Table of Contents
March, 2015

Cardiovascular Anesthesiology

Research Report

麻醉医师对冠状动脉搭桥手术预后的影响
(殷文 译 陈杰 校)

The Impact of Anesthesiologists on Coronary Artery Bypass Graft Surgery Outcomes

- Glance, Laurent G.;
- Kellermann, Arthur L.;
- Hannan, Edward L.;
- Fleisher, Lee A.;
- Eaton, Michael P.;
- Dutton, Richard P.;
- Lustik, Stewart J.;
- Li, Yue; Dick, Andrew W.

Anesthesia & Analgesia. 120(3):526-533, March 2015.

三维超声与二维超声心动图对功能性二尖瓣返流近端等速表面积评估的比较
(王嘉兴译 薛张纲校)

Three-Dimensional Versus Two-Dimensional Echocardiographic Assessment of Functional Mitral Regurgitation Proximal Isovelocity Surface Area

- Ashikhmina, Elena;
- Shook, Douglas;
- Cobey, Fred;
- Bollen, Bruce;
- Fox, John;
- Liu, Xiaoxia;
- Worthington, Andrea;
- Song, Pingping;
- Shernan, Stanton

Anesthesia & Analgesia. 120(3):534-542, March 2015.

Review Article

关于新的心脏风险指数的研究计划提出
(陈凌君 译，李士通 审校)
Proposed Research Plan for the Derivation of a New Cardiac Risk Index

- Biccard, Bruce

Anesthesia & Analgesia. 120(3):543-553, March 2015.

一项关于肥厚性心肌病的综述
(俞芳 译 陈杰 校)
Hypertrophic Cardiomyopathy: A Review

- Hensley, Nadia;
- Dietrich, Jennifer;
- Nyhan, Daniel;
- Mitter, Nanhi;
- Yee, May-Sann;
- Brady, MaryBeth

Anesthesia & Analgesia. 120(3):554-569, March 2015

Focused Review

POISE-2 后围术期使用阿司匹林：一些答案，但问题仍存在
(吴赤译 薛张纲校)
Perioperative Aspirin Management After POISE-2: Some Answers, but Questions Remain

- Gerstein, Neal Stuart;
- Carey, Michael Christopher;
- Cigarroa, Joaquin E.;
- Schulman, Peter M.

Anesthesia & Analgesia. 120(3):570-575, March 2015.

Ambulatory Anesthesiology

Research Report

有关围术期戒烟后的长期戒烟率的随机对照试验。

(陈凌君 译，李士通 审校)

Long-Term Quit Rates After a Perioperative Smoking Cessation Randomized Controlled Trial

- Lee, Susan M.;
- Landry, Jennifer;
- Jones, Philip M.;
- Buhrmann, Ozzie;
- Morley-Forster, Patricia

Anesthesia & Analgesia. 120(3):582-587, March 2015.

Anesthetic Pharmacology

Research Report

不同局麻药对人神经母细胞瘤细胞系毒性效应的比较

(隋永恒 译 陈杰 校)

The Comparative Cytotoxic Effects of Different Local Anesthetics on a Human Neuroblastoma Cell Line

- Malet, Arnaud;
- Faure, Marie-Odile;
- Deletage, Nathalie;
- Pereira, Bruno;
- Haas, Jerome;
- Lambert, Gregory

Anesthesia & Analgesia. 120(3):589-596, March 2015.

利多卡因优先抑制蟾蜍卵母细胞中 **P2X7** 嘌呤受体的功能

(吕越昌译 薛张纲校)

Lidocaine Preferentially Inhibits the Function of Purinergic P2X7 Receptors Expressed in Xenopus Oocytes

- Okura, Dan;
- Horishita, Takafumi;
- Ueno, Susumu;
- Yanagihara, Nobuyuki;
- Sudo, Yuka;
- Uezono, Yasuhito;
- Minami, Tomoko;

- Kawasaki, Takashi;
- Sata, Takeyoshi

Anesthesia & Analgesia. 120(3):597-605, March 2015.

Critical Care, Trauma, and Resuscitation

Research Report

一组随机对照试验：在根治性前列腺切除术中，6%羟乙基淀粉 130/0.4 对肾功能,动脉血压力,和血管活性激素的影响

(李婷婷 译，李士通 审校)

The Effect of 6% Hydroxyethyl Starch 130/0.4 on Renal Function, Arterial Blood Pressure, and Vasoactive Hormones During Radical Prostatectomy: A Randomized Controlled Trial

- Kancir, Anne Sophie Pinholt;
- Johansen, Joergen Kühlwein;
- Ekeloef, Niels Peter;
- Pedersen, Erling Bjerregaard

Anesthesia & Analgesia. 120(3):608-618, March 2015.

在原位肝移植手术中羟乙基淀粉和急性肾损伤关系：一项单中心回顾性研究

(张帆 译 陈杰 校)

Hydroxyethyl Starch and Acute Kidney Injury in Orthotopic Liver Transplantation: A Single-Center Retrospective Review

- Hand, William R.;
- Whiteley, Joseph R.;
- Epperson, Tom I.;
- Tam, Lauren;
- Crego, Heather;
- Wolf, Bethany;
- Chavin, Kenneth D.;
- Taber, David J.

Anesthesia & Analgesia. 120(3):619-626, March 2015.

利用实验室检查和旋转血栓弹力描记术对比创伤患者在受伤现场与到达急诊科时凝血的变化

(江凌慧译 薛张纲校)

Changes in Coagulation in Standard Laboratory Tests and ROTEM in Trauma Patients Between On-Scene and Arrival in the Emergency Department

- Theusinger, Oliver M.;
- Baulig, Werner;
- Seifert, Burkhardt;
- Müller, Stefan M.;
- Mariotti, Sergio;
- Spahn, Donat R.

Anesthesia & Analgesia. 120(3):627-635, March 2015.

Obstetric Anesthesiology

Focused Review

引起孕妇心脏衰竭的原因:是围产期心肌病吗?

(李婷婷 译，李士通 审校)

Heart Failure in Pregnant Women: Is It Peripartum Cardiomyopathy?

- Dennis, Alicia Therese

Anesthesia & Analgesia. 120(3):638-643, March 2015.

硬脊膜-蛛网膜穿刺后第六颅神经麻痹

(林雨轩 译 陈杰 校)

Cranial Nerve VI Palsy After Dural-Arachnoid Puncture

- Hofer, Jennifer E.;
- Scavone, Barbara M.

Anesthesia & Analgesia. 120(3):644-646, March 2015.

Neuroscience in Anesthesiology and Perioperative Medicine

Special Article

老年人围术期神经毒性——第四届国际研讨会的总结

(王飞译 薛张纲校)

Perioperative Neurotoxicity in the Elderly: Summary of the 4th International Workshop

- Terrando, Niccolò;
- Eriksson, Lars I.;

- Eckenhoff, Roderic G.

Anesthesia & Analgesia. 120(3):649-652, March 2015.

General Articles

Special Article

在 1889 年和 1950 年之间 Surgeon-nurse 麻醉合作促进手术的发展。

(李婷婷 译，李士通 审校)

Surgeon-Nurse Anesthetist Collaboration Advanced Surgery Between 1889 and 1950

- Koch, Bruce Evan

Anesthesia & Analgesia. 120(3):653-662, March 2015.

Pain and Analgesic Mechanisms

Research Report

鞘内注射 RGS4 抑制剂 CCG50014 可减少小鼠福尔马林实验中伤害性反应并增强阿片类药物介导的镇痛效果

(柳韶华 译 陈杰 校)

Intrathecal RGS4 Inhibitor, CCG50014, Reduces Nociceptive Responses and Enhances Opioid-Mediated Analgesic Effects in the Mouse Formalin Test

- Yoon, Seo-Yeon;
- Woo, Jiwan;
- Park, Joon-Oh;
- Choi, Eui-Ju;
- Shin, Hee-Sup;
- Roh, Dae-Hyun;
- Kim, Key-Sun

Anesthesia & Analgesia. 120(3):671-677, March 2015.

Regional Anesthesia

Research Report

志愿者电流感知阈值评估的可靠性及其临床适用性

(黄文惠译 薛张纲校)

The Reliability of the Current Perception Threshold in Volunteers and Its Applicability in a Clinical Setting

- Gaudreault, François;
- Drolet, Pierre;
- Fallaha, Michel;
- Varin, France

Anesthesia & Analgesia. 120(3):678-683, March 2015.

