



Anesthesiology



Society for Obstetric Anesthesia and Perinatology

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Society for Obstetric Anesthesia and Perinatology



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■ CLINICAL INVESTIGATIONS

◆ Optimal Dose of Succinylcholine Revisited 1045

Mohamed Naguib, Abdulhamid Samarkandi, Waleed Riad, and Saleh W. Alharby

A similar fraction of patients had excellent or good intubating conditions after 0.3, 0.5, or 1.0 mg/kg succinylcholine. The authors recommended that 0.56 mg/kg succinylcholine is sufficient to achieve acceptable intubating conditions at 60 s in 95% of patients anesthetized with 2 μ g/kg fentanyl and 2 mg/kg propofol.

- ◆ Refers to This Month in Anesthesiology
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- ◆ The “Intubating Dose” of Succinylcholine: The Effect of Decreasing Doses on Recovery Time 1050

Aaron F. Kopman, Bledi Zhaku, and Kane S. Lai

Reducing the dose of succinylcholine from 1.0 mg/kg to 0.60 mg/kg results in an average decrease in the drug’s duration of effect of between 1.5 and 2.0 min. This modest decrease in the drug’s duration of effect may be of clinical importance when early return of spontaneous ventilation is desired.

- Influence of Nitrous Oxide on Minimum Alveolar Concentration of Sevoflurane for Laryngeal Mask Insertion in Children 1055

Shinichi Kihara, Yuichi Yaguchi, Shinichi Inomata, Seiji Watanabe, Joseph R. Brimacombe, Noriko Taguchi, and Tetsuya Komatsuzaki

Nitrous oxide and sevoflurane suppress the responses to *Laryngeal Mask Airway™* insertion in a linear, additive fashion in children.

- ◇ Women Appear to Have the Same Minimum Alveolar Concentration as Men: A Retrospective Study 1059

Edmond I Eger II, Michael J. Laster, George A. Gregory, Takasumi Katoh, and James M. Sonner

Gender does not influence the concentration of inhaled anesthetic required to eliminate movement in response to a noxious stimulus.

- ◇ Women Have the Same Desflurane Minimum Alveolar Concentration as Men: A Prospective Study 1062

Anupama Wadhwa, Jaleel Durrani, Papiya Sengupta, Anthony G. Doufas, and Daniel I. Sessler

Minimum alveolar concentration for desflurane was similar in young adult women and men ($6.2 \pm 0.4\%$ desflurane for women *vs.* $6.0 \pm 0.3\%$ for men; $P = 0.31$). This contrasts with previous results in which anesthetic requirement was based on the response to electrical stimulation and with studies showing that women report more pain than men.

- Comparison of the *LMA-Classic™* with the New Disposable Soft Seal Laryngeal Mask in Spontaneously Breathing Adult Patients 1066

André A. J. van Zundert, Kristine Fonck, Baha Al-Shaikh, and Eric Mortier

Disposable laryngeal masks show a similar clinical performance compared to reusable laryngeal masks, but without a substantial increase in cuff pressure.

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Narcotrend[®] and Bispectral Index[®] Monitor Are Superior to Classic Electroencephalographic Parameters for the Assessment of Anesthetic States during Propofol-Remifentanyl Anesthesia

1072

Gunter N. Schmidt, Petra Bischoff, Thomas Standl, Kai Jensen, Moritz Voigt, and Jochen Schulte am Esch

Modern electroencephalographic parameters (Narcotrend[®], Bispectral Index[®]) are more reliable indicators for different states of anesthesia with remifentanyl and propofol than classic electroencephalographic parameters. The Narcotrend[®] was superior to the Bispectral Index[®] for distinguishing different states during anesthesia.

■ LABORATORY INVESTIGATIONS

◆ Using Front-end Kinetics to Optimize Target-controlled Drug Infusions

1078

Michael J. Avram and Tom C. Krejcie

Estimates of the initial volume of distribution of a multicompartmental pharmacokinetic model depend on not only the mode of drug administration (bolus *vs.* infusion) but also the blood sampling schedule, and they affect both the other parameters of the pharmacokinetic model and the drug concentration history produced by a model-based targeted drug infusion.

◆ Deleterious Effects of Mild Hypothermia in Septic Rats Are Ameliorated by Granulocyte Colony-stimulating Factor

1087

Alexander Torossian, Sebastian Ruehlmann, Martin Middeke, Daniel I. Sessler, Wilfried Lorenz, Hinnerk F. Wulf, and Artur Bauhofer

Postoperative hypothermia is deleterious in rats with intraabdominal sepsis. Prophylaxis with granulocyte colony-stimulating factor improves the mortality rate and reduces signs of inflammation.

Lidocaine Enhances $G\alpha_i$ Protein Function

1093

Claudia Benkwitz, James C. Garrison, Joel Linden, Marcel E. Durieux, and Markus W. Hollmann

In contrast to inhibitory actions of local anesthetics on $G\alpha_q$ -coupled receptors, lidocaine facilitates $G\alpha_i$ protein function. This indicates that the modulation of G protein function by local anesthetics is subunit-dependent.



