改良 RVM。HI 期间采用机械通气和气管插管及七氟烷麻醉，小鼠可存活。HI 期间七氟烷和亚低温联合应用与 RVM 小鼠相比，能同样提供短期结构性的和长期功能性的保护作用。这些研究结果值得进一步研究以改善危重新生儿的神经系统预后。

（柳韶华 译 陈杰 校）

BACKGROUND: Infant brain injury from hypoxia-ischemia (HI) can lead to life-long impairment, but protective strategies are lacking. Short-term but not long-term protection has been demonstrated in the Rice-Vannucci neonatal brain ischemia model (RVM) by volatile anesthetic administration before HI, while exposure during HI has not been tested. In the current study, we evaluated a combination of sevoflurane and mild hypothermia as a protective approach during HI, both short- and long-term, by introducing intubation and mechanical ventilation to the RVM.

METHODS: The right common carotid artery was ligated in 10-day-old mice during brief sevoflurane anesthesia, followed by a 2-hour recovery with the dam. Littermates were then randomized to either: HI spontaneously breathing 10% oxygen for 60 minutes (the classical RVM); HI-Protect mild hypothermia and orotracheal intubation and mechanical ventilation with 3.5% sevoflurane in 10% oxygen for 60 minutes; or Room Air spontaneously breathing room air for 60 minutes. In a nonsurviving cohort, cerebral oxygenation was monitored in the area at risk and the contralateral hemisphere during HI or HI-Protect using visible-light spectroscopy

(Spectros Corp). Mean arterial blood pressure and heart rate were measured. Arterial blood gases were obtained. Right/left brain hemispheric weight ratios and brain damage scores were determined 1 week after HI. In another group, learning and behavior were assessed in young adulthood (9 weeks) using spontaneous locomotion, Morris water maze, and apomorphine injection.

RESULTS: During HI, ipsilateral and contralateral brain oxygenation, arterial blood pressures, blood gases, and glucose levels were similar in both ischemic groups, while heart rate was slower in the HI-Protect group. One week after ischemia, brain hemispheric weight ratios and injury scores in several brain regions were significantly worse after HI, compared with HI-Protect. Nine weeks after HI, Morris water maze hidden platform and reversal platform escape latencies, measures of spatial memory function, were superior after HI-Protect, compared with HI ($P < 0.0001$). HI-Protect animals demonstrated significantly less circling behavior after an apomorphine challenge ($P < 0.0001$), a measure of striatal integrity.

CONCLUSIONS: To test the neuroprotective effects of volatile anesthetics during neonatal brain ischemia, we developed a modification of the RVM. By using mechanical ventilation and endotracheal intubation, sevoflurane administration during HI was survivable. The combination of sevoflurane administration and mild hypothermia during HI conferred not only short-term structural, but also long-term functional protection, compared with littermates treated according to the RVM. These findings warrant further studies to improve neurological outcome in critically ill infants.

关于镰状细胞病中的儿茶酚-o-甲基转移酶(COMT)、Val158Met(rs4680)、多巴胺 D3 受体(DRD3)以及 Ser9Gly(rs6280)多态性和急性疼痛的探讨

Dopamine D3 Receptor Ser9Gly and Catechol-O-Methyltransferase Val158Met Polymorphisms and Acute Pain in Sickle Cell Disease

Jhun, Ellie*; He, Ying PhD*; Yao, Yingwei PhD†; Molokie, Robert E. MD*‡§; Wilkie, Diana J. PhD, RN, FAAN† ‖ ; Wang, Zaijie Jim PhD* ‖

Anesthesia & Analgesia 2014 119 1201–1207

背景：镰状细胞病(SCD)以阵发性急性疼痛，占用紧急医疗资源的主要病种和持续性慢性疼痛为特点。在 SCD 患者中，持续性慢性疼痛严重程度和频率以及急性医疗利用率有很大区别。本研究探讨了单胺基因多态性对疼痛变化的影响。

方法：SCD 成人受试者完成一项麦吉尔电脑疼痛问卷,研究者通过该问卷计算综合的疼痛指数。通过医疗记录和 12 个月的每周两次的电话随访获取“占用”数据，“占用”定义为因镰状细胞疼痛危象而就诊于急诊室和/或急诊监护中心。对儿茶酚-o-甲基转移酶(COMT)、Val158Met(rs4680)、多巴胺 D3 受体(DRD3)以及 Ser9Gly(rs6280)多态性进行基因分型,进一步对这些基因多态性与疼痛表型相关性做出分析。

结果：二项 logistic 模型结果显示,DRD3、Ser9Gly 杂合子患者出现急性疼痛危象的可能性更低(比值比[OR](95%可信区间{CI}),4.37(1.39-22.89);P = 0.020) ,当考虑到人口统计变异值时结果仍然如此(OR 值(95%可信区间),4.53(1.41-28.58);P = 0.016)。相比 Val 等位基因，COMT 与 Val158Met 的 Met 等位基因出现零占用的概率更小(OR(95%可信信区间),0.32(0.12-0.83);P = 0.020)。负二项回归分析中,携带 COMT Met/Met 基因型的受试者占用发生率比(95% CI) 是携带 Val/Val 基因型的受试者的 2.20(1.21-3.99)倍 (P = 0.010)。

结论：这些探索性的研究结果表明, 正如急性疼痛危象的发生率不同，DRD3、Ser9Gly、COMT 以及 Val158Met 可能参与 SCD 疼痛异质性的产生。具体来说, 携带 DRD3 纯合子基因型、COMT 158Met 等位基因或 Met/Met 基因型的 SCD 患者, 更可能占用急性医疗资源，即急性疼痛的一项反映指标。然而,这些研究结果需要大量后续的前瞻性研究来证实。

（池晓颖 译 陈杰 校）

BACKGROUND: Pain in sickle cell disease (SCD) is characterized by episodes of acute pain, primarily responsible for acute health care utilization, and persistent chronic pain. Pain severity and frequency vary significantly among patients with SCD. In this study, we investigated the possible contribution of monoamine gene polymorphisms to pain variation.

METHODS: Adult subjects with SCD completed PAINReportIt® , a computerized McGill Pain Questionnaire, from which we calculated the Composite Pain Index. Utilization data were obtained from the medical record and biweekly telephone calls for 12 months. Utilization is defined as admissions to the emergency department and/or the acute care center resulting from a sickle cell pain crisis. We performed genotyping for catechol-O-methyltransferase (COMT) Val158Met (rs4680) and dopamine D3 receptor (DRD3) Ser9Gly (rs6280) polymorphisms, which were analyzed for associations with pain phenotypes.