三维超声与二维超声心动图对功能性二尖瓣返流近端等速表面积评估的比较

Three-Dimensional Versus Two-Dimensional Echocardiographic Assessment of Functional Mitral Regurgitation Proximal Isovelocity Surface Area

Ashikhmina, Elena MD, PhD*; Shook, Douglas MD*; Cobey, Fred MD†; Bollen, Bruce MD‡; Fox, John MD*; Liu, Xiaoxia MS*; Worthington, Andrea BA*; Song, Pingping MD*; Shernan, Stanton MD, FAHA, FASE*

Anesthesia & Analgesia 2015 120 534–542

背景：二尖瓣返流近端等速面（PISA）的几何形状常被假设为一个半球面。然而，对于功能性二尖瓣返流（MR），PISA 既不是半球面也不是半椭圆，常常为非对称且呈新月形。我们利用三维经食管超声（3D TEE）采集全容积数据去测量 PISA，并且对所计算出的有效返流孔面积（EROA）与传统 2D TEE 数据对应比较。从 PISA 计算得到的 EROA 数据，最终与缩流面积比较，这是反映功能性二尖瓣孔返流面积公认的参照面。

方法：24 例功能性二尖瓣返流拟行心脏外科手术患者入组，术中行常规 TEE（含 3D 矩阵排列探针）行功能二尖瓣返流检查（X7-2t; IE33; Philips Healthcare, Inc., Andover, MA)，对 2D 和 3D TEE 对二尖瓣返流严重程度的评价进行回顾性分析。传统 2D TEE 测量 PISA 建立在假设面是半球形和半椭圆基础上。然而，3D TEE 对 PISA 的直接测量来自相应全容积及彩色血流多普勒数据。对基于半球形和半椭圆数据计算得到的 EROAs 与 3D TEE PISAs 相应的数据进行比较。对于计算得到 EROAs 三组 PISA 数据均与缩流面积进行比较。

结果：3D PISA 计算结果均比 HS-PISA 和 HE-PISA 计算值大（平均值±标准差: 4.65 ± 2.03 cm2 vs 2.10 ± 1.58 cm2 and 2.75 ± 1.42 cm2; both $P < 0.0001$）。其中 HE-PISA 所得值比 HS-PISA 大（$P = 0.042$）。此外，3D EROA 均比 HS/HE-EROAs 值大（均数±标准差: 0.44 ± 0.21 vs 0.19 ± 0.12 cm2 and 0.26 ± 0.14; both $P < 0.0001$）。其中 HE-EROA 亦比 HS-EROA 大（$P = 0.024$）。血流紧缩期横截面积与 3D EROA（Spearman r = 0.865）, HS-EROA（Spearman r = 0.820; $P < 0.001$）, HE-EROA（Spearman r = 0.819）面积相关。但是缩流面积与 3D EROA 的差异要明显小于缩流面积与 2D HS- 或者 2D HE-EROA 的差异（$P < 0.0001$）。

结论：利用 3D TEE 直接对患者 PISA 进行测量来评价功能性二尖瓣返流严重程度可能比传统二维要具有优越性。由于 2D TEE 建立在半球形或者半椭圆基础上进行计算，因而评价二尖瓣返流严重程度时可能低估 EROA，原因在于没有对几何面积的非对称性进行全面考虑。

（王嘉兴译 薛张纲校）

BACKGROUND: The geometric shape of the mitral regurgitation (MR) proximal isovelocity surface area (PISA) is conventionally assumed to be a hemisphere (HS). However, in functional MR, PISA is frequently neither an HS nor a hemiellipse (HE) but is often asymmetric and

crescent shaped. We used 3-dimensional transesophageal echocardiographic (3D TEE), full-volume data sets to directly measure the PISA and subsequently compared calculated values of effective regurgitant orifice area (EROA) with conventional 2D TEE techniques. EROA calculations from all PISA measurements were finally compared with the cross-sectional area at the vena contracta, a well-validated reference measure of the functional MR orifice area.

METHODS: Twenty-four cardiac surgical patients with functional MR, who underwent routine intraoperative TEE examinations with a 3D matrix array probe (X7-2t; IE33; Philips Healthcare, Inc., Andover, MA) were retrospectively evaluated for MR severity using quantitative 2D and 3D TEE-derived techniques. Conventional 2D TEE methods were used to estimate PISA assuming an HS shape and an HE shape. In addition, direct measurement of the 3D PISA was obtained (QLab, Philips Healthcare, Inc.) from corresponding full-volume, color-flow Doppler data sets. EROAs calculated from HS- and HE-PISA techniques were compared with the same values obtained from 3D TEE PISAs. EROAs obtained from all 3 PISA techniques were subsequently compared with vena contracta area.

RESULTS: Three-dimensional PISA was significantly larger than both HS-PISA and HE-PISA (mean ± SD: 4.65 ± 2.03 cm2 vs 2.10 ± 1.58 cm2 and 2.75 ± 1.42 cm2; both $P < 0.0001$), respectively. HE-PISA was also larger than HS-PISA ($P = 0.042$). In addition, 3D EROA was larger than both HS- and HE-acquired EROAs (mean ± SD: 0.44 ± 0.21 vs 0.19 ± 0.12 cm2 and 0.26 ± 0.14; both $P < 0.0001$), respectively, while HE-EROA was larger than HS-EROA ($P = 0.024$). Vena contracta area correlated well with 3D EROA (Spearman $r = 0.865$), HS-EROA (Spearman $r = 0.820$; $P < 0.001$) and HE-EROA (Spearman $r = 0.819$). However, the difference between vena contracta area and 3D EROA was significantly less than the differences between vena contracta area and either 2D HS- or 2D HE-EROA ($P < 0.0001$).

CONCLUSIONS: Quantitative assessment of functional MR severity by 3D TEE may be superior to 2D methods by permitting more direct measures of PISA. Two-dimensional TEE techniques for assessing functional MR severity that rely on an HS- or HE-PISA shape may underestimate the EROA due to geometric assumptions that do not account for asymmetry.

POISE-2 后围术期使用阿司匹林：一些答案，但问题仍存在

Perioperative Aspirin Management After POISE-2: Some Answers, but Questions Remain

Gerstein, Neal Stuart MD, FASE*; Carey, Michael Christopher MD*; Cigarroa, Joaquin E. MD†; Schulman, Peter M. MD‡

Anesthesia & Analgesia 2015 120 570–575

阿司匹林是许多心脏病或者高危因素患者重要的不间断终生治疗的部分。然而，阿司匹林是否应该在非心脏手术的病人继续使用或停止使用是常见的临床难题，即阿司匹林减少血栓形成和增加出血潜能之间的平衡。在这篇焦点综述中，我们描述了阿司匹林在治疗和预防心血管疾病的作用，总结了在围手术期使用阿司匹林（包括最近公布的围手术期缺血性评价[POISE]-2 实验）中最重要的文献，并提出目前围术期使用阿司匹林的建议。POISE-2 显示，围手术期使用阿斯匹林不改变心血管事件的风险，并可能导致更多的出血。然而，这些发现是由一些和本研究相关的方法学文献的回顾。目前可用的文献，包括 POISE-2，指出除非有明确的指南为基础的一级或二级预防指征，手术患者不应当使用阿司匹林。除了闭合腔室的手术，髓内脊柱外科手术，或前列腺手术，以指南为基础的初级和二级预防的中等风险患者，围术期可以继续使用阿司匹林。

（吴赤译 薛张纲校）

Aspirin constitutes important uninterrupted lifelong therapy for many patients with cardiovascular (CV) disease or significant (CV) risk factors. However, whether aspirin should be continued or withheld in patients undergoing noncardiac surgery is a common clinical

conundrum that balances the potential of aspirin for decreasing thrombotic risk with its possibility for increasing perioperative blood loss. In this focused review, we describe the role of aspirin in treating and preventing cardiovascular disease, summarize the most important literature on the perioperative use of aspirin (including the recently published Peri Operative ISchemic Evaluation [POISE]-2 trial), and offer current recommendations for managing aspirin during theperioperative period. POISE-2 suggests that aspirin administration during the perioperative period does not change the risk of a cardiovascular event and may result in increased bleeding. However, these findings are tempered by a number of methodological issues related to the study. On the basis of currently available literature, including POISE-2, aspirin should not be administered to patients undergoing surgery unless there is a definitive guideline-based primary or secondary prevention indication. Aside from closed-space procedures, intramedullary spine surgery, or possibly prostate surgery, moderate-risk patients taking lifelong aspirin for a guideline-based primary or secondary indication may warrant continuation of their aspirin throughout the perioperative period.

