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三維超聲與二維超聲心動圖對功能性二尖瓣返流近端等速表面積評估的比較

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

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背景：二尖瓣返流近端等速面（PISA）的幾何形狀常被假設為一個半球面。然而，對於功能性二尖瓣返流（MR），PISA 既不是半球面也不是半橢圓，常常為非對稱且呈新月形。我們利用三維經食管超聲（3D TEE）採集全容積資料去測量 PISA，並且對所計算出的有效返流孔面積（EROA）與傳統 2D TEE 資料對應比較。從 PISA 計算得到的 EROA 資料，最終與縮流面積比較，這是反映功能性二尖瓣孔返流面積公認的參照面。

方法：24 例功能性二尖瓣返流擬行心臟外科手術患者入組，術中行常規 TEE（含 3D 矩陣排列探針）行功能二尖瓣返流檢查（X7-2t; IE33; Philips Healthcare, Inc., Andover, MA），對 2D 和 3D TEE 對二尖瓣返流嚴重程度的評價進行回顧性分析。傳統 2D TEE 測量 PISA 建立在假設面是半球形和半橢圓基礎上。然而，3D TEE 對 PISA 的直接測量來自相應全容積及彩色血流多普勒資料。對基於半球形和半橢圓資料計算得到的 EROAs 與 3D TEE PISAs 相應的資料進行比較。對於計算得到 EROAs 三組 PISA 資料均與縮流面積進行比較。

結果：3D PISA 計算結果均比 HS-PISA 和 HE-PISA 計算值大（平均值±標準差: 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（均數±標準差: 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）。血流緊縮期橫截面面積與 3D EROA（Spearman r = 0.865），HS-EROA（Spearman r = 0.820; P < 0.001），HE-EROA（Spearman r = 0.819）面積相關。但是縮流面積與 3D EROA 的差異要明顯小於縮流面積與 2D HS- 或者 2D HE-EROA 的差異（P < 0.0001）。

結論：利用 3D TEE 直接對患者 PISA 進行測量來評價功能性二尖瓣返流嚴重程度可能比傳統二維要具有優越性。由於 2D TEE 建立在半球形或者半橢圓基礎上進行計算，因而評價二尖瓣返流嚴重程度時可能低估 EROA，原因在於沒有對幾何面積的非對稱性進行全面考慮。

（王嘉興譯 薛張綱校）

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 \pm 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 \pm 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 後圍術期使用阿司匹林：一些答案，但問題仍存在

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

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阿司匹林是許多心臟病或者高危因素患者重要的不間斷終生治療的部分。然而，阿司匹林是否應該在非心臟手術的病人繼續使用或停止使用是常見的臨床難題，即阿司匹林減少血栓形成和增加出血潛能之間的平衡。在這篇焦點綜述中，我們描述了阿司匹林在治療和預防心血管疾病的作用，總結了在圍手術期使用阿司匹林（包括最近公佈的圍手術期缺血性評價[POISE]-2 實驗）中最重要文獻，並提出目前圍術期使用阿司匹林的建議。POISE-2 顯示，圍手術期使用阿司匹林不改變心血管事件的風險，並可能導致更多的出血。然而，這些發現是由一些和本研究相關的方法學文獻的回顧。目前可用的文獻，包括 POISE-2，指出除非有明確的指南為基礎的一級或二級預防指征，手術患者不應當使用阿司匹林。除了閉合腔室的手術，髓內脊柱外科手術，或前列腺手術，以指南為基礎的初級和二級預防的中等風險患者，圍術期可以繼續使用阿司匹林。

（吳赤譯 薛張綱校）

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 the perioperative 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.

利多卡因優先抑制蟾蜍卵母細胞中 P2X7 嘌呤受體的功能

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

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背景：利多卡因通過全身或局部使用經被廣泛用於緩解急性疼痛和慢性頑固性疼痛。許多研究報導利多卡因影響包括電壓門控鈉通道在內的多個疼痛信號通路，提示利多卡因緩解疼痛有多種機制介導。一些細胞外三磷酸腺苷受體亞基在慢性疼痛機制中起重要作用，但是很少有研究利多卡因對三磷酸腺苷受體的影響。我們研究了利多卡因對 P2X3、P2X4、P2X7 嘌呤受體的影響來探討利多卡因緩解疼痛的機制。