RESULTS: Binary logistic models revealed that DRD3 Ser9Gly heterozygote patients were more likely not to have an acute pain crisis (odds ratio [OR] [95% confidence interval {CI}], 4.37 [1.39–22.89]; P = 0.020), which remained so when demographic variables were considered (OR [95% CI], 4.53 [1.41–28.58]; P = 0.016). COMT Val158Met Met allele showed lower probability for zero utilization (OR [95% CI], 0.32 [0.12–0.83]; P = 0.020) than the Val allele. In the negative binomial regression analysis, subjects with COMT Met/Met genotype had utilization incident rate ratio (95% CI) of 2.20 (1.21–3.99) over those with Val/Val (P = 0.010).

CONCLUSIONS: These exploratory findings suggest that DRD3 Ser9Gly and COMT Val158Met may contribute to pain heterogeneity in SCD, as suggested by the different rates of acute pain crisis. Specifically, SCD patients with the DRD3 homozygote genotypes, COMT 158 Met allele or Met/Met genotype, are more likely to have acute care utilization, an indicator of acute pain. These results, however, will need to be further examined in future large prospective studies.

关于接受大血管手术后发生肌钙蛋白增高的病人进行早期心血管强化治疗是否影响远期预后的研究

The Long-Term Impact of Early Cardiovascular Therapy Intensification for Postoperative Troponin Elevation After Major Vascular Surgery

Foucrier, Arnaud MD*†; Rodseth, Reitze MD‡§; Aissaoui, Mohamed MD*†; Ibanes, Cristina MD*†; Goarin, Jean-Pierre MD*†; Landais, Paul MD, PhD ‖ ; Coriat, Pierre MD*†; Le Manach, Yannick MD, PhD¶

Anesthesia & Analgesia 2014 119 1053–1063

背景：急性心脏事件是血管手术后的常见并发症，对血管手术后发生心脏事件的病人进行早期循证医学的干预是否能影响长期预后，这一问题目前还没有得到深入的研究。本研究中，我们有这样一个设想：对术后心肌肌钙蛋白水平升高的病人进行合适有效的治疗能提高病人的长期生存率。

方法：我们对 667 名接受大血管手术并且术后肌钙蛋白 I 发生升高的病人进行了队列研究。这些病人中一部分接受了心血管方面的治疗，治疗方案遵照美国心脏病学会 2007 年推荐的慢性心绞痛病人的治疗指南。所有术后发生肌钙蛋白增高的病人与 2 名未发生此事件的病人进行对照，对照的配对通过逻辑回归和最邻近配对原则进行。最初的研究终点是术后 12 个月内无心脏重大事件（例如：死亡，心肌梗死，冠脉再灌注损伤，肺梗并且需要入院治疗）发生的无病存活。

结果：在 66 个术后发生心肌肌钙蛋白 I 升高的病人中，43 名病人得到了治疗，研究结果显示对未曾接受治疗的病人相对对照组的风险比是 1.77，而接受治疗组的风险比是 0.64。

术后肌钙蛋白增高不接受早期干预的病人比接受干预的病人发生心脏事件的风险更大。（风险比为 2.8）

结论：本研究的主要发现是对接受非心脏手术并且术后发生肌钙蛋白增高的病人进行循证医学的心脏早期干预能预防远期心脏不良事件的发生。

（王飞译 薛张纲校）

BACKGROUND: Acute cardiac events are a frequent cause of morbidity after vascular surgery. The impact of early evidence-based treatment for patients with an acute cardiac event after vascular surgery on long-term postoperative outcomes has not been extensively studied. We hypothesized that providing appropriate evidence-based treatment to patients with elevated postoperative cardiac troponin levels may limit long-term mortality.

METHODS: We conducted a study of 667 consecutive major vascular surgery patients with an elevated postoperative troponin I level. We then determined which of these patients received medical therapy as per the 2007 American College of Cardiology/American Heart Association recommendations for the medical management of patients with chronic stable angina. All patients with troponin elevation were then matched with 2 control patients without postoperative troponin elevation. Matching was done using logistic regression and nearest-neighbor matching methods. The primary study end point was 12 months survival without a major cardiac event (i.e., death, myocardial infarction, coronary revascularization, or pulmonary edema requiring hospitalization).

RESULTS: Therapy was intensified in 43 of 66 patients (65%) who suffered a troponin I elevation after surgery. Patients with a troponin I elevation not receiving intensified cardiovascular treatment had a hazard ratio (HR) of 1.77 (95% confidence interval (CI), 1.13–2.42; P = 0.004) for the primary study outcome as compared with the control group. In contrast, patients with a troponin I elevation who received intensified cardiovascular treatment had an HR of 0.63 (95% CI, 0.10–1.19; P = 0.45) for the primary outcome as compared with the control group. Patients with a troponin I elevation not receiving treatment intensification likely were at higher risk for a major cardiac event (HR, 2.80; 95% CI, 1.05–24.2; P = 0.04) compared with patients who did receive treatment intensification.

CONCLUSIONS: The main finding of this study was that in patients with elevated troponin I levels after noncardiac surgery, long-term adverse cardiac outcomes may likely be improved by following evidence-based recommendations for the medical management of acute coronary syndromes.

静脉注射脂肪乳剂在猪身上的超敏反应：脂肪乳剂复苏的相关研究

Hypersensitivity Reactions to Intravenous Lipid Emulsion in Swine: Relevance for Lipid Resuscitation Studies

Bedocs, Peter MD*; Capacchione, John MD†; Potts, Lauren MD‡; Chugani, Ryan§; Weiszhar, Zsoka MSc ‖ ; Szebeni, Janos MD, PhD, DSc¶#; Buckenmaier, Chester C MD*

Anesthesia & Analgesia 2014 119 1094–1101

背景：新近文献报道静脉注射脂肪乳剂（ILE）在逆转局麻药或其他脂溶性药物过量中毒时的心血管症状和神经系统症状时，在不同的动物身上得到不同的作用效果。特别地，ILE 似乎在大鼠，家兔，狗和人类有效，而对于猪却不是。在猪身上，ILE 不仅不能逆转麻醉药的作用，甚至还引起广泛的皮肤花斑或者肤色暗淡，提示产生了另外的毒性。这种毒性症状出现在补体激活相关的类过敏反应中，是对药物的一种超敏反应。

方法：将 10 只约克郡猪（15-20Kg）利用氯胺酮镇静、异氟烷进行麻醉。分别以 1.5 和 5mL/Kg 分组注射脂肪乳剂,首先将总量的 20%通过耳缘静脉给予注射，同时持续监测肺动