利多卡因优先抑制蟾蜍卵母细胞中 P2X7 嘌呤受体的功能

Lidocaine Preferentially Inhibits the Function of Purinergic P2X7 Receptors Expressed in Xenopus Oocytes

Okura, Dan MD*; Horishita, Takafumi MD, PhD*; Ueno, Susumu MD, PhD†; Yanagihara, Nobuyuki PhD‡; Sudo, Yuka PhD§; Uezono, Yasuhito MD, PhD‖ ; Minami, Tomoko MD*; Kawasaki, Takashi MD, PhD*; Sata, Takeyoshi MD, PhD*

Anesthesia & Analgesia 2015 120 597–605

背景：利多卡因通过全身或局部使用经被广泛用于缓解急性疼痛和慢性顽固性疼痛。许多研究报道利多卡因影响包括电压门控钠通道在内的多个疼痛信号通路，提示利多卡因缓解疼痛有多种机制介导。一些细胞外三磷酸腺苷受体亚基在慢性疼痛机制中起重要作用，但是很少有研究利多卡因对三磷酸腺苷受体的影响。我们研究了利多卡因对 P2X3、P2X4、P2X7 嘌呤受体的影响来探讨利多卡因缓解疼痛的机制。

方法：我们应用全细胞双电极电压钳技术来研究利多卡因对蟾蜍卵母细胞中三磷酸腺苷受体亚基（P2X3、P2X4、P2X7）中 ATP 介导的电流的影响。

结果：利多卡因呈浓度依赖性抑制 P2X7 亚基中 ATP 介导的电流，但不会抑制 P2X3、P2X4 亚基中 ATP 介导的电流。利多卡因的半数最大抑制浓度是 282±45μmol/L 。但是，甲哌卡因、罗哌卡因和布比卡因仅仅对 P2X7 受体有有限的抑制作用。利多卡因非竞争性抑制了 P2X7 受体的三磷酸腺苷浓度反应性曲线。细胞内和细胞外的 QX-314 以及苯唑卡因浓度依赖性抑制 P2X7 受体中 ATP 介导的电流。同时，在利多卡因持续存在情况下每 5 分钟重复 ATP 治疗表明利多卡因的抑制作用是功能依赖性的。最终，选择性 P2X7 受体拮抗剂亮蓝 G 和 AZ11645373 不会影响利多卡因对 P2X7 受体的抑制作用。

结论：利多卡因选择性抑制蟾蜍卵母细胞中 P2X7 受体的功能。这种作用可能由细胞内外的离子通道孔触发。这些研究结果至少可以帮助理解利多卡因局部应用时镇痛效应的机制。

（吕越昌译 薛张纲校）

BACKGROUND: Lidocaine has been widely used to relieve acute pain and chronic refractory pain effectively by both systemic and local administration. Numerous studies reported that lidocaine affects several pain signaling pathways as well as voltage-gated sodium channels, suggesting the existence of multiple mechanisms underlying pain relief by lidocaine. Some extracellular adenosine triphosphate (ATP) receptor subunits are thought to play a role in chronic pain mechanisms, but there have been few studies on the effects of lidocaine on ATP receptors.

We studied the effects of lidocaine on purinergic P2X3, P2X4, and P2X7 receptors to explore the mechanisms underlying pain-relieving effects of lidocaine.

METHODS: We investigated the effects of lidocaine on ATP-induced currents in ATP receptor subunits, P2X3, P2X4, and P2X7 expressed in Xenopus oocytes, by using whole-cell, two-electrode, voltage-clamp techniques.

RESULTS: Lidocaine inhibited ATP-induced currents in P2X7, but not in P2X3 or P2X4 subunits, in a concentration-dependent manner. The half maximal inhibitory concentration for lidocaine inhibition was 282 ± 45 μmol/L. By contrast, mepivacaine, ropivacaine, and bupivacaine exerted only limited effects on the P2X7 receptor. Lidocaine inhibited the ATP concentration-response curve for the P2X7 receptor via noncompetitive inhibition. Intracellular and extracellular N-(2,6-dimethylphenyl carbamoylmethyl) triethylammonium bromide (QX-314) and benzocaine suppressed ATP-induced currents in the P2X7 receptor in a concentration-dependent manner. In addition, repetitive ATP treatments at 5-minute intervals in the continuous presence of lidocaine revealed that lidocaine inhibition was use-dependent. Finally, the selective P2X7 receptor antagonists Brilliant Blue G and AZ11645373 did not affect the inhibitory actions of lidocaine on the P2X7 receptor.

CONCLUSIONS: Lidocaine selectively inhibited the function of the P2X7 receptor expressed in Xenopus oocytes. This effect may be caused by acting on sites in the ion channel pore both extracellularly and intracellularly. These results help to understand the mechanisms underlying the analgesic effects of lidocaine when it is administered locally at least.

利用实验室检查和旋转血栓弹力描记术对比创伤患者在受伤现场与到达急诊科时凝血的变化

Changes in Coagulation in Standard Laboratory Tests and ROTEM in Trauma Patients Between On-Scene and Arrival in the Emergency Department

Theusinger, Oliver M. MD*; Baulig, Werner MD*; Seifert, Burkhardt PhD†; Müller, Stefan M. MD‡; Mariotti, Sergio MD‡; Spahn, Donat R. MD, FRCA*

Anesthesia & Analgesia 2015 120 627–635

背景：当创伤患者到达急诊科（ED）时，常常已经发生了凝血功能障碍。但是，创伤发生至到达急诊这段时间，凝血功能的变化情况知之甚少。至今还没有研究对从创伤现场到医院这段时间的凝血状态充分评估，包括血栓弹力图。本研究假设，在创伤现场和到达 ED 时测得的凝血指标可能发生了变化。

方法：本研究是一项前瞻性、单中心、观察性研究，调查 50 名外伤患者在现场及抵达 ED 时的凝血情况。测量内容包括动脉血气，ROTEM® ，蛋白质 S100，蛋白质 C 活性，蛋白 S，Quick 值，国际标准化比值，活化部分凝血酶时间，D-二聚体，凝血因子 V（FV），凝血因子 XIII（FXIII），纤维蛋白原，血红蛋白，血细胞比容，血小板以及体积，以及在第一个 24 小时内使用血液制品。

结果：以下观察指标在现场与 ED 之间有显著改变：局部静脉氧分压增加，钠、葡萄糖和乳酸盐下降。EXTEM、INTEM 和 APTEM 中，凝血时间和血块形成时间显著增加，而最大血凝块硬度和 α 角度显著下降（P≤0.004）。对于 FIBTEM，凝血时间显著增加，最大血凝块硬度显著下降。实验室检查中，血红蛋白、血细胞比容、血小板、活化部分凝血酶时间、纤维蛋白原、FV、FXIII、C 蛋白活性、蛋白 S 和蛋白 S100 均显著减少（P≤0.001）。

结论：尽管在现场与 ED 中大部分实验室检查和旋转血栓凝血试验指标均提示凝血功能恶化，但是在现场监测创伤患者的凝血情况并不能为大多数患者提供临床重要信息。在创伤

发生一小时后，纤维蛋白原显著活化和消耗，FV、FXIII、C 蛋白活性和蛋白 S 的变化显著。

（江凌慧译 薛张纲校）

BACKGROUND: When trauma patients arrive in the emergency department (ED), coagulopathy frequently is present. The time course, however, in which this coagulopathy develops is poorly understood. No study has fully evaluated the coagulation status, including thromboelastometry on-scene and at hospital arrival. We hypothesized that measured coagulation variables might change when measured at the scene of injury and upon arrival to the ED.

METHODS: We performed a prospective, single-center, observational study investigating coagulation status in 50 trauma patients on-scene and at arrival in the ED. Measurements included arterial blood gases, ROTEM® , protein S100, protein C activity, protein S, Quick value, international normalized ratio, activated partial thromboplastin time, D-dimer, coagulation factor V (FV), coagulation factor XIII (FXIII), fibrinogen, hemoglobin, hematocrit, platelets, and volume and blood products being administered during the first 24 hours.

RESULTS: Significant changes between on-scene and the ED were observed for the following values: partial venous oxygen pressure increased and sodium, glucose, and lactate decreased. For EXTEM, INTEM, and APTEM, clotting time and clot formation time increased significantly, whereas maximal clot firmness and angle α decreased significantly (all $P \leq 0.004$). For FIBTEM, clotting time increased significantly and maximal clot firmness decreased significantly. In the laboratory, significant reductions in hemoglobin, hematocrit, platelets, activated partial thromboplastin time, fibrinogen, FV, FXIII, protein C activity, protein S, and protein S100 were observed (all $P \leq 0.001$).

CONCLUSIONS: Although most all laboratory and rotational thromboelastometry coagulation tests worsened over time when measured on-scene and in the ED, monitoring coagulation at the scene of trauma does not provide clinically important information in a majority of trauma patients. One hour after injury, significant activation and consumption of fibrinogen, FV, FXIII, protein C activity, and protein S were observed.