方法：我們應用全細胞雙電極電壓鉗技術來研究利多卡因對蟾蜍卵母細胞中三磷酸腺苷受體亞基（P2X3、P2X4、P2X7）中 ATP 介導的電流的影響。

結果：利多卡因呈濃度依賴性抑制 P2X7 亞基中 ATP 介導的電流，但不會抑制 P2X3、P2X4 亞基中 ATP 介導的電流。利多卡因的半數最大抑制濃度是 $282 \pm 45 \mu\text{mol/L}$ 。但是，甲呱卡因、羅呱卡因和布比卡因僅僅對 P2X7 受體有有限的抑制作用。利多卡因非競爭性抑制了 P2X7 受體的三磷酸腺苷濃度反應性曲線。細胞內和細胞外的 QX-314 以及苯唑卡因濃度依賴性抑制 P2X7 受體中 ATP 介導的電流。同時，在利多卡因持續存在情況下每 5 分鐘重複 ATP 治療表明利多卡因的抑制作用是功能依賴性的。最終，選擇性 P2X7 受體拮抗劑亮藍 G 和 AZ11645373 不會影響利多卡因對 P2X7 受體的抑制作用。

結論：利多卡因選擇性抑制蟾蜍卵母細胞中 P2X7 受體的功能。這種作用可能由細胞內外的離子通道孔觸發。這些研究結果至少可以幫助理解利多卡因局部應用時鎮痛效應的機制。

（呂越昌譯 薛張綱校）

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 $282 \pm 45 \mu\text{mol/L}$. 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.

利用實驗室檢查和旋轉血栓彈力描記術對比創傷患者在受傷現場與到達急診科時凝血的變化

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

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背景：當創傷患者到達急診科（ED）時，常常已經發生了凝血功能障礙。但是，創傷發生至到達急診這段時間，凝血功能的變化情況知之甚少。至今還沒有研究對從創傷現場到醫院這段時間的凝血狀態充分評估，包括血栓彈力圖。本研究假設，在創傷現場和到達ED時測得的凝血指標可能發生了變化。

方法：本研究是一項前瞻性、單中心、觀察性研究，調查 50 名外傷患者在現場及抵達ED時的凝血情況。測量內容包括動脈血氣，ROTEM®，蛋白質 S100，蛋白質 C 活性，蛋白 S，Quick 值，國際標準化比值，活化部分凝血酶時間，D-二聚體，凝血因數 V（FV），凝血因數 XIII（FXIII），纖維蛋白原，血紅蛋白，血細胞比容，血小板以及體積，以及在第一個 24 小時內使用血液製品。

結果：以下觀察指標在現場與 ED 之間有顯著改變：局部靜脈氧分壓增加，鈉、葡萄糖和乳酸鹽下降。EXTEM、INTEM 和 APTEM 中，凝血時間和血塊形成時間顯著增加，而最大血凝塊硬度和 α 角度顯著下降（ $P \leq 0.004$ ）。對於 FIBTEM，凝血時間顯著增加，最大血凝塊硬度顯著下降。實驗室檢查中，血紅蛋白、血細胞比容、血小板、活化部分凝血酶時間、纖維蛋白原、FV、FXIII、C 蛋白活性、蛋白 S 和蛋白 S100 均顯著減少（ $P \leq 0.001$ ）。

結論：儘管在現場與 ED 中大部分實驗室檢查和旋轉血栓凝血試驗指標均提示凝血功能惡化，但是在現場監測創傷患者的凝血情況並不能為大多數患者提供臨床重要資訊。在創傷

發生一小時後，纖維蛋白原顯著活化和消耗，FV、FXIII、C 蛋白活性和蛋白 S 的變化顯著。

（江凌慧譯 薛張綱校）

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.

老年人圍術期神經毒性——第四屆國際研討會的總結

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

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爲了研究學習關於不同形式的手術後認知功能障礙的最新進展，一些科研工作者及醫務工作者相聚在瑞典首都—斯德哥爾摩，進行了一整天的演講及相互之間的探討。這篇文章總結了本次會議的研討內容，強調了老年人群圍術期神經毒性領域的最新進展、面臨的挑戰及未來發展的方向。

（王飛譯 薛張綱校）

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.