脉压，体循环动脉血压，心电图，以及呼吸末 CO2，分别测定基础水平、注射后 2 分钟和注射后 10 分钟循环中血栓素的水平。在离体试验中，通过检测绵羊红细胞和游离末端补体复合物(SC5b-9)水平来探究脂肪乳剂导致的补体激活作用。

结果：脂肪乳剂静脉注射后几分钟，两组都观察到肺动脉压的明显升高，其中 1.5mL 组增加(15 [12–16.5] to 18.5 [16–20] mm Hg，5mL 组增加 15.5 [13–17.25] to 39.5 [30.5–48.5]，P = 0.0058。注射后，也出现了体循环动脉压的升高和心率降低。静脉注射脂肪乳剂后 1.5mL 组中血栓烷 B2 的血浆浓度从基础值 617.3 [412.4–920]增加到 1132 [597.9–1417] pg/mL，(P = 0.0055)；5mL 组从基础值 1276 [1200–2581]增加到 4046 [2946–8442] pg/mL (P = 0.0017)。静脉注射脂肪乳剂并不会引起体外人血清中补体的激活。

结论：在猪身上，ILE 可引起明显的血流动力学改变和血栓素血浆浓度的明显增加。但是，体外试验并没有证实有人血清补体系统参与了这种超敏反应过程，其内在机制尚待阐明。然而，试验中观察到静脉注射脂肪乳剂后的血流动力学和生物学效应也提示我们，猪不能作为静脉注射脂肪乳剂的理想动物模型。

（潘艳译 薛张纲校）

BACKGROUND: Reports in the recent experimental literature have provided contradicting results in different animal species regarding the efficacy of IV lipid emulsion (ILE) in the reversal of cardiovascular and central nervous system symptoms of local anesthetic and other lipophilic drug overdoses. In particular, ILE seemed to be effective in rats, rabbits, dogs, and humans, but not in swine, for which it not only failed to reverse the adverse effects of anesthetics, but the animals also developed a generalized cutaneous mottling or a dusky appearance immediately after ILE, suggestive of another type of toxicity. The latter symptoms arise in complement (C) activation–related pseudoallergy, a hypersensitivity reaction to particulate drugs and agents.

METHODS: Ten Yorkshire swine (15–20 kg) were sedated with ketamine and anesthetized with isoflurane. ILE 1.5 and 5 mL/kg 20% was administered via the ear vein while pulmonary arterial pressure, systemic arterial blood pressure, electrocardiogram, and end-tidal CO2 were recorded continuously. Thromboxane was measured in blood collected at baseline and 2 and 10 minutes after injections. Complement activation by lipid emulsion was also assessed in vitro with soluble terminal complement complex (SC5b-9) and sheep red blood cell assays.

RESULTS: Significant increases were observed in the pulmonary pressure (median [interquartile range]) within minutes after the administration of ILE, both at doses 1.5 and 5 mL/kg (15 [12–16.5] to 18.5 [16–20] mm Hg, P = 0.0058 and 15.5 [13–17.25] to 39.5 [30.5–48.5], respectively). The systemic arterial blood pressure increased, and the heart rate decreased after both injections. Thromboxane B2 concentration (median [interquartile range]) in the blood plasma increased from a baseline of 617.3 [412.4–920] to 1132 [597.9–1417] pg/mL (P = 0.0055) and from 1276 [1200–2581] to 4046 [2946–8442] pg/mL (P = 0.0017) after the administration of 1.5 and 5 mL/kg ILE, respectively. Intralipid did not cause in vitro complement activation in human serum.

CONCLUSIONS: ILE causes clinically significant hemodynamic changes in pigs, in concert with significant increases in the plasma thromboxane concentration. However, the in vitro tests did not confirm involvement of the complement system in human sera, leaving the underlying mechanism of these findings in doubt. Nonetheless, the observed hemodynamic and biochemical effects of ILE serve as a caveat that the pig is not an ideal model for the study of interventions involving ILE.

腹部手术中急性肾损伤的危险因素

Variations in the Risk of Acute Kidney Injury Across Intraabdominal Surgery Procedures

Kim, Minjae MD, MS*; Brady, Joanne E. PhD*†; Li, Guohua MD, DrPH*†

Anesthesia & Analgesia 2014 119 1121–1132

背景：目前有关围术期急性肾损伤的研究重点主要关注心脏和大血管手术。而在一般非心血管手术中，普外科腹部手术已被确定具有发生急性肾损伤的高风险，但不同类型的腹部手术发生急性肾损伤的风险变化和对 30 天死亡率的影响的研究还不是很透彻。

方法：我们使用美国外科学院国家外科质量改进计划(2005 - 2010)来将患者区分为 15 组普外科腹部手术(n = 457656)。急性肾损伤定义为肌酐水平参照基线和/或透析水平增加大于 2 mg / dL。相对风险回归模型被用来评估整个过程急性肾损伤的相对风险。外科手术、急性肾损伤和 30 天死亡率分层之间的关系，使用相对风险回归模型进行评估。

结果：普外科腹部手术患者围术期急性肾损伤的总体发病率为 1.1%，其中阑尾切除术发生率为 0.2%，胃旁路手术发生率为 0.3%，小肠切除术发生率为 2.6%，开腹探查术发生率 3.5%。发生围术期急性肾损伤的患者中有 31.3%在 30 天内死亡，而相比之下，那些没有发生围术期急性肾损伤的患者 30 天死亡率为 1.9%。并发症和手术因素调整后，围术期急性肾损伤与 30 天死亡率风险增加 3.5 倍有关（调整风险比 3.51,95%可信区间(CI),3.29 - -3.74)。在单个考核中，估计 30 天死亡率与急性肾损伤的风险比在开腹探查术为 1.87(95% CI,1.62 - -2.17)，在胃旁路手术为 31.6(95% CI,17.9 - -55.9)。

结论：在普外科腹部手术过程中，急性肾损伤发生率和其对 30 天死亡率有着显著不同的影响。这强调了术前风险识别和分层作为一个重要危险因素对围术期急性肾损伤和 30 天死亡率的重要性。

（黄文惠译 薛张纲校）

BACKGROUND: The literature on perioperative acute kidney injury (AKI) focuses mainly on cardiac and major vascular surgery. Among noncardiac general surgery procedures, intraabdominal general surgery has been identified as high risk for developing AKI, but variations in AKI risk and its impact on 30-day mortality among different types of abdominal surgeries are not well characterized.