老年人围术期神经毒性——第四届国际研讨会的总结

Perioperative Neurotoxicity in the Elderly: Summary of the 4th International Workshop

Terrando, Niccolò PhD*; Eriksson, Lars I. MD, PhD†; Eckenhoff, Roderic G. MD‡

Anesthesia & Analgesia 2015 120 649–652

为了研究学习关于不同形式的手术后认知功能障碍的最新进展，一些科研工作者及医务工作者相聚在瑞典首都—斯德哥尔摩，进行了一整天的演讲及相互之间的探讨。这篇文章总结了本次会议的研讨内容，强调了老年人群围术期神经毒性领域的最新进展、面临的挑战及未来发展的方向。

（王飞译 薛张纲校）

To learn the latest developments in the various forms of postoperative cognitive dysfunction, a group of scientists and physicians met in Stockholm for a full day of presentations and interactive discussions. This article summarizes the discussion; highlighting progress, challenges, and new directions in the area of perioperative neurotoxicity in our aging population.

志愿者电流感知阈值评估的可靠性及其临床适用性

The Reliability of the Current Perception Threshold in Volunteers and Its Applicability in a Clinical Setting

Gaudreault, François BSc, PhD*; Drolet, Pierre MD†; Fallaha, Michel MD‡; Varin, France BPharm, PhD*

Anesthesia & Analgesia 2015 120 678–683

背景：尽管当前电流感知阈值(CPT)已经被用于评估术前患者的感觉阻断有效性，但其在控制条件下的可靠性并没有被研究。我们进行了两个独立的研究。第一项研究的主要目的是确定在健康志愿者中，重复刺激后的 CPT 的重测信度。第二项研究的主要目的是通过评价接受膝关节手术患者股神经阻滞感觉消失来评价该技术的临床适用性。

方法：三十个健康受试者在完全相同的时间中进行研究，间隔至少 24 小时，期间连续 5 次刺激双侧大腿前内侧后测量 CPTs。对 15 个使用 20 毫升 0.5%的罗哌卡因行股神经阻滞的骨科病人行类似的测试。重测信度的评估使用组内相关(ICC)和标准误(表示为变异系数[CVSEM])，student t 检验($P < 0.05$)用来比较基线及增加的电流感知阈值。

结果：一日内组内相关值范围 (%可信区间[CI])为从 0.66 到 0.95，变异系数大约 39%(% CI:17% - -58%)，日间组内相关值范围从 0.57 到 0.94(CVSEM：约 45%，% CI：13%－71%)，这表明逐日 CPT 测量值仍是有变异的。引起骨科患者感知所需的电流强度显著增加，从未使用局麻药时平均 CPT 值 82.5±66.5μA(SD)到使用后 22±8 分钟后的 481±338μA。

结论：健康志愿者中，CPT 被证明是评估一日内感知的可靠工具。我们的研究也表明，CPT 可以在临床上被应用于以定量的方式描述周围神经阻滞起效，从而支持它在未来的研究中用于比较不同区域的麻醉模式或方法。

（黄文惠译 薛张纲校）

BACKGROUND: Even though current perception threshold (CPT) has been used for evaluating the effectiveness of sensory block in patients before surgery, its reliability under controlled conditions has not been investigated. Two independent investigations were performed. The primary objective of the first study was to determine the test-retest reliability of CPT measures after repeated stimulations in a group of healthy volunteers. The primary objective of the second study was to evaluate the clinical applicability of this technique to assess the sensory onset of a femoral nerve block in patients undergoing knee surgery.

METHODS: Thirty healthy subjects participated in 2 identical sessions, separated by at least 24 hours, in which CPTs were measured after 5 consecutive stimulations over the anteromedial aspect of the thigh. Similar measures were obtained in 15 orthopedic patients receiving a femoral nerve block with 20 mL of ropivacaine 0.5%. Test-retest reliability was assessed using intraclass correlation (ICC) and standard error of measurement (expressed as coefficient of variation [CVSEM]), whereas Student t test ($P < 0.05$) compared the increase in CPTs over baseline.

RESULTS: Within-day ICC values ranged (% confidence interval [CI]) from 0.66 to 0.95 with a CVSEM of approximately 39% (% CI: 17%-58%). Between-day ICC values, ranging from 0.57 to 0.94 (CVSEM: approximately 45%, % CI: 13%-71%), indicated that day-to-day CPT measurements are also variable. The current intensity needed for sensory perception in orthopedic patients significantly increased, varying from a mean CPT value of 82.5 ± 66.5 μA (SD) at time zero to an average of 481 ± 338 μA, 22 ± 8 minutes after the administration of the local anesthetic.

CONCLUSIONS: CPT proved to be a reliable assessment tool for within-day sensory perception in healthy volunteers. Our study also suggests that CPT can be applied to characterize, in a quantitative manner, the sensory onset of a peripheral nerve block in a clinical setting, thereby supporting its use in future studies comparing different regional anesthetic modalities or approaches.

麻醉医师对冠状动脉搭桥手术预后的影响

The Impact of Anesthesiologists on Coronary Artery Bypass Graft Surgery Outcomes

Glance, Laurent G. MD[*†]; Kellermann, Arthur L. MD, MPH[‡]; Hannan, Edward L. PhD, MS[§]; Fleisher, Lee A. MD[‖] ; Eaton, Michael P. MD[*]; Dutton, Richard P. MD, MBA[¶]; Lustik, Stewart J. MD, MBA[*]; Li, Yue PhD[#]; Dick, Andrew W. PhD[†]

Anesthesia & Analgesia 2015 120 526–533

背景：每 150 名住院患者中就有一人会经历一次致命的不良事件;几乎有一半的此类事件涉及外科病人。虽然已有文献报道外科医生的技术水准和质量存在差异，但关于麻醉医师对重大手术预后的影响还知之甚少。此研究目标是在控制病例组合和医院质量前提下，确定不同麻醉医师之间手术预后是否存在显著差异。

方法：临床数据来源于纽约州心脏手术报告系统，对 7920 名行孤立的冠状动脉搭桥手术患者进行了此项回顾性观察研究。采用多变量逻辑回归模型，通过控制患者人口学、疾病严重程度、合并症以及医院质量参数，研究麻醉医师之间患者死亡或重大并发症(Q 波性心肌梗死、肾功能衰竭、中风)的差异。

结果：通过固定效应模型对麻醉医师的技能水平进行量化。麻醉医师间技能存在显著差异 (P < 0.001)。由低水平麻醉医师管理的患者(对应麻醉医师风险校正预后分布的第 25 百分位) ，其死亡率或严重并发症发生率(修正率 3.33%；95%可信区间(CI)，3.09% -3.58%)是高水平麻醉医师（对应第 75 百分位）(修正率 1.82%；95%置信区间，1.58% -2.10%)管理患者的近两倍。在所有患者风险分组中都观察到存在这种差异。

结论: 接受冠状动脉搭桥手术的患者的死亡率或重大并发症发生率在不同麻醉医师之间存在显著差异。这些发现表明，可能有机会通过提高围手术期管理水平改变高危手术患者预后。

（殷文 译 陈杰 校）

BACKGROUND: One of every 150 hospitalized patients experiences a lethal adverse event; nearly half of these events involves surgical patients. Although variations in surgeon performance and quality have been reported in the literature, less is known about the influence of anesthesiologists on outcomes after major surgery. Our goal of this study was to determine whether there is significant variation in outcomes between anesthesiologists after controlling for patient case mix and hospital quality.

METHODS: Using clinical data from the New York State Cardiac Surgery Reporting System, we conducted a retrospective observational study of 7920 patients undergoing isolated coronary artery bypass graft surgery. Multivariable logistic regression modeling was used to examine the variation in death or major complications (Q-wave myocardial infarction, renal failure, stroke) across anesthesiologists, controlling for patient demographics, severity of disease, comorbidities, and hospital quality.

RESULTS: Anesthesiologist performance was quantified using fixed-effects modeling. The variability across anesthesiologists was highly significant (P < 0.001). Patients managed by low-performance anesthesiologists (corresponding to the 25th percentile of the distribution of anesthesiologist risk-adjusted outcomes) experienced nearly twice the rate of death or serious complications (adjusted rate 3.33%; 95% confidence interval [CI], 3.09%–3.58%) as patients managed by high-performance anesthesiologists (corresponding to the 75th percentile) (adjusted rate 1.82%; 95% CI, 1.58%–2.10%). This performance gap was observed across all patient risk groups.

CONCLUSIONS: The rate of death or major complications among patients undergoing coronary artery bypass graft surgery varies markedly across anesthesiologists. These findings suggest that

there may be opportunities to improve perioperative management to improve outcomes among high-risk surgical patients.