志願者電流感知閾值評估的可靠性及其臨床適用性

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

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背景：儘管當前電流感知閾值(CPT)已經被用於評估術前患者的感覺阻斷有效性，但其在控制條件下的可靠性並沒有被研究。我們進行了兩個獨立的研究。第一項研究的主要目的是確定在健康志願者中，重複刺激後的 CPT 的重測信度。第二項研究的主要目的是通過評價接受膝關節手術患者股神經阻滯感覺消失來評價該技術的臨床適用性。

方法：三十個健康受試者在完全相同的時間中進行研究，間隔至少 24 小時，期間連續 5 次刺激雙側大腿前內側後測量 CPTs。對 15 個使用 20 毫升 0.5% 的羅呱卡因行股神經阻滯的骨科病人行類似的測試。重測信度的評估使用組內相關(ICC)和標準誤(表示為變異係數 [CVSEM])，student t 檢驗($P < 0.05$)用來比較基線及增加的電流感知閾值。

結果：一日內組內相關值範圍 (% 可信區間 [CI]) 為從 0.66 到 0.95，變異係數大約 39% (% CI: 17% - 58%)，日間組內相關值範圍從 0.57 到 0.94 (CVSEM: 約 45%，% CI: 13% - 71%)，這表明逐日 CPT 測量值仍是有變異的。引起骨科患者感知所需的電流強度顯著增加，從未使用局麻藥時平均 CPT 值 $82.5 \pm 66.5 \mu\text{A}$ (SD) 到使用後 22 ± 8 分鐘後的 $481 \pm 338 \mu\text{A}$ 。

結論：健康志願者中，CPT 被證明是評估一日內感知的可靠工具。我們的研究也表明，CPT 可以在臨床上被應用於以定量的方式描述周圍神經阻滯起效，從而支持它在未來的研究中用於比較不同區域的麻醉模式或方法。

(黃文惠譯 薛張綱校)

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 $82.5 \pm 66.5 \mu\text{A}$ (SD) at time zero to an average of $481 \pm 338 \mu\text{A}$, 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.

麻醉醫師對冠狀動脈搭橋手術預後的影響

The Impact of Anesthesiologists on Coronary Artery Bypass Graft Surgery Outcomes

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背景：每 150 名住院患者中就有一人會經歷一次致命的不良事件；幾乎有一半的此類事件涉及外科病人。雖然已有文獻報導外科醫生的技術水準和品質存在差異，但關於麻醉醫師對重大手術預後的影響還知之甚少。此研究目標是在控制病例組合和醫院品質前提下，確定不同麻醉醫師之間手術預後是否存在顯著差異。

方法：臨床資料來源於紐約州心臟手術報告系統，對 7920 名行孤立的冠狀動脈搭橋手術患者進行了此項回顧性觀察研究。採用多變數邏輯回歸模型，通過控制患者人口學、疾病嚴重程度、合併症以及醫院品質參數，研究麻醉醫師之間患者死亡或重大併發症(Q 波性心肌梗死、腎功能衰竭、中風)的差異。

結果：通過固定效應模型對麻醉醫師的技能水準進行量化。麻醉醫師間技能存在顯著差異 ($P < 0.001$)。由低水準麻醉醫師管理的患者(對應麻醉醫師風險校正預後分佈的第 25 百分位)，其死亡率或嚴重併發症發生率(修正率 3.33%；95%可信區間(CI)，3.09% -3.58%)是高水準麻醉醫師(對應第 75 百分位)(修正率 1.82%；95%置信區間，1.58% -2.10%)管理患者的近兩倍。在所有患者風險分組中都觀察到存在這種差異。

結論：接受冠狀動脈搭橋手術的患者的死亡率或重大併發症發生率在不同麻醉醫師之間存在顯著差異。這些發現表明，可能有機會通過提高圍手術期管理水準改變高危手術患者預後。

(殷文譯 陳傑校)

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.