METHODS: We used the American College of Surgeons National Surgical Quality Improvement Program (2005–2010) to identify patients in 15 intraabdominal general surgery procedure categories (n = 457,656). AKI was defined as an increase in the creatinine level of >2 mg/dL above baseline and/or dialysis. Relative risk regression modeling was used to assess the relative risks of AKI across the procedures. The relationships among surgical procedure, AKI, and 30-day mortality stratified by procedure type were assessed using relative risk regression.

RESULTS: The overall incidence of AKI among intraabdominal surgery patients was 1.1%, which varied from 0.2% in appendectomy and 0.3% in gastric bypass patients to 2.6% in small bowel resection and 3.5% in exploratory laparotomy patients. Of the patients who developed AKI, 31.3% died within 30 days, compared with 1.9% of those who did not develop AKI. After adjusting for comorbidities and operative factors, AKI was associated with a 3.5-fold increase in the risk of 30-day mortality (adjusted risk ratio, 3.51, 95% confidence interval [CI], 3.29–3.74). Among individual procedures, the estimated adjusted risk ratio of 30-day mortality associated with AKI ranged from 1.87 (95% CI, 1.62–2.17) in exploratory laparotomy to 31.6 (95% CI, 17.9–55.9) in gastric bypass.

CONCLUSIONS: The incidence of AKI and the impact of AKI on 30-day mortality vary markedly across procedures within intraabdominal general surgery. This highlights the importance of preoperative risk stratification and identifies procedure type as a significant risk factor for AKI and 30-day mortality.

脊柱侧弯儿童术中的丙泊酚血药浓度测量值与预测值的比较

Measured versus predicted blood propofol concentrations in children during scoliosis surgery.

Panchatsharam, Selvakumar FRCA*; Callaghan, Michael FFARCSI*; Day, Rachel*; Sury, Michael R. J. FRCA, PhD*†

Anesthesia & Analgesia 2014 119 1150–1157

背景：丙泊酚常作为脊柱侧弯手术静脉麻醉的首选药物。与其他药物相比，丙泊酚不但能抑制术中可能诱发的脊髓反射，而且能更准确诊断脊髓缺血。本研究主要针对儿童脊椎侧弯手术，对手术实施丙泊酚靶控静脉麻醉时的实时血药浓度和预测浓度进行比较。

方法：本研究 20 例脊柱侧弯儿童入组，在麻醉过程中每隔 30 分钟测定动脉血丙泊酚实时值（Cm）和预测值（Cp）。测定 Cm 的方法是利用床旁即时检测仪器完成。手术麻醉管理不受该试验影响。对数据的误差中位数，绝对误差中位数，变异度和离散度均进行统计分析。

结果：入组儿童年龄区间为 9 岁-17 岁，体重为 26.5 千克-95 千克。丙泊酚静脉输注模式中 Paedfusor 模式入组 16 例，Marsh 模式入组 4 例。154 例丙泊酚血药浓度样本数据中，Cm 和 Cp 平均数误差为 1.5 μg/ml（可信区间，-1.4 到 4.5 μg/ml），均数的标准误为 44.7%（可信区间，-40.1% 到 130.2%）。对于整个样本，误差中位数和绝对误差中位数分别为 39.8% （值域, -20.9%-103.3%）和 39.8% （值域, 20%-103.3%）。测量值和预测值的误差可通过注射时间的延长而缩小（离散度，-2.2 [值域，-1.03 到 0.13]）。样本中大部分患者 Cm 都大于 Cp，但样本中有两位儿童的 Cm 均小于 Cp（最低 Cm 分别为 1.74μg/ml 和 1.96μg/ml，对应的 Cp 均为 3μg/ml）。两位儿童均入组 Paedfusor 模式，体重分别为 28kg 和 33kg。

结论：丙泊酚靶控输注模式不适合用于儿童脊柱侧弯手术。床旁即时丙泊酚检测方案对于丙泊酚静脉注射达到预期血药浓度更为可行。

（王嘉兴译 薛张纲校）

BACKGROUND: Propofol anesthesia is preferred during scoliosis surgery because it suppresses evoked potential spinal cord function less than other drugs and better enables the detection of spinal cord ischemia. In this study, we determined the difference between the true and predicted blood propofol levels during target-controlled infusions in children during scoliosis surgery.

METHODS: Arterial blood propofol measured concentrations (Cm) were compared with predicted concentrations (Cp) approximately every 30 minutes during the maintenance phase of anesthesia in 20 children. Whole blood propofol concentrations were measured using a point-of-care blood propofol analyzer. Anesthesia management was not affected by the study. The median performance error, median absolute performance error, wobble, and divergence were calculated.

RESULTS: Children were aged 9 to 17 years and weighed 26.5 to 95 kg. The Paedfusor model was used in 16 children and the Marsh model in 4 children. In 154 blood propofol measurements, the mean difference between the Cm and Cp was 1.5 μg•mL (limits of agreement, -1.4 to 4.5 μg•mL), and the mean performance error was 44.7% (limits of agreement, -40.1% to 130.2%). The median performance error and median absolute performance error for the whole group were 39.8% (range, -20.9% to 103.3%) and 39.8% (range, 20%-103.3%), respectively. The performance errors improved with increase in duration of infusion (divergence, -2.2 [range, -1.03 to 0.13]). Cm was almost always larger than Cp except in 2 children who had consistently lower Cm than Cp (lowest Cm(s) were 1.74 and 1.96 μg•mL when the Cp was 3 μg•mL); both had the Paedfusor model and their body weights were 28 and 33 kg.

CONCLUSIONS: Propofol target-controlled infusion models had poor performance characteristics in children undergoing scoliosis surgery. Point-of-care propofol assay may enable adjustment of the infusion to better achieve the intended blood level.

儿茶酚氧位甲基转移酶基因多态性预测阿片类药物术后镇痛的用量

Catechol-o-methyltransferase polymorphisms predict opioid consumption in postoperative pain.

Candiotti KA1, Yang Z, Buric D, Arheart K, Zhang Y, Rodriguez Y, Gitlin MC, Carvalho E, Jaraba I, Wang L.