一项关于肥厚性心肌病的综述

Hypertrophic Cardiomyopathy: A Review

Hensley, Nadia MD; Dietrich, Jennifer MD; Nyhan, Daniel MD; Mitter, Nanhi MD; Yee, May-Sann MD; Brady, MaryBeth MD

Anesthesia & Analgesia 2015 120 554–569

肥厚性心肌病（hypertrophic cardiomyopathy，HCM）是一种麻醉科医师在围术期较常遇到的疾病。50 年前，HCM 被认为是一种神秘的疾病。然而，如今人们对于肥厚性心肌病患者的理解以及诊断能力有了突飞猛进的进步。肥厚性心肌病患者具有基因型和表观变异性。实际上，这些患者有一亚组表现为 HCM 基因型而非表型（左心室肥厚）。对于这些患者有许多治疗手段，包括药物治疗控制症状，植入式心脏除颤器缓解恶性心律失常以及手术心肌和室间隔（部分）切除以缓解左室流出道梗阻。准确诊断对这部分患者围术期管理是至关重要的。诊断通常通过心超评价左心室肥厚，左心室流出道压力差，收缩期和舒张期功能，以及二尖瓣解剖及功能情况来完成。心脏核磁共振检查也有一定的价值，因为它可判断左心室肥厚的部位及程度以及二尖瓣和乳头肌的解剖异常情况。本文针对于非心脏手术麻醉医师关于肥厚性心肌病的综述中，讨论肥厚性心肌病的临床表现以及基因突变，心超在诊断和手术评估中的重要作用，以及肥厚性心肌病患者行非心脏手术的围术期管理，尤其是肥厚性心肌病产妇的管理。

（俞芳 译 陈杰 校）

Hypertrophic cardiomyopathy (HCM) is a relatively common disorder that anesthesiologists encounter among patients in the perioperative period. Fifty years ago, HCM was thought to be an obscure disease. Today, however, our understanding and ability to diagnose patients with HCM have improved dramatically. Patients with HCM have genotypic and phenotypic variability. Indeed, a subgroup of these patients exhibits the HCM genotype but not the phenotype (left ventricular hypertrophy). There are a number of treatment modalities for these patients, including pharmacotherapy to control symptoms, implantable cardiac defibrillators to manage malignant arrhythmias, and surgical myectomy and septal ablation to decrease the left ventricular outflow obstruction. Accurate diagnosis is vital for the perioperative management of these patients. Diagnosis is most often made using echocardiographic assessment of left ventricular hypertrophy, left ventricular outflow tract gradients, systolic and diastolic function, and mitral valve anatomy and function. Cardiac magnetic resonance imaging also has a diagnostic role by determining the extent and location of left ventricular hypertrophy and the anatomic abnormalities of the mitral valve and papillary muscles. In this review on hypertrophic cardiomyopathy for the noncardiac anesthesiologist, we discuss the clinical presentation and genetic mutations associated with HCM, the critical role of echocardiography in the diagnosis and the assessment of surgical interventions, and the perioperative management of patients with HCM undergoing noncardiac surgery and management of the parturient with HCM.

不同局麻药对人神经母细胞瘤细胞系毒性效应的比较

The Comparative Cytotoxic Effects of Different Local Anesthetics on a Human Neuroblastoma Cell Line

Malet, Arnaud PhD[*]; Faure, Marie-Odile PhD[*]; Deletage, Nathalie PhD[†]; Pereira, Bruno PhD[‡]; Haas, Jerome[*]; Lambert, Gregory PharmD, PhD[*]

Anesthesia & Analgesia 2015 120 589–596

背景：局麻药物（LAs）通常被认为是安全的，但有研究认为所有局麻药都有可能引起神经元损伤。因此，在本研究中比较了不同局麻药对人神经母细胞瘤的 50%致死率（LD50），这些局麻药包括：阿替卡因，利多卡因，甲哌卡因，布比卡因，普鲁卡因和罗哌卡因。

方法：每种局麻药用不同剂量处理未分化 SH-SY5Y 细胞各 20min。应用四唑染色（WST-1）并光密度定量检测法评估细胞活性。通过反应曲线计算 LD50.

结果：如同预期，所有局麻药都以浓度依赖性方式引起细胞死亡。20min 局麻药处理 SH-SY5Y 细胞株后，布比卡因，利多卡因，普鲁卡因，甲哌卡因，阿替卡因，罗哌卡因的 LD50 分别为：0.95 ± 0.08, 3.35 ± 0.33, 4.32 ± 0.39, 4.84 ± 1.28, 8.98 ± 2.07, 13.43 ± 0.61 mM。罗哌卡因的 LD50 与布比卡因，利多卡因，甲哌卡因和普鲁卡因的 LD50 有显著差异（所有 P≤0.009）。罗哌卡因与阿替卡因之间以及普鲁卡因、利多卡因和甲哌卡因之间的 LD50 没有显著差异。阿替卡因与利多卡因的 LD50 有明显差异（p=0.03）.布比卡因的 LD50 显著低于其他局麻药的 LD50（所有 P ≤ 0.003）

结论：局麻药神经毒性是在经过认证的体外模型，即人神经母细胞瘤细胞系 SH-SY5Y 上检测的。根据其神经毒性将局麻药分为三类：（1）低度毒性（罗哌卡因，阿替卡因）；（2）中度毒性（甲哌卡因、普鲁卡因、利多卡因）；（3）高度毒性（布比卡因）。在口腔麻醉药物中：阿替卡因对于 SH-SY5Y 细胞的神经毒性最小。

（隋永恒 译 陈杰 校）

BACKGROUND: Although local anesthetics (LAs) are generally accepted as being safe, incidental neuronal damage has been reported for all LAs in humans. Therefore, in this study, we compared the dose corresponding to 50% cell lethality (LD50) of articaine, lidocaine, mepivacaine, bupivacaine, prilocaine, and ropivacaine in human neuroblastoma cells.

METHODS: Undifferentiated SH-SY5Y cells were exposed for 20 minutes to different concentrations of each LA. Metabolic activity of viable cells was assessed by a cell viability test with a tetrazolium dye (WST-1) followed by optical density quantification. LD50 was determined by extrapolation of curve response.

RESULTS: As expected, all LAs induced cell death in a concentration-dependent manner. The bupivacaine, lidocaine, prilocaine, mepivacaine, articaine, and ropivacaine LD50 were 0.95 ± 0.08, 3.35 ± 0.33, 4.32 ± 0.39, 4.84 ± 1.28, 8.98 ± 2.07, and 13.43 ± 0.61 mM, respectively, after 20 minutes of incubation on SH-SY5Y cells. Ropivacaine LD50 was significantly different from the bupivacaine, lidocaine, mepivacaine, and prilocaine LD50 (all P ≤ 0.009). No significant difference was obtained between ropivacaine and articaine LD50 and between prilocaine, lidocaine, and mepivacaine LD50. Articaine LD50 was significantly different from lidocaine LD50 (P = 0.03). Bupivacaine LD50 was significantly lower compared with all LAs (all P ≤ 0.003).

CONCLUSIONS: LA neurotoxicity was tested in a validated in vitro model SH-SY5Y, a human neuroblastoma cell line. Three groups of LAs were identified in terms of toxicity: (1) the less (ropivacaine, articaine); (2) medium (mepivacaine, prilocaine, lidocaine); and (3) the high (bupivacaine). Among dental anesthetics, articaine is the least neurotoxic in SH-SY5Y cells.

在原位肝移植手术中羟乙基淀粉和急性肾损伤关系：一项单中心回顾性研究

Hydroxyethyl Starch and Acute Kidney Injury in Orthotopic Liver Transplantation: A Single-Center Retrospective Review

Hand, William R. MD[*]; Whiteley, Joseph R. DO[*]; Epperson, Tom I. MD[*]; Tam, Lauren BS[†]; Crego, Heather RN, BSN, CCTC[‡]; Wolf, Bethany PhD[§]; Chavin, Kenneth D. MD, PhD[‖] ; Taber, David J. PharmD[‖]

Anesthesia & Analgesia 2015 120 619–626

背景： 急性肾损伤（AKI）是原位肝移植术（OLT）的一个常见并发症。肝衰竭的病理生理改变及术中事件与 OLT 后 AKI 相关。OLT 术中胶体常规用于维持血管内容量。近期证据显示在危重病人中 6%羟乙基淀粉（HES）（130/0.4）与 AKI 相关。

方法： 研究者对电子麻醉记录、手术记录和围术期实验室检查结果进行了一个回顾性横断面分析。术后 AKI 根据 RIFLE 标准进行诊断。AKI 根据血清肌酐从术前基线至术后第七天峰水平的改变被分为危险、损伤和衰竭三个阶段。单变量和多变量分析用于评估术中使用的胶体种类和 AKI 的关系。

结果： 174 例接受 OLT 并获取完整信息的成人患者被纳入了研究。其中，50 例仅使用了 5%白蛋白，25 例同时使用了 5%白蛋白和 HES，另外 99 例仅使用了 HES。白蛋白组、白蛋白及 HES 组和 HES 组在患者个人情况和术中情况中没有差异。使用胶体种类和 AKI（Rifle 标准-损伤阶段）之间存在显著的线性统计学差异。与使用白蛋白的患者相比，使用 HES 的患者 OLT 术后发生 AKI 的可能性增加了 3 倍（调整后的比值比 2.94，95%可信区间 1.13-7.7，P = 0.027）。胶体使用种类（5%白蛋白组、白蛋白/HES 组和 HES 组对比，排名顺序）和“损伤”之间的线性关系在统计学上显著相关（P = 0.048）。倾向性匹配分析也显示接受白蛋白患者和 HES 患者之间的 AKI 发病率存在显著差异（P = 0.044）。

结论： 在 OLT 术中输注 6%HES（130/0.4）的患者相较输注 5%白蛋白的患者更有可能发生 AKI。这些回顾性结论与近期关于 6%HES（130/0.4）与肾损害在危重病人中存在相关性的临床试验相吻合。

（张帆 译 陈杰 校）

BACKGROUND: Acute kidney injury (AKI) is a frequent complication of orthotopic liver transplantation (OLT). Hepatic failure pathophysiology and intraoperative events contribute to AKI after OLT. Colloids are routinely used to maintain intravascular volume during OLT. Recent evidence has implicated 6% hydroxyethyl starch (HES) (130/0.4) with AKI in critically ill patients.