一項關於肥厚性心肌病的綜述

Hypertrophic Cardiomyopathy: A Review

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肥厚性心肌病 (hypertrophic cardiomyopathy, HCM) 是一種麻醉科醫師在圍術期較常遇到的疾病。50 年前, HCM 被認為是一種神秘的疾病。然而, 如今人們對於肥厚性心肌病患者的理解以及診斷能力有了突飛猛進的進步。肥厚性心肌病患者具有基因型和表觀變異性。實際上, 這些患者有一亞組表現為 HCM 基因型而非表型 (左心室肥厚)。對於這些患者有許多治療手段, 包括藥物治療控制症狀, 植入式心臟除顫器緩解惡性心律失常以及手術心肌和室間隔 (部分) 切除以緩解左室流出道梗阻。準確診斷對這部分患者圍術期管理是至關重要的。診斷通常通過心超評價左心室肥厚, 左心室流出道壓力差, 收縮期和舒張期功能, 以及二尖瓣解剖及功能情況來完成。心臟核磁共振檢查也有一定的價值, 因為它可判斷左心室肥厚的部位及程度以及二尖瓣和乳頭肌的解剖異常情況。本文針對於非心臟手術麻醉醫師關於肥厚性心肌病的綜述中, 討論肥厚性心肌病的臨床表現以及基因突變, 心超在診斷和手術評估中的重要作用, 以及肥厚性心肌病患者行非心臟手術的圍術期管理, 尤其是肥厚性心肌病產婦的管理。

(俞芳 譯 陳傑 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.

不同局麻藥對人神經母細胞瘤細胞系毒性效應的比較

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

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背景：局麻藥物 (LAs) 通常被認為是安全的，但有研究認為所有局麻藥都有可能引起神經元損傷。因此，在本研究中比較了不同局麻藥對人神經母細胞瘤的 50% 致死率 (LD50)，這些局麻藥包括：阿替卡因，利多卡因，甲呱卡因，布比卡因，普魯卡因和羅呱卡因。

方法：每種局麻藥用不同劑量處理未分化 SH-SY5Y 細胞各 20min。應用四唑染色 (WST-1) 並光密度定量檢測法評估細胞活性。通過反應曲線計算 LD50。

結果：如同預期，所有局麻藥都以濃度依賴性方式引起細胞死亡。20min 局麻藥處理 SH-SY5Y 細胞株後，布比卡因，利多卡因，普魯卡因，甲呱卡因，阿替卡因，羅呱卡因的 LD50 分別為： 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。羅呱卡因的 LD50 與布比卡因，利多卡因，甲呱卡因和普魯卡因的 LD50 有顯著差異 (所有 $P \leq 0.009$)。羅呱卡因與阿替卡因之間以及普魯卡因、利多卡因和甲呱卡因之間的 LD50 沒有顯著差異。阿替卡因與利多卡因的 LD50 有明顯差異 ($p=0.03$)。布比卡因的 LD50 顯著低於其他局麻藥的 LD50 (所有 $P \leq 0.003$)

結論：局麻藥神經毒性是在經過認證的體外模型，即人神經母細胞瘤細胞系 SH-SY5Y 上檢測的。根據其神經毒性將局麻藥分為三類：(1) 低度毒性 (羅呱卡因，阿替卡因)；(2) 中度毒性 (甲呱卡因、普魯卡因、利多卡因)；(3) 高度毒性 (布比卡因)。在口腔麻醉藥物中：阿替卡因對於 SH-SY5Y 細胞的神經毒性最小。

(隋永恆 譯 陳傑 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 $P \leq 0.009$). 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 $P \leq 0.003$).

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.

在原位肝移植手術中羥乙基澱粉和急性腎損傷關係：一項單中心回顧性研究

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

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背景：急性腎損傷（AKI）是原位肝移植術（OLT）的一個常見併發症。肝衰竭的病理生理改變及術中事件與 OLT 後 AKI 相關。OLT 術中膠體常規用於維持血管內容量。近期證據顯示在危重病人中 6% 羥乙基澱粉（HES）（130/0.4）與 AKI 相關。

方法：研究者對電子麻醉記錄、手術記錄和圍術期實驗室檢查結果進行了一個回顧性橫斷面分析。術後 AKI 根據 RIFLE 標準進行診斷。AKI 根據血清肌酐從術前基線至術後第七天峰水準的改變被分為危險、損傷和衰竭三個階段。單變數和多變數分析用於評估術中使用的膠體種類和 AKI 的關係。