Anesthesia & Analgesia 2014 119 1194–1200

背景：以往的研究探讨了儿茶酚-O-甲基转移酶（COMT）的酶 rs4680 多态性与阿片类药物在慢性癌性疼痛治疗中的用量的关系。在这项研究中，我们评估 COMT rs4680 和 rs4818 的多态性与肾切除后术后急性期阿片类药物用量的关系。

方法：总共评估了 152 例肾切除患者术后 48 小时内的阿片类药物用量和疼痛评分。每位患者的基因型是从血液样品中通过对 DNA 的聚合酶链反应来提取的。rs4680 和 rs4818 的多态性与阿片类药物用量的关系是通过广义线性回归模型分析完成的。3 个基因组之间比较的所有 P 值和置信区间采用 Bonferroni 校正。

结果：在手术后 24 小时内（COMT rs4680），Val/Val 变异的纯合子患者比 MET / Met 组患者消耗的阿片类药物多 36%（95%可信区间为 31%-41%）（P = 0.009）。在术后第一个 24 小时，疼痛评分或呕吐药物的使用，3 个基因组无统计学显著差异。与携带 rs4818 GG 基因型的患者组相比较，携带 rs4818 CC 基因组患者使用的呕吐药物在统计学上显著增加（P =0.035）。在术后 6-48 小时期间，对于 COMT rs4680 来说，高活性 Val/Val 基因型组的患者比 Met/ Met 组显著消耗更多的阿片类药物（0-6 h：P= 0.005; 0-12 h：P= 0.015; 0-24h：P =0.015; 0-48 h：P=0.023）。在肾切除术后 6 小时内，纯合 GG 基转移酶 rs4818 单核苷酸多态性组的患者比 CG 组患者消耗更多的阿片类药物，统计学上有显著差异（P= 0.02）。

结论：对肾切除术围术期的患者来说，COMT rs4680 单核苷酸多态性的遗传变异与阿片类药物用量相关。该 COMT rs4818 多态性可能有助于预测术后呕吐药物的使用。

（吴赤译 薛张纲校）

BACKGROUND: Previous studies have associated the catechol-O-methyltransferase (COMT) enzyme rs4680 polymorphism with opioid consumptionin the treatment of chronic cancer pain. In this study, we evaluated the association between COMT rs4680 and rs4818 polymorphisms and opioidconsumption in the acute postoperative period after a nephrectomy.

METHODS: Opioid consumption and pain scores were evaluated in 152 patients for 48 hours after nephrectomy. The genotype of each patient was determined using polymerase chain reaction on DNA extracted from blood samples. The association between rs4680 and rs4818 genotypes andopioid consumption was evaluated using general linear model regression analysis. All P values and confidence intervals were Bonferroni corrected for the 3 comparisons among genotypes.

RESULTS: In the 24-hour period after surgery (COMT rs4680), patients homozygous for the variant Val/Val consumed 36% (95% confidence interval, 31%-41%) more opioids than patients homozygous for the Met/Met group (P = 0.009). No statistically significant differences among the 3 genotype groups were noted for pain scores or emesis medication use in the first 24 hours after surgery. There was a statistically significant increase in emesis medication use in patients possessing the CC genotype of rs4818 when compared to patients carrying the GG genotypes (P = 0.035). In the 6- to 48-hour postsurgery period, there was significantly higher opioid consumption in the high-activity homozygotes Val/Val than in the homozygous Met/Met group for COMT rs4680 (0-6 h: P = 0.005; 0-12 h: P = 0.015; 0-24 h: P = 0.015; and 0-48 h: P = 0.023). Patients in the homozygous GG group COMT rs4818 single nucleotide polymorphism showed

statistically significant differences in opioid consumption in the first 6 hours after nephrectomy compared with heterozygous CG patients (P = 0.02).

CONCLUSIONS: The genetic variant of the COMT rs4680 single nucleotide polymorphism is associated with variability in opioid consumption inpostoperative nephrectomy patients. The COMT rs4818 polymorphism may prove useful in predicting emesis medication use postoperatively.

每天三次使用普通肝素预防血栓形成的病人行硬膜外麻醉：活化部分凝血酶时间的测定

Epidurals in patients receiving thromboprophylaxis with unfractionated heparin three times a day: the value of activated partial thromboplastin time testing.

Pace M1, Koury K, Gulur P.

Anesthesia & Analgesia 2014 119 1215–1218

背景：在美国，非骨科手术病人为预防深静脉血栓形成给予每天三次皮下注射普通肝素。目前对于每天三次皮下注射普通肝素的病人实施椎管内麻醉的风险，尚缺少这方面的数据；尽管如此，对更高风险的出血的关注已逐步提高。为减少此类病人拔除硬膜外导管时的出血风险，我们将测定的活化部分凝血酶时间作为参考，此项前瞻性研究就是来评价这种措施的可行性。

方法：我们收集了 2011 年 12 月至 2013 年 12 月间每天三次或两次注射 5000 单位普通肝素并且实施硬膜外麻醉的病人的电子病历数据。每天三次注射 5000 单位普通肝素的病人在拔除硬膜外导管前均做活化部分凝血酶时间测定。每天两次注射 5000 单位普通肝素的病人只是在凝血异常变量相关的危险因素出现时进行活化部分凝血酶时间测定。我们对异常活化部分凝血酶时间的病人进行病例回顾研究来评价相关有价值的危险因素。

结果：两年期间总共有 3523 例硬膜外麻醉，包括 714（20.3%）例每天三次普通肝素注射和 1594（45.2%）例每天两次普通肝素注射。在每天两次普通肝素注射的病人中，186（11.7%）例有危险因素的病人测定了活化部分凝血酶时间。在这些病人中有 10 例在硬膜外导管拔除时的活化部分凝血酶时间延长 35 秒以上。在每天三次普通肝素注射的病人中有 20 例在硬膜外导管拔除当天的活化部分凝血酶时间延长 35 秒以上。所有活化部分凝血酶时间异常的每天三次肝素注射病人都伴随着明显的凝血参数异常的危险因素。不管是每天三次还是每天两次肝素注射的病人都没有出现血肿情况。

结论：为减少每天三次注射普通肝素的病人拔除硬膜外导管时的出血风险，将测定活化部分凝血酶时间作为参考，在我们的结果中是没有证据支持的，因为仅仅有 2.8%的病人活化部分凝血酶时间异常。 我们的研究为每天三次接受普通肝素治疗的不同硬膜外镇痛的安全性提供了有限的资料。既然很少出现神经源性血肿，我们目前的样本量大小也就不能对每天三次注射普通肝素病人实施硬膜外镇痛的危险性得出最终明确的结论。

（吕越昌译 薛张纲校）

BACKGROUND: Dosing subcutaneous (SC) unfractionated heparin (UFH) 3 times a day (TID) for deep venous thrombosis prophylaxis is used for patients in the United States undergoing nonorthopedic surgery. There is a lack of data on the risks of neuraxial techniques in patients receiving TID SC UFH; however, concerns have been raised about higher bleeding risks. In this prospective study, we evaluated the value of activated partial thromboplastin time (aPTT) testing at the time of removal of epidural catheters as a risk-reduction strategy for this population.