METHODS: We performed a retrospective cross-sectional analysis of electronic anesthesia records, surgical dictations, and perioperative laboratory results. Postoperative AKI incidence was determined by RIFLE (Risk Injury Failure Loss End-Stage) criteria. AKI was staged into Risk, Injury, and Failure based on change in serum creatinine from preoperative baseline to peak level by postoperative day 7. Uni- and multivariate analysis was used to evaluate the association between type of intraoperative colloid administered and AKI.

RESULTS: One hundred seventy-four adult patients underwent OLT and had complete records for review. Of these, 50 received only 5% albumin, 25 received both 5% albumin and HES, and 99 received only HES. Albumin-only, albumin and HES, and HES-only groups were otherwise homogeneous based on patient characteristics and intraoperative variables. There was a statistically significant linear-by-linear association between type of colloid(s) administered and AKI (Rifle Criteria—Injury Stage). Patients administered HES were 3 times more likely to develop AKI within 7 days after OLT compared with albumin (adjusted odds ratio 2.94, 95% confidence interval, 1.13–7.7, P = 0.027). The linear trend between colloidal use (5% albumin only versus albumin/HES versus HES only, ranked ordering) and “injury” was statistically significant (P = 0.048). A propensity-matched analysis also showed a significant difference in the incidence of AKI between the patients receiving albumin compared with HES (P = 0.044).

CONCLUSIONS: Patients receiving 6% HES (130/0.4) likely had an increased odds of AKI compared with patients receiving 5% albumin during OLT. These retrospective findings are consistent with recent clinical trials that found an association between 6% HES (130/0.4) and renal injury in critically ill patients.

硬脊膜-蛛网膜穿刺后第六颅神经麻痹

Cranial Nerve VI Palsy After Dural-Arachnoid Puncture

Hofer, Jennifer E. MD; Scavone, Barbara M. MD

Anesthesia & Analgesia 2015 120 644–646

本文对硬脊膜-蛛网膜穿刺后第六颅神经（CN VI）损伤相关文献进行了回顾。CN VI 损伤是罕见的，严重程度范围从复视至完全眼外直肌麻痹伴倾斜凝视不等。提出的损伤机制是脑脊液渗漏引起颅内压降低和脑干向下位移。这导致了 CN VI 受牵拉引起神经伸展和脱髓鞘。症状可能出现在硬脊膜-蛛网膜穿刺后 1 天到 3 周，典型症状还伴随硬脊膜穿刺后头痛。症状的缓解可能需要数周到数月。使用小号的，非斜面穿刺针可能减少颅内压降低和随后的 CN VI 损伤。当眼部症状出现时，早期实施硬膜外血补垫可能会降低发病率或预防眼部症状的进展。

（林雨轩 译 陈杰 校 ）

In this article, we provide a literature review of cranial nerve (CN) VI injury after dural-arachnoid puncture. CN VI injury is rare and ranges in severity from diplopia to complete lateral rectus palsy with deviated gaze. The proposed mechanism of injury is cerebrospinal fluid leakage causing intracranial hypotension and downward displacement of the brainstem. This results in traction on CN VI leading to stretch and neural demyelination. Symptoms may present 1 day to 3 weeks after dural-arachnoid puncture and typically are associated with a postdural puncture (spinal) headache. Resolution of symptoms may take weeks to months. Use of small-gauge, noncutting spinal needles may decrease the risk of intracranial hypotension and subsequent CN VI injury. When ocular symptoms are present, early administration of an epidural blood patch may decrease morbidity or prevent progression of ocular symptoms.

鞘内注射 RGS4 抑制剂 CCG50014 可减少小鼠福尔马林实验中伤害性反应并增强阿片类药物介导的镇痛效果

Intrathecal RGS4 Inhibitor, CCG50014, Reduces Nociceptive Responses and Enhances Opioid-Mediated Analgesic Effects in the Mouse Formalin Test

Yoon, Seo-Yeon DVM, PhD[*]; Woo, Jiwan MS[*†]; Park, Joon-Oh MS[*]; Choi, Eui-Ju PhD[†]; Shin, Hee-Sup MD, PhD[‡]; Roh, Dae-Hyun DVM, PhD[§]; Kim, Key-Sun PhD[*¶]

Anesthesia & Analgesia 2015 120 671–677

背景： G 蛋白信号转导调节蛋白 4（regulator of G-protein signaling protein type 4，RGS4）加速 Gαi 和 Gαo 的鸟苷三磷酸酶活性，导致 G 蛋白偶联受体信号转导失活。阿片受体（opioid receptor ，OR）和一种 Gαi 耦联受体在中枢神经系统的痛觉调节中发挥重要作用。本研究验证（1） 脊髓 RGS4 是否影响福尔马林疼痛试验中的伤害性反应；(2) 这种 RGS4 介导的效应是否参与 OR 激活；(3) μ-OR 诱导激动剂诱导的镇痛效应是否由 RGS4 调节。

方法： 皮下注射福尔马林（1%，20μL）到雄性 129s4 / svjae×C57BL/6J（RGS4+/+或 RGS4−/−）小鼠右后爪，计数 40min 内的舔体反应。分别计算在 0 - 10 min （早期）及 10 - 40 min （晚期） 舔右后爪所花费的时间（秒）作为急性伤害性疼痛和炎症性疼痛反应指标。注入福尔马林 5 min 前于鞘内注射 RGS4 抑制剂 CCG50014 和 （或） μ-OR 受体激动剂、[D-Ala、N-MePhe Gly-ol]-脑啡肽（DAMGO）。在注射 CCG50014 前 30min，腹腔内注射非选择性 OR 拮抗剂纳洛酮。

结果： 福尔马林注射的小鼠表现出典型的双相伤害刺激行为。在晚期而非早期， RGS4 基因敲除小鼠疼痛反应有明显下降。同样鞘内注射 CCG50014 （10、 30 或 100 nmol） 能剂

量依赖性地减弱晚期伤害性反应。纳洛酮（5 mg/kg）可完全阻断 RGS4 抑制剂的抗伤害效应。相比之下，鞘内注射 DAMGO 能同时剂量依赖性地减弱早晚期伤害性反应。RGS4 基因缺失或合用 CCG 50014（10 nmol）显著增强 DAMGO 的这种镇痛效果。

结论：这些研究结果表明，脊髓 RGS4 抑制福尔马林疼痛试验中内源性或外源性 OR 介导的抗伤害作用。因此，抑制 RGS4 活动可以增强 OR 受体激动剂的镇痛效应。通过合用 RGS4 抑制剂可增强 OR 激动剂的镇痛作用，此现象启发了炎症性疼痛管理的一种新治疗策略。

（柳韶华 译 陈杰 校）

BACKGROUND: The regulator of G-protein signaling protein type 4 (RGS4) accelerates the guanosine triphosphatase activity of Gαi and Gαo, resulting in the inactivation of G-protein–coupled receptor signaling. An opioid receptor (OR), a Gαi-coupled receptor, plays an important role in pain modulation in the central nervous system. In this study, we examined whether (1) spinal RGS4 affected nociceptive responses in the formalin pain test, (2) this RGS4-mediated effect was involved in OR activation, and (3) the μ-OR agonist–induced antinociceptive effect was modified by RGS4 modulation.

METHODS: Formalin (1%, 20 μL) was injected subcutaneously into the right hindpaws of male 129S4/SvJae×C57BL/6J (RGS4+/+ or RGS4−/−) mice, and the licking responses were counted for 40 minutes. The time periods (seconds) spent licking the injected paw during 0 to 10 minutes (early phase) and 10 to 40 minutes (late phase) were measured as indicators of acute nociception and inflammatory pain response, respectively. An RGS4 inhibitor, CCG50014, and/or a μ-OR agonist, [D-Ala2, N-MePhe4, Gly-ol]-enkephalin (DAMGO), were intrathecally injected 5 minutes before the formalin injection. A nonselective OR antagonist, naloxone, was intraperitoneally injected 30 minutes before the CCG50014 injection.