結果：174 例接受 OLT 並獲取完整資訊的成人患者被納入了研究。其中，50 例僅使用了 5% 白蛋白，25 例同時使用了 5% 白蛋白和 HES，另外 99 例僅使用了 HES。白蛋白組、白蛋白及 HES 組和 HES 組在患者個人情況和術中情況中沒有差異。使用膠體種類和 AKI（Rifle 標準-損傷階段）之間存在顯著的線性統計學差異。與使用白蛋白的患者相比，使用 HES 的患者 OLT 術後發生 AKI 的可能性增加了 3 倍（調整後的比值比 2.94，95% 可信區間 1.13-7.7， $P = 0.027$ ）。膠體使用種類（5% 白蛋白組、白蛋白/HES 組和 HES 組對比，排名順序）和“損傷”之間的線性關係在統計學上顯著相關（ $P = 0.048$ ）。傾向性匹配分析也顯示接受白蛋白患者和 HES 患者之間的 AKI 發病率存在顯著差異（ $P = 0.044$ ）。

結論：在 OLT 術中輸注 6% HES（130/0.4）的患者相較輸注 5% 白蛋白的患者更有可能發生 AKI。這些回顧性結論與近期關於 6% HES（130/0.4）與腎損害在危重病人中存在相關性的臨床試驗相吻合。

（張帆 譯 陳傑 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-蛛網膜穿刺後第六顱神經麻痺

Cranial Nerve VI Palsy After Dural-Arachnoid Puncture

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本文對硬脊膜-蛛網膜穿刺後第六顱神經 (CN VI) 損傷相關文獻進行了回顧。CN VI 損傷是罕見的，嚴重程度範圍從複視至完全眼外直肌麻痺伴傾斜凝視不等。提出的損傷機制是腦脊液滲漏引起顱內壓降低和腦幹向下位移。這導致了 CN VI 受牽拉引起神經伸展和脫髓鞘。症狀可能出現在硬脊膜-蛛網膜穿刺後 1 天到 3 周，典型症狀還伴隨硬脊膜穿刺後頭痛。症狀的緩解可能需要數周到數月。使用小號的，非斜面穿刺針可能減少顱內壓降低和隨後的 CN VI 損傷。當眼部症狀出現時，早期實施硬膜外血補墊可能會降低發病率或預防眼部症狀的進展。

(林雨軒 譯 陳傑 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.

鞘內注射 RGS4 抑制劑 CCG50014 可減少小鼠福馬林實驗中傷害性反應並增強阿片類藥物介導的鎮痛效果

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

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背景： G 蛋白信號轉導調節蛋白 4 (regulator of G-protein signaling protein type 4, RGS4) 加速 Gai 和 Gao 的鳥苷三磷酸酶活性，導致 G 蛋白偶聯受體信號轉導失活。阿片受體 (opioid receptor, OR) 和一種 Gai 耦聯受體在中樞神經系統的痛覺調節中發揮重要作用。本研究驗證 (1) 脊髓 RGS4 是否影響福馬林疼痛試驗中的傷害性反應；(2) 這種 RGS4 介導的效應是否參與 OR 啟動；(3) μ -OR 誘導激動劑誘導的鎮痛效應是否由 RGS4 調節。

方法： 皮下注射福馬林 (1%, 20 μ L) 到雄性 129s4 / svjae \times C57BL/6J (RGS4^{+/+} 或 RGS4^{-/-}) 小鼠右後爪，計數 40min 內的舔體反應。分別計算在 0 - 10 min (早期) 及 10 - 40 min (晚期) 舔右後爪所花費的時間 (秒) 作為急性傷害性疼痛和炎症性疼痛反應指標。注入福馬林 5 min 前於鞘內注射 RGS4 抑制劑 CCG50014 和 (或) μ -OR 受體激動劑、[D-Ala, N-MePhe Gly-ol]-腦啡肽 (DAMGO)。在注射 CCG50014 前 30min, 腹腔內注射非選擇性 OR 拮抗劑納洛酮。

結果： 福馬林注射的小鼠表現出典型的雙相傷害刺激行為。在晚期而非早期，RGS4 基因敲除小鼠疼痛反應有明顯下降。同樣鞘內注射 CCG50014 (10、30 或 100 nmol) 能劑量

依賴性地減弱晚期傷害性反應。納洛酮 (5 mg/kg) 可完全阻斷 RGS4 抑制劑的抗傷害效應。相比之下，鞘內注射 DAMGO 能同時劑量依賴性地減弱早晚期傷害性反應。RGS4 基因缺失或合用 CCG 50014 (10 nmol) 顯著增強 DAMGO 的這種鎮痛效果。