METHODS: We collected data from our electronic hospital databases for all patients receiving epidural analgesia in conjunction with 5000 units TID or twice daily dosing (BID) SC UFH from December 2011 to December 2013. Our cohort received aPTT testing before removal of the catheter in all patients receiving TID SC UFH. An aPTT was ordered for patients receiving BID

SC UFH only if risk factors for abnormal coagulation variables were identified. Chart reviews were performed on all patients with abnormal aPTT values to evaluate contributing risk factors.

RESULTS: Over a 2-year period, 3523 epidurals were placed at our institution, including 714 (20.3%) for patients receiving TID SC UFH, and 1594 (45.2%) for patients receiving BID SC UFH. Of those patients receiving BID SC UFH, 186 (11.7%) had aPTT values drawn on the basis of risk factors. Ten (5.4 %, 95% CI: 2.6%-9.7%) of those patients had an aPTT value of greater than 35 seconds on the date of epidural removal. Of those patients receiving TID SC UFH, 20 (2.8%, 95% CI: 1.7%-4.3%) had an initial aPTT value of more than 35 seconds on the date of epidural removal. All patients who had abnormal aPTT values on TID heparin dosing were identified as having obvious concomitant risk factors for coagulation parameter abnormalities. There were no epidural hematomas in patients receiving either BID or TID dosing (95% CI: 0%-0.001%).

CONCLUSIONS: The routine use of aPTT testing on patients receiving TID SC UFH at the time of removal of epidural catheters as a risk-reduction strategy is not supported by our results, where only 2.8% (95% CI: 1.7%-4.3%) of these patients had abnormal aPTT values. Our study adds to the limited data currently available on the safety of epidural analgesia in patients receiving TID SC UFH. Given the rare incidence of neuraxial hematoma (95% CI: 0%-0.001%), definitive conclusions on the risks of TID SC UFH administration in patients receiving epidural analgesia cannot be drawn based on our sample size.

术中应用地塞米松对心脏手术病人术后谵妄的影响：一项随机的临床试验

Intraoperative dexamethasone and delirium after cardiac surgery: a randomized clinical trial.

Sauër AM, Slooter AJ, Veldhuijzen DS, van Eijk MM, Devlin JW, van Dijk D.

Anesth &Analg 2014 119 1046-52.

背景：心外科手术的病人术后常会发生谵妄，发生术后谵妄可能与手术所触发的全身炎症反应有一定关系，而使用地塞米松可以减少炎症反应。我们假设术中给予大剂量的地塞米松——一种有效的消炎作用的药物，将会减少心外科手术病人术后前四天中任意时间谵妄的发生率。

方法：这是一个大容量、多中心的对照控制的随机临床试验的其中一个单中心的亚组，这一地塞米松用于心外科手术临床试验采用了双盲的试验方法，随机选取≥18 周岁、手术过程中应用了心肺分流术的心外科手术病人，在麻醉诱导期间，一组给予地塞米松 1 mg/kg，另一组给予安慰剂。在术后的前四天里，我们比较了限制使用和分别给予氟哌啶醇、苯二氮卓类、阿片类药物组术后谵妄的发生率（以适用于重症监护室的杂乱性评价方法为基础，或者是离开重症监护室以后，通过杂乱性评价以及图表回顾的方法）。试验数据的分析采用了意向性治疗原则。地塞米松组的术后谵妄的发生比例和对照组相比，数据采用比值比在 95%的可信区间这一方法。这 2 组病人的数据比较同样采用逻辑回归来调整可能混淆术后谵妄发生率的常规基线变量。

结果：在 768 个符合条件的病人中，737 人（96%）完成了数据的采集。地塞米松组术后谵妄的发生率为 14.2%，而对照组为 14.9%，两者数据相近（原始的比值比为 0.95,95%可信区间为 0.63-1.43；调整后的比值比为 0.85，95% 可信区间为 0.55-1.31）。在发生谵妄的病人中，地塞米松组和对照组持续时间的中位数（四分位差）也相近（分别为 2 [1-3] 和 2 [1-2] 天，P = 0.45; WMW 0.98, 95% 可信区间为 0.83-1.17）。这两组病人的限制使用和分别给与氟哌啶醇、苯二氮卓类、阿片类药物的数据也同样相近。

结论：术中给予地塞米松不会减少心外科手术病人术后前四天谵妄的发生率和持续时间。

(田园 译 李士通 审校)

BACKGROUND: Delirium is common after cardiac surgery and may be partly related to the systemic inflammatory response triggered by the surgery and the use of cardiopulmonary bypass. We hypothesized that intraoperative administration of high-dose dexamethasone, a drug with potent anti-inflammatory effects, would reduce the incidence of delirium at any time point during the first 4 postoperative days after cardiac surgery.

METHODS: This was a single-center substudy within a larger, multicenter placebo-controlled randomized clinical trial, the Dexamethasone for Cardiac Surgery (DECS) trial that randomized patients ≥18 years, undergoing cardiac surgery with cardiopulmonary bypass, to receive, in a double-blind fashion, either dexamethasone 1 mg/kg or placebo at the induction of anesthesia. Over the first 4 postoperative days, we compared between groups the incidence of delirium (based on the Confusion Assessment Method adapted for the intensive care unit, or after intensive care unit discharge, by the Confusion Assessment Method, accompanied by chart review), restraint use, and administered haloperidol, benzodiazepines, and opioids. Data were analyzed according to the intention-to-treat principle. The proportion of patients with delirium in the dexamethasone versus the placebo group was compared using the odds ratio (OR) with a 95% confidence interval (CI). The proportion also was compared using logistic regression to adjust for common baseline variables that might confound the presence of delirium between the 2 groups.

RESULTS: Of 768 eligible patients, 737 subjects (96.0%) had complete data. The incidence of delirium was similar between the dexamethasone (14.2%) and placebo (14.9%) groups (crude OR = 0.95, 95% CI, 0.63-1.43; adjusted OR = 0.85, 95% CI, 0.55-1.31). Among patients who developed delirium, the median (interquartile range) duration of delirium was similar between the dexamethasone and placebo groups (2 [1-3] vs 2 [1-2] days, respectively, P = 0.45; WMWodds 0.98, 95% CI, 0.83-1.17). Restraint use and the administration of haloperidol, benzodiazepines, and opioids were also similar between the 2 groups.

CONCLUSIONS: The intraoperative administration of dexamethasone did not reduce the incidence or duration of delirium in the first 4 days after cardiac surgery.