RESULTS: Mice that received the formalin injection exhibited typical biphasic nociceptive behaviors. The nociceptive responses in RGS4-knockout mice were significantly decreased during the late phase but not during the early phase. Similarly, intrathecally administered CCG50014 (10, 30, or 100 nmol) attenuated the nociceptive responses during the late phase in a dose-dependent manner. The antinociceptive effect of the RGS4 inhibitor was totally blocked by naloxone (5 mg/kg). In contrast, intrathecal injection of DAMGO achieved a dose-dependent reduction of the nociceptive responses at the early and late phases. This analgesic effect of DAMGO was significantly enhanced by the genetic depletion of RGS4 or by coadministration of CCG50014 (10 nmol).

CONCLUSIONS: These findings demonstrated that spinal RGS4 inhibited the endogenous or exogenous OR-mediated antinociceptive effect in the formalin pain test. Thus, the inhibition of RGS4 activity can enhance OR agonist–induced analgesia. The enhancement of OR agonist–induced analgesia by coadministration of the RGS4 inhibitor suggests a new therapeutic strategy for the management of inflammatory pain.

关于新的心脏风险指数的研究计划提出

Proposed Research Plan for the Derivation of a New Cardiac Risk Index

Biccard, Bruce MBChB, FCA(SA), FFARCSI, MMedSci, PhD

Anesthesia & Analgesia 2015 120 543–553

修订后的心脏风险指数(RCRI) 被收录到美国心脏病学会/美国心脏协会（ACC/AHA）关于心脏病人非心脏手术的术前评估的推荐中。这篇综述的目的在于分析研究比对在临床心血管风险预测中的“最佳标准”模型和 RCRI。本文宗旨在于对比 RCRI，修改现有的风险因素或者采纳其他风险因素或风险指数是否能够提高心脏风险预测的评估力。这是必要

的，因为最新的风险评估模板对大的心脏不良事件有更好的辨识力，相比较 RCRI 在预见性方面的优势地位也值得商榷。现在需要一个新的心血管风险评估“最佳标准”模板来取代 RCRI。这是十分可取的，因为它能够：（1）提供一个全球心血管评估标准；（2）在所有风险预测研究中提供标准对照；（3）获得有对比的数据采集，以及（4）允许单个病人数据的荟萃分析。这将会使临床心血管风险预测持续进步。述评里最新的证据表明提高术前临床风险心脏不良事件，新的风险分层模型包括 RCRI 中定义的临床风险因子，还需要改进以下几点：（1）补充肾小球滤过率的分界点（与单独肌酐分界点相反）；（2）年龄；（3）外周血管疾病史；（4）心功能容量，以及（5）一种特殊的外科过程分类。每个人都期望通过这个方法能够使 RCRI 的分辨力有大的提高。虽然大多数非心脏手术能够从某一类标准心血管风险预测模型中获益，仍有数据表明接受血管外科手术的艾滋病病人可能通过特别的心血管风险评估模型获益。

（陈凌君 译，李士通 审校）

The Revised Cardiac Risk Index (RCRI) was incorporated into the American College of Cardiology/American Heart Association (ACC/AHA) recommendations for the preoperative evaluation of the cardiac patient for noncardiac surgery. The purpose of this review was to analyze studies on cardiovascular clinical risk prediction that had used the previous "standard best" model, the RCRI, as a comparator. This review aims to determine whether modification of the current risk factors or adoption of other risk factors or other risk indices would improve upon the discrimination of cardiac risk prediction when compared with the RCRI. This is necessary because recent risk prediction models have shown better discrimination for major adverse cardiac events, and the pre-eminence of the RCRI is now in question. There is now a need for a new "best standard" cardiovascular risk prediction model to supersede the RCRI. This is desirable because it would: (1) allow for a global standard of cardiovascular risk assessment; (2) provide a

standard comparator in all risk prediction research; (3) result in comparable data collection; and (4) allow for individual patient data meta-analyses. This should lead to continued progress in cardiovascular clinical risk prediction. A review of the current evidence suggests that to improve the preoperative clinical risk stratification for adverse cardiac events, a new risk stratification model be built that maintains the clinical risk factors identified in the RCRI, with the following modifications: (1) additional glomerular filtration rate cut points (as opposed to a single creatinine cut point); (2) age; (3) a history of peripheral vascular disease; (4) functional capacity; and (5) a specific surgical procedural category. One would expect a substantial improvement in the discrimination of the RCRI with this approach. Although most noncardiac surgeries will benefit from a standard "generic" cardiovascular risk prediction model, there are data to suggest that patients with human immunodeficiency virus disease who are undergoing vascular surgery may benefit from specific cardiovascular risk prediction models.

有关围术期戒烟后的长期戒烟率的随机对照试验。

Long-Term Quit Rates After a Perioperative Smoking Cessation Randomized Controlled Trial

Lee, Susan M. MD, FRCPC[*]; Landry, Jennifer MD, FRCPC[*]; Jones, Philip M. MD, FRCPC, MSc (Clinical Trials)[*,†]; Buhrmann, Ozzie BScPhm, RPh[‡]; Morley-Forster, Patricia MD, FRCPC*

Anesthesia & Analgesia 2015 120 582–587

背景： 我们知道手术及围手术期的戒烟干预措施可能促使患者在短期戒烟，但是不知道它转变为永久戒烟的概率是多少。在这项研究中，我们试图找出在围术期戒烟介入及成功戒烟一年后的永久戒烟率。

方法： 我们先从围术期随机对照试验得出短期结果，对比以下常规干预措施（1）入院前护士的简短宣教；（2）戒烟手册；（3）介绍一个戒烟热线；（4）免费六周提供经皮给尼古丁的替代治疗。现在我们将公布 1 年来的随访结果。

结果： 2010 年 10 月至 2012 年 4 月之间，随机选取 168 名患者。1 年之内，有 127 名患者（78%）能够保持电话随访。对照组有 8%的病人戒烟，对比介入组 25%的病人戒烟（相对风险，3.0; 95%可信区间[CI], 1.2-7.8; P = 0.018)。要成功使一个患者术后戒烟一年，我们需要治疗 5.9 名患者(95% CI, 3.4-25.9)。多变量逻辑回归模型发现介入组（P =0.020）以及在基线的低尼古丁依赖性患者(P < 0.001)可以预见 1 年内戒烟成功。Poisson 回归分析表明经调整尼古丁依赖，那些随机进入介入组的患者是对照组患者获得长期戒烟概率的 2.7 倍（95% CI, 1.1-6.7; P = 0.028）。校正后的随机组，低水平的尼古丁依赖导致了 5.1 的戒烟相对风险（95% CI,2.0-12.8; P = 0.001).

结论：研究表明入院前给予干预措施可减少吸烟率，不仅仅在手术期，同时还可以持续惠及戒烟后的一年。围术期的保健提供者有一个特殊的机会能够帮助病人戒烟并且获得长期的良好效果。

（陈凌君 译，李士通 审校）

BACKGROUND: While surgery and perioperative smoking cessation interventions may motivate patients to quit smoking in the short term, it is unknown how often this translates into permanent cessation. In this study, we sought to determine the rates of long-term smoking cessation after a perioperative smoking cessation intervention and predictors of successful cessation at 1 year.

METHODS: We previously reported short-term results from a perioperative randomized controlled trial comparing usual care with an intervention involving (1) brief counseling by the preadmission nurse, (2) smoking cessation brochures, (3) referral to a telephone quitline, and (4) a free 6-week supply of transdermal nicotine replacement. We now report our 1-year follow-up outcomes. RESULTS: Between October 2010 and April 2012, 168 patients were randomized. At 1 year, 127 patients (76%) were available for follow-up telephone interview. Smoking cessation occurred in 8% of control patients compared with 25% of patients in the intervention group (relative risk, 3.0; 95% confidence interval [CI], 1.2-7.8; P = 0.018). The number needed-to-treat to achieve smoking cessation for 1 patient at 1 year postoperatively was 5.9 (95% CI, 3.4-25.9).

Multivariable logistic regression modeling found that the intervention (P = 0.020) and lower nicotine dependency at baseline (P < 0.001) were predictive of success at smoking cessation at 1 year. Poisson regression showed that adjusted for nicotine dependency, those randomized to the intervention group were 2.7 times (95% CI, 1.1-6.7; P = 0.028) more likely to achieve long-term cessation than those in the control group. Adjusted for randomization group, a low level of

nicotine dependency resulted in a relative risk of quitting of 5.1 (95% CI, 2.0-12.8; P = 0.001).