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Open-lung Protective Ventilation with Pressure Control Ventilation, High-frequency Oscillation, and Intratracheal Pulmonary Ventilation Results in Similar Gas Exchange, Hemodynamics, and Lung Mechanics 1102

Khaled A. Sedeek, Muneyuki Takeuchi, Klaudiusz Suchodolski, Sara O. Vargas, Motomu Shimaoka, Jay J. Schnitzer, and Robert M. Kacmarek

High-frequency oscillation, intratracheal pulmonary ventilation, and pressure control ventilation all provide equivalent gas exchange, lung mechanics, and hemodynamic response when applied in a lung protective ventilatory strategy. However, pilot data indicate that lung injury may be greater with pressure control ventilation than with high frequency oscillation or intratracheal pulmonary ventilation.

Evaluation of Rapid Ischemic Preconditioning in a Rabbit Model of Spinal Cord Ischemia 1112

Meiko Kakimoto, Masahiko Kawaguchi, Takanori Sakamoto, Satoki Inoue, Hitoshi Furuya, Mitsutoshi Nakamura, and Noboru Konishi

Rapid ischemic preconditioning protects spinal cord against neuronal damage 24 h but not 7 days after reperfusion in a rabbit model of spinal cord ischemia.

Selective Blockade of AT1 Receptor Attenuates Impairment of Hypotensive Autoregulation and Improves Cerebral Blood Flow after Brain Injury in the Newborn Pig 1118

Dimitry Baranov and William M. Armstead

The results of this study show that blockade of the AT1 and not AT2 receptor diminished the reduction in hypotensive pial artery dilation after brain injury in the piglet. AT1 selective blockade also blunted the decrease in cerebral blood flow observed during hypotension after injury. These data suggest that AT1 receptor activation by angiotensin II contributes to cerebrovascular dysregulation during hypotension after brain injury.

Cholinergic Reversal of Isoflurane Anesthesia in Rats as Measured by Cross-approximate Entropy of the Electroencephalogram 1125

Anthony G. Hudetz, James D. Wood, and John P. Kampine

Intracerebroventricular applications of cholinesterase inhibitor, neostigmine, or the muscarinic agonist oxotremorine reverse the depressant effect of 1.0% isoflurane on the bifrontal electroencephalogram as measured by cross-approximate entropy and confer antinociception to tail pinch, consistent with dissociated, antihypnotic-analgesic action of cholinergic agents.

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- ◇ Induction of Malignant Hyperthermia in Susceptible Swine by 3,4-Methylenedioxymethamphetamine ("Ecstasy") 1132

Marko Fiege, Frank Wappler, Ralf Weissborn, Mark U. Gerbershagen, Melanie Menge, and Jochen Schulte am Esch

3,4-Methylenedioxymethamphetamine (MDMA, "ecstasy") in abusive doses induces malignant hyperthermia in susceptible swine. Dantrolene was effective in therapy of MDMA-induced porcine malignant hyperthermia.

- Effects of Spontaneous Breathing during Airway Pressure Release Ventilation on Intestinal Blood Flow in Experimental Lung Injury 1137

Rudolf Hering, Andreas Viehöfer, Jörg Zinserling, Hermann Wrigge, Stefan Kreyer, Andreas Berg, Thomas Minor, and Christian Putensen

Intestinal blood flow was examined during airway pressure release ventilation with and without spontaneous breathing in pigs with oleic acid-induced lung injury. Maintaining spontaneous breathing improved blood flow to the stomach and small and large bowels. Improvements were more pronounced in the mucosal-submucosal as compared to the muscularis-serosal layer.

- Severe Hypotension Is Not Essential for Isoflurane Neuroprotection against Forebrain Ischemia in Mice 1145

H. Mayumi Homi, Javier M. Mixco, Huaxin Sheng, Hilary P. Grocott, Robert D. Pearlstein, and David S. Warner

Isoflurane compared with fentanyl/N₂O improved outcome from severe forebrain ischemia in mice. This occurred in the presence or absence of concomitant hypotension, indicating a direct cellular neuroprotective effect of isoflurane.

■ PAIN AND REGIONAL ANESTHESIA

- Arthroscopic Knee Surgery Does Not Modify Hyperalgesic Responses to Heat Injury 1152

Mads U. Werner, Preben Duun, Otto Kraemer, Birgit Lassen, and Henrik Kehlet

There are contradictory results in the experimental literature regarding the general effect of surgery on the nociceptive system: Does sensitization or inhibition prevail? This controlled study demonstrated that in patients undergoing standardized arthroscopic repair of the anterior cruciate ligament, the surgery *per se* did not modify hyperalgesic responses to an experimental injury applied at the contralateral side of the incisional area.



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Quality of Recovery from Anesthesia in Neurosurgical Patients 1158

Kate Leslie, Sally Troedel, Kimberley Irwin, Frances Pearce, Antony Ugoni, Robyn Gillies, Elizabeth