不同深度神经肌肉阻滞对低腹压腹腔镜胆囊切除术的手术操作空间情况的影响：一项随机的临床试验全关节置换术后防跌倒策略以及患者特征对术后跌倒率的影响

Fall-prevention strategies and patient characteristics that impact fall rates after total knee arthroplasty.

Johnson RL1, Duncan CM, Ahn KS, Schroeder DR, Horlocker TT, Kopp SL. Author information:

Anesth & Analg 2014 119 1113-8

背景：由于术后跌倒会引发严重的外伤，防跌倒监测已经成为国家质控重点内容，同时受到各医学学会的重视。在该研究中，我们通过统计分析进行全关节置换术后的患者发生跌倒的几率，着重研究防跌倒策略的特点及其影响。

方法：在此研究中，我们回顾了从 2003 年到 2012 年 10 年内进行电子记录下全关节置换术后发生跌倒的患者信息，包括患者的人口统计资料，即患者的年龄、性别、身体质量指数（BMI）等。通过对患者上述资料进行统计分析，进一步研究预防患者发生术后跌倒的多种因素，包括病人宣教、Hendrich II 跌到风险评估模型中的相关因素、跌倒前的预警特征、病人的电梯使用率下降等。

结果：据统计，从 2003 年 1 月 2 日到 2012 年 12 月 31 日，在这 10 年期间共有 15,189 例全关节置换术在 Methodist 医院完成。总体的患者术后跌倒率为 15.3‰（选择 95%的可信

区间，CI 值为 13.4-17.4）。在早期防跌倒策略的实施的过程中，患者的术后跌倒率随之缓慢下降，其差异具有统计学意义（P < 0.001）。多因素分析发现，随着时间的推移，老年人的术后跌倒率有所提高（通过将年龄位于 70-79 岁组和年龄≥80 岁组与年龄介于 60-69 岁组的患者进行比较，P < 0.001）。而进行过关节修复术的患者与进行全关节置换的患者相比，术后跌倒率前者明显下降，这一差异同样具有统计学意义。对于跌倒率与性别因素及 BMI 指数因素的关系，研究结果表明差异不存在统计学意义。大多数患者是在自己的病房内发生跌倒（72%; 95% CI: 66%-78%）。在收集资料时发现，不符合研究标准的跌倒（如在床头洗脸台、盥洗室内或离开、去往盥洗室的途中发生的跌倒）占据收集到总体资料的绝大部分（59%; 95% CI: 53%-65%）。根据 Hendrich II 跌到风险评估模型的分析，大多数发生跌倒的患者被认为并不具备相应的高危因素。23%的术后跌倒患者与手术时访视及摩擦相关。

结论：我们的研究数据表明：患者术后跌倒率的降低与多重介入的防跌倒策略的实施相关。尽管上述预防策略发挥了一定的作用，但是高龄患者、不符合研究标准的跌倒情况、处于中间期（术后 1-3 天）复苏阶段的患者，仍有很高的风险发生跌倒。因此，防跌倒策略应该继续加强病人宣教，特别是高龄患者，提高风险意识，同时对需要在病房内进行监护的患者的防护措施进行加固与改进。

(许红娇 译 李士通 审校)

BACKGROUND: Fall prevention has emerged as a national quality metric, a focus for The Joint Commission, because falls after orthopedic surgery can result in serious injury. In this study, we examined patient characteristics and effects of fall-prevention strategies on the incidence of postoperative falls in patients undergoing total knee arthroplasty.

METHODS: We reviewed electronic records of all patients who fell after total knee arthroplasty between 2003 and 2012 (10 years). Patient demographics, including age, sex, and body mass index, were analyzed. The impact of various fall-prevention efforts, including provider and patient education, Hendrich II Fall Risk Model, fall-alert signs, and the use of patient lifts on the incidence of falls, also was studied.

RESULTS: Between January 2, 2003, and December 31, 2012 (10 years), 15,189 total knee arthroplasties were performed at Methodist Hospital, Mayo Clinic Rochester, MN. The overall fall rate was 15.3 per 1000 patients (95% confidence interval [CI]: 13.4-17.4). The rate varied significantly (P < 0.001) during the 10-year period with an initial increase followed by a gradual decrease after the initiation of the fall-prevention strategies. From multivariable analysis adjusting for the temporal trends over time, the odds of falling were found to increase with older age (odds ratio = 1.7 and 2.0 for those 70-79 and ≥80 compared with those 60-69 years of age; P < 0.001) and were lower for patients undergoing revision compared with primary total knee arthroplasties (odds ratio = 0.6, P = 0.006). There was no statistically significant difference in fall rates by sex or body mass index. Most patient falls (72%; 95% CI: 66%-78%) occurred within their own rooms. Elimination-related falls (those that occurred while in the bathroom, while going to and from the bathroom, or while using a bedside commode) comprised a majority (59%; 95% CI: 53%-65%) of the falls. Most patients who fell were not considered high risk according to the Hendrich II Fall Risk Model. Twenty-three percent of falls were associated with morbidity, including 7 return visits to the operating room and 2 new fractures.

CONCLUSIONS: Our data demonstrate a reduction in fall incidence coinciding with the implementation of a multi-intervention fall-prevention strategy. Despite prevention efforts, patients of advanced age, elimination-related activities, and patients in the intermediate phase (late postoperative day 1 through day 3) of recovery continue to have a high risk for falling. Therefore, fall-prevention strategies should continue to provide education to all patients (especially elderly patients) and reinforce practices that will monitor patients within their hospital rooms.

产后出血的临床治疗进展

Medical advances in the treatment of postpartum hemorrhage.

Ducloy-Bouthors AS1, Susen S, Wong CA, Butwick A, Vallet B, Lockhart E.

Anesth & Analg 2014 119 1140-7

摘要：产后出血（PPH）是造成全世界产妇死亡的主要因素。关于外伤导致的产后严重出血处理的研究进展可能为 PPH 的处置方法提供了新的观点，但必须慎重考虑到外科损伤与分娩损伤的差异。在本研究中，我们总结了目前阶段对主要由分娩损伤引起的产后出血的处理策略，包括（1）快速实验室凝血功能检测，（2）对于严重的大出血应早期输注血浆或红细胞悬液（3）使用氨甲环酸，对于同时合并有凝血障碍的复杂型 PPH 患者应大剂量集中使用纤维蛋白原。

(许红娇 译 李士通 审校)

Abstract：Postpartum hemorrhage (PPH) is a leading cause of maternal mortality worldwide. Recent advances in the management of severe bleeding for trauma patients may provide insight into PPH management, but must be applied with caution considering the significant differences between trauma and obstetric patients. In this review, we summarized evidence for current management strategies for patients with major obstetric hemorrhage, including (1) rapid laboratory assessment of coagulopathy, (2) early transfusion of plasma and high plasma-to-red blood cell transfusion ratios in massive PPH, and (3) use of tranexamic acid and fibrinogen concentrates in the setting of PPH complicated by coagulopathy.