CONCLUSIONS: This study demonstrates that an intervention designed for a busy preadmission clinic results in decreased smoking rates not only around the time of surgery but also continued benefit in smoking cessation at 1 year. Perioperative care providers have a unique opportunity to assist patients in smoking cessation and achieve long-lasting results.

一组随机对照试验：在根治性前列腺切除术中，6%羟乙基淀粉 130/0.4 对肾功能,动脉血压力,和血管活性激素的影响

The Effect of 6% Hydroxyethyl Starch 130/0.4 on Renal Function, Arterial Blood Pressure, and Vasoactive Hormones During Radical Prostatectomy: A Randomized Controlled Trial

Kancir, Anne Sophie Pinholt MD, PhD Student*; Johansen, Joergen Kühlwein MD†; Ekeloef, Niels Peter MD‡; Pedersen, Erling Bjerregaard MD, MSc§

Anesthesia & Analgesia 2015 120 608–618

背景：尽管羟乙基淀粉(HES)在手术患者中是常用的血管内容量扩充剂,最近的研究表明它可能会增加危重患者的肾功能衰竭的风险。我们假设接受根治性前列腺切除术的患者，应用 HES 后例如尿中性粒细胞 gelatinase-associated lipocalin(u-NGAL)增加,肌酐清除率(Ccrea)下降和尿量减少(UO)，就表明更易发生肾衰竭。

方法：在一项随机,双盲,安慰剂对照研究中,40 个病人在根治性前列腺切除术中在第一个小时内接受 HES 或 0.9%生理盐水，7.5 毫升/公斤体重和在剩下的几个小时内 5 毫升/公斤体重;我们测量手术之前、期间和之后 u-NGAL、尿白蛋白、肌酐清除率、UO、动脉血压和血浆肌酐的浓度、肾素、血管紧张素 II、醛固酮、抗利尿激素的数值。

结果：36 例病人完成了这项研究。 u-NGAL、肌酐清除率、 UO、血浆中性粒细胞明胶酶相关脂质运载蛋白（NGAL）、尿白蛋白、血肌酐、动脉血压两组的数值是相同的,运用 HES 那一组失血量明显偏高(1250 毫升 HES VS 750 毫升盐水),而白蛋白被减少到一个显著降低水平。肾素和血管紧张素 II 两组均增加,而在生理盐水组醛固酮和抗利尿激素明显增加。

结论：我们发现没有证据表明术前肾功能正常的患者在接受前列腺切除术中输注 HES 后的肾毒性,血流动力学稳定,输注液体容量在这两组都是相同的。我们发现给予 HES 会增加术中失血。

（李婷婷 译，李士通 审校）

BACKGROUND: Although hydroxyethyl starch (HES) is commonly used as an intravascular volume expander in surgical patients, recent studies suggest that it may increase the risk of renal failure in critically ill patients. We hypothesized that patients undergoing radical prostatectomy and receiving HES would be more likely to develop markers of renal failure, such as increasing urinary neutrophil gelatinase-associated lipocalin (u-NGAL), creatinine clearance (Ccrea), and decreasing urine output (UO).

METHODS: In a randomized, double-blinded, placebo-controlled study, 40 patients referred for radical prostatectomy received either 6% HES 130/0.4 or saline 0.9%; 7.5 mL/kg during the first hour of surgery and 5 mL/kg in the following hours; u-NGAL, urine albumin, Ccrea, UO, arterial blood pressure, and plasma concentrations of creatinine, renin, angiotensin II, aldosterone, and vasopressin were measured before, during, and after surgery.

RESULTS: Thirty-six patients completed the study. u-NGAL, Ccrea, UO, plasma neutrophil gelatinase-associated lipocalin, p-creatinine, urine albumin, and arterial blood pressure were the same in both groups. Blood loss was higher in the HES group (HES 1250 vs saline 750 mL), while p-albumin was reduced to a significantly lower level. P-renin and p-angiotensin-II increased in both groups, whereas p-aldosterone and p-vasopressin increased significantly in the saline Group.

CONCLUSIONS: We found no evidence of nephrotoxicity after infusion of 6% HES 130/0.4 in patients undergoing prostatectomy with normal preoperative renal function. Hemodynamic stability and infused fluid volume were the same in both groups. We observed an increased blood loss in the group given 6% HES 130/0.4.

引起孕妇心脏衰竭的原因:是围产期心肌病吗?

Heart Failure in Pregnant Women: Is It Peripartum Cardiomyopathy?

Dennis, Alicia Therese MBBS, PhD, PGDipEcho, FANZCA

Anesthesia & Analgesia 2015 120 638–643

围产期心肌病是一种罕见的引起孕产妇发病和死亡的重要原因。女性围产期心肌病常伴发心力衰竭的症状和体征。围产期心肌病 的诊断是排除其他引起心脏衰竭的原因。重点是趁早意识到孕妇或最近怀孕女性的不适症状和体征,使用超声心动图早期诊断,心脏衰竭的正确治疗。

（李婷婷 译，李士通 审校）

Peripartum cardiomyopathy is a rare but important cause of maternal morbidity and mortality. Women with peripartum cardiomyopathy often present with symptoms and signs of heart failure. The diagnosis of peripartum cardiomyopathy is made after all other causes of heart failure are excluded. Emphasis is on the immediate recognition of an unwell pregnant or recently pregnant woman, early diagnosis with the use of echocardiography, and the correct treatment of heart failure.

在 1889 年和 1950 年之间 Surgeon-nurse 麻醉合作促进手术的发展。

Surgeon-Nurse Anesthetist Collaboration Advanced Surgery Between 1889 and 1950

Koch, Bruce Evan CRNA, MSN

Anesthesia & Analgesia 2015 120 653–662

为满足合格麻醉医生的需求,在内战期间和 19 世纪的后叶美国外科医生招募了许多护士练习麻醉。这一决定使他们在明尼苏达州的梅奥诊所更为正式地与护士共同合作。在 1890 年代,Alice Magaw 精确地管理醚的安全。Florence Henderson 在 20 世纪初的第一个十年继续 Alice Magaw 的工作并改善醚的安全管理。安全的麻醉使梅奥医生们变成外科先驱。著名的外科医生 George Crile 与 Agatha

Hodgins 在克利夫兰的 the Lakeside Hospital 引入一氧化二氮/氧麻醉。一氧化二氮/氧的心血管抑制小于醚从而挽救了在一战期间无数创伤受害者的生命，Crile 设计了“anoci-association”,一氧化二氮/氧产物麻醉。Hodgins 使用’’anoci-association’’使 Crile 的甲状腺手术操作更加安全。东海岸的杰出外科医生在梅奥外科医生的引领下，William Halsted 与 Margaret Boise 紧密合作，Harvey Cushing 与 Gertrude Gerard 密切合作。随着医学变得更加复杂,外科医生和麻醉护士之间的合作变得常规和必要的。外科医生和麻醉护士的团队促进胸科、心血管外科和儿科手术的发展。Evarts Graham 和 Helen Lamb 的团队 实施了世界首例肺切除术。Surgeon-nurse 麻醉合作似乎是美国一个独有的现象。这种合作促进“手术的黄金时代”和我们今天所知道的职业麻醉护士。

（李婷婷 译，李士通 审校）

To meet the need for qualified anesthetists, American surgeons recruited nurses to practice anesthesia during the Civil War and in the latter half of the 19th century. The success of this decision led them to collaborate with nurses more formally at the Mayo Clinic in Minnesota. During the 1890s, Alice Magaw refined the safe administration of ether. Florence Henderson continued her work improving the safety of ether administration during the first decade of the 20th century. Safe anesthesia enabled the Mayo surgeons to turn the St. Mary's Hospital into a surgical powerhouse. The prominent surgeon George Crile collaborated with Agatha Hodgins at the Lakeside Hospital in Cleveland to introduce nitrous oxide/oxygen anesthesia. Nitrous oxide/oxygen caused less cardiovascular depression than ether and thus saved the lives of countless trauma victims during World War I. Crile devised "anoci-association," an outgrowth of nitrous oxide/oxygen anesthesia. Hodgins' use of anoci-association made Crile's thyroid operations safer. Pioneering East Coast surgeons followed the lead of the surgeons at Mayo. William Halsted worked closely with Margaret Boise, and Harvey Cushing worked closely with Gertrude Gerard. As medicine became more complex, collaboration between surgeons and nurse

anesthetists became routine and necessary. Teams of surgeons and nurse anesthetists advanced thoracic, cardiovascular, and pediatric surgery. The team of Evarts Graham and Helen Lamb performed the world's first pneumonectomy. Surgeon-nurse anesthetist collaboration seems to have been a uniquely American phenomenon. This collaboration facilitated both the "Golden Age of Surgery" and the profession we know today as nurse anesthesia.