結論：這些研究結果表明，脊髓 RGS4 抑制福馬林疼痛試驗中內源性或外源性 OR 介導的抗傷害作用。因此，抑制 RGS4 活動可以增強 OR 受體激動劑的鎮痛效應。通過合用 RGS4 抑制劑可增強 OR 激動劑的鎮痛作用，此現象啟發了炎症性疼痛管理的一種新治療策略。

(柳韶華 譯 陳傑 校)

BACKGROUND: The regulator of G-protein signaling protein type 4 (RGS4) accelerates the guanosine triphosphatase activity of G α i and G α o, resulting in the inactivation of G-protein-coupled receptor signaling. An opioid receptor (OR), a G α i-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 μ L) was injected subcutaneously into the right hindpaws of male 129S4/SvJae \times 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-Ala 2 , N-MePhe 4 , 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.

關於新的心臟風險指數的研究計畫提出

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

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修訂後的心臟風險指數(RCRI) 被收錄到美國心臟病學會/美國心臟協會 (ACC/AHA) 關於心臟病人非心臟手術的術前評估的推薦中。這篇綜述的目的在於分析研究比對在臨床心血管風險預測中的“最佳標準”模型和 RCRI。本文宗旨在於對比 RCRI，修改現有的風險因素或者採納其他風險因素或風險指數是否能夠提高心臟風險預測的評估力。這是必要

的，因為最新的風險評估範本對大的心臟不良事件有更好的辨識力，相比較 RCRI 在預見性方面的優勢地位也值得商榷。現在需要一個新的心血管風險評估“最佳標準”範本來取代 RCRI。這是十分可取的，因為它能夠：（1）提供一個全球心血管評估標準；（2）在所有風險預測研究中提供標準對照；（3）獲得有對比的資料獲取，以及（4）允許單個病人資料的薈萃分析。這將會使臨床心血管風險預測持續進步。述評裡最新的證據表明提高術前臨床風險心臟不良事件，新的風險分層模型包括 RCRI 中定義的臨床風險因數，還需要改進以下幾點：（1）補充腎小球濾過率的分界點（與單獨肌酐分界點相反）；（2）年齡；（3）外周血管疾病史；（4）心功能容量，以及（5）一種特殊的外科過程分類。每個人都期望通過這個方法能夠使 RCRI 的分辨力有大的提高。雖然大多數非心臟手術能夠從某一類標準心血管風險預測模型中獲益，仍有資料表明接受血管外科手術的愛滋病人可能通過特別的心血管風險評估模型獲益。

（陳凌君 譯，李士通 審校）

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.

有關圍術期戒煙後的長期戒煙率的隨機對照試驗。

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

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背景： 我們知道手術及圍手術期的戒煙干預措施可能促使患者在短期戒煙，但是不知道它轉變為永久戒煙的概率是多少。在這項研究中，我們試圖找出在圍術期戒煙介入及成功戒煙一年後的永久戒煙率。

方法：我們先從圍術期隨機對照試驗得出短期結果，對比以下常規干預措施（1）入院前護士的簡短宣教；（2）戒煙手冊；（3）介紹一個戒煙熱線；（4）免費六周提供經皮給尼古丁的替代治療。現在我們將公佈1年來的隨訪結果。

結果：2010年10月至2012年4月之間，隨機選取168名患者。1年之內，有127名患者（78%）能夠保持電話隨訪。對照組有8%的病人戒煙，對比介入組25%的病人戒煙（相對風險，3.0；95%可信區間[CI]，1.2-7.8； $P = 0.018$ ）。要成功使一個患者術後戒煙一年，我們需要治療5.9名患者（95% CI，3.4-25.9）。多變數邏輯回歸模型發現介入組（ $P = 0.020$ ）以及在基線的低尼古丁依賴性患者（ $P < 0.001$ ）可以預見1年內戒煙成功。Poisson回歸分析表明經調整尼古丁依賴，那些隨機進入介入組的患者是對照組患者獲得長期戒煙概率的2.7倍（95% CI，1.1-6.7； $P = 0.028$ ）。校正後的隨機組，低水準的尼古丁依賴導致了5.1的戒煙相對風險（95% CI，2.0-12.8； $P = 0.001$ ）。

結論：研究表明入院前給予干預措施可減少吸煙率，不僅僅在手術期，同時還可以持續惠及戒煙後的一年。圍術期的保健提供者有一個特殊的機會能夠幫助病人戒煙並且獲得長期的良好效果。

（陳凌君譯，李士通審校）

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.