麻醉方案是否会影响全身麻醉过程中产生的无意识记忆？

Does anesthetic regimen influence implicit memory during general anesthesia?

Lequeux PY1, Hecquet F, Bredas P.

Anesth & Analg 2014 119 1174-9

背景：在全麻过程中，由于术中听觉刺激所产生的无意识学习（记忆）很难予以量化评估，但其可能需要伤害性刺激的存在。我们推测，采取低剂量阿片类药物的麻醉方案可能会增加无意识记忆，而采用高剂量的阿片类药物则不会。

方法：120 名患者被随机分成三组。所有患者采取丙泊酚和瑞芬太尼诱导麻醉，靶向 BIS 值为 50。第一组的瑞芬太尼效应浓度（in ng/mL）为丙泊酚（(in μg/mL)）的两倍，而第二组瑞为丙的 1/2。在手术过程中，两组病人通过耳机听取一段 20 个单词的列表，第三组作为对照组不给予单词表听取。在单词播放时记录 BIS 值。

结果：高浓度阿片类药物组中 67.5% [50.7%; 80.9%] ，低浓度阿片类药物组中 72.5% [55.9%; 84.9%] 拥有至少一段 BIS >60 的经历，但三组患者的记忆测试没有统计学差异。

结论：在低剂量及高剂量阿片类药物的丙泊酚-瑞芬太尼麻醉方案中，都不能证明术中无意识及明确记忆的存在。

(李蔚文 译 李士通 审校)

BACKGROUND: Implicit learning of intraoperative auditory stimuli during general anesthesia is very difficult to quantify but may require the presence of noxious stimulation. We hypothesized that an anesthetic regimen with a low dose of opioid would enhance implicit memory, while a regimen with a high dose of opioid would not.

METHODS: One hundred-twenty patients were randomized into 3 groups. All patients were anesthetized with a target-controlled infusion of propofol and remifentanil, targeting a Bispectral Index (BIS) value of 50. The remifentanil effect-site concentration (in ng/mL) was always

double that of propofol (in μg/mL) in the first group and half of that in the second group. Patients in these 2 groups were played a list of 20 words via headphones during surgery. The third group served as control for memory tests and was not played any word during anesthesia. BIS was recorded during word presentation.

RESULTS: No statistical difference was found among the 3 groups regarding 3 different memory tests although 67.5% [50.7%; 80.9%] of the patients of the high-opioid group and 72.5% [55.9%; 84.9%] of the low-opioid group had at least 1 episode of BIS >60.

CONCLUSIONS: We could not demonstrate the presence of implicit or explicit memorization under propofol-remifentanil anesthesia either with a low- or a high-dose opioid anesthetic regimen.

慢性背根神经节压缩大鼠脊髓水平 NR2B 亚基棕榈酰化的作用。

The Effect of NR2B Subunit Palmitoylation at the Spinal Level After Chronic Dorsal Root Ganglia Compression in Rats.

Xia T1, Cui Y, Shi H, Ma Z, Gu X.

Author information:

Anesth Analg. 2014 Nov;119(5):1208-14

背景：NR2B 亚基（N-甲基-D-天冬氨酸受体 2B 亚基）调节疼痛的来源，并参与中枢敏化的形成。棕榈被证明参与调节 N-甲基-D-天冬氨酸受体的形成。在本研究中，我们研究了大鼠慢性背根神经节的压缩（CCD）模型中，NR2B 亚基的棕榈酰化的作用。

方法：CCD 模型术后鞘内注射棕榈酰化的抑制剂（2- bromopalmitate[2 - BP]），为评估机械性异常性疼痛和 CCD 术后之后热痛觉过敏，本研究采用爪子机械痛阈和缩爪的热潜伏期作为指标。实验方法有生物素标记法，Western Blot，co-IP，用于研究疼痛处理的效果以及脊髓水平 NR2B 棕榈酰化和磷酸化的表达变化。

结果：CCD 的大鼠具有持久的热痛觉过敏和机械性异常性疼痛，伴随脊髓水平 NR2B 棕榈酰化和磷酸化水平的上调。CCD 手术后用 2-BP 鞘内治疗第 14 天，大鼠疼痛行为明显改善， NR2B 棕榈酰化和磷酸化的表达水平明显下调。

结论：研究数据表明，在 CCD 的诱导的慢性神经痛模型中，NR2B 的棕榈酰化水平上调；鞘内注射 2-BP 克减少疼痛行为并下调 NR2B 磷酸化。我们的研究结果表明，脊髓 NR2B 棕榈酰化是在 CCD 引起的慢性神经痛的发生机制中起重要作用，它可能是指导治疗慢性疼痛治疗的潜在靶标。

(李蔚文 译 李士通 审校)

Abstract

BACKGROUND:

The NR2B subunit (N-methyl-D-aspartate receptor 2B subunit) regulates the source of pain, and it participates in the formation of central sensitization. Palmitoylation was shown to be involved in the regulation of N-methyl-D-aspartate receptor internalization. In the present study, we investigated the effects of NR2B subunit palmitoylation in a chronic dorsal root ganglia compression (CCD) rat model.

METHODS:

Paw mechanical withdrawal threshold and paw withdrawal thermal latency were used to assess mechanical allodynia and thermal hyperalgesia after a CCD operation and an intrathecal injection of the inhibitor of palmitoylation (2-bromopalmitate [2-BP]). The acyl-biotinyl exchange method, Western blotting, and coimmunoprecipitation were used to investigate the effects of pain processing and the expression of levels of NR2B palmitoylation and phosphorylation at the spinal level.

RESULTS:

CCD rats had long-lasting thermal hyperalgesia and mechanical allodynia, leading to upregulation of the level of NR2B palmitoylation and phosphorylation at the spinal level. An intrathecal treatment with 2-BP on day 14 after CCD surgery markedly improved pain behaviors and downregulated the expression of NR2B palmitoylation and phosphorylation.

CONCLUSIONS:

These data suggest that upregulated NR2B palmitoylation in CCD-induced neuropathic pain and intrathecal injection of 2-BP could reduce pain behaviors and NR2B phosphorylation. Our findings indicate that spinal NR2B palmitoylation is an important component of CCD-induced neuropathic pain, and it might be a potential target for chronic pain therapy.