一組隨機對照試驗：在根治性前列腺切除術中，6%羥乙基澱粉 130/0.4 對腎功能、動脈血壓力、和血管活性激素的影響

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

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背景：儘管羥乙基澱粉(HES)在手術患者中是常用的血管內容量擴充劑,最近的研究表明它可能會增加危重患者的腎功能衰竭的風險。我們假設接受根治性前列腺切除術的患者,應用 HES 後例如尿中性粒細胞 gelatinase-associated lipocalin(u-NGAL)增加,肌酐清除率(Ccrea)下降和尿量減少(UO),就表明更易發生腎衰竭。

方法：在一項隨機,雙盲,安慰劑對照研究中,40 個病人在根治性前列腺切除術中在第一個小時內接受 HES 或 0.9%生理鹽水,7.5 毫升/公斤體重和在剩下的幾個小時內 5 毫升/公斤體重;我們測量手術之前、期間和之後 u-NGAL、尿白蛋白、肌酐清除率、UO、動脈血壓和血漿肌酐的濃度、腎素、血管緊張素 II、醛固酮、抗利尿激素的數值。

結果：36 例病人完成了這項研究。u-NGAL、肌酐清除率、UO、血漿中性粒細胞明膠酶相關脂質運載蛋白(NGAL)、尿白蛋白、血肌酐、動脈血壓兩組的數值是相同的,運用 HES 那一組失血量明顯偏高(1250 毫升 HES VS 750 毫升鹽水),而白蛋白被減少到一個顯著降低水準。腎素和血管緊張素 II 兩組均增加,而在生理鹽水組醛固酮和抗利尿激素明顯增加。

結論：我們發現沒有證據表明術前腎功能正常的患者在接受前列腺切除術中輸注 HES 後的腎毒性,血流動力學穩定,輸注液體容量在這兩組都是相同的。我們發現給予 HES 會增加術中失血。

(李婷婷譯,李士通 審校)

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.

引起孕婦心臟衰竭的原因:是圍產期心肌病嗎?

Heart Failure in Pregnant Women: Is It Peripartum Cardiomyopathy?

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圍產期心肌病是一種罕見的引起孕產婦發病和死亡的重要原因。女性圍產期心肌病常伴發心力衰竭的症狀和體征。圍產期心肌病的診斷是排除其他引起心臟衰竭的原因。重點是趁早意識到孕婦或最近懷孕女性的不適症狀和體征,使用超聲心動圖早期診斷,心臟衰竭的正確治療。

(李婷婷 譯, 李士通 審校)

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 年之間 Surgeon-nurse 麻醉合作促進手術的發展。

Surgeon-Nurse Anesthetist Collaboration Advanced Surgery Between 1889 and 1950

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為滿足合格麻醉醫生的需求,在內戰期間和 19 世紀的後葉美國外科醫生招募了許多護士練習麻醉。這一決定使他們在明尼蘇達州的梅奧診所更為正式地與護士共同合作。在 1890 年代,Alice Magaw 精確地管理醚的安全。Florence Henderson 在 20 世紀初的第一個十年繼續 Alice Magaw 的工作並改善醚的安全管理。安全的麻醉使梅奧醫生們變成外科先驅。著名的外科醫生 George Crile 與 Agatha

Hodgins 在克利夫蘭的 the Lakeside Hospital 引入一氧化二氮/氧麻醉。一氧化二氮/氧的心血管抑制小於醚從而挽救了在一戰期間無數創傷受害者的生命, Crile 設計了“anoci-association”,一氧化二氮/氧產物麻醉。Hodgins 使用“anoci-association”使 Crile 的甲狀腺手術操作更加安全。東海岸的傑出外科醫生在梅奧外科醫生的引領下, William Halsted 與 Margaret Boise 緊密合作, Harvey Cushing 與 Gertrude Gerard 密切合作。隨著醫學變得更加複雜,外科醫生和麻醉護士之間的合作變得常規和必要的。外科醫生和麻醉護士的團隊促進胸科、心血管外科和兒科手術的發展。Evarts Graham 和 Helen Lamb 的團隊實施了世界首例肺切除術。Surgeon-nurse 麻醉合作似乎是美國一個獨有的現象。這種合作促進“手術的黃金時代”和我們今天所知道的職業麻醉護士。

(李婷婷 譯, 李士通 審校)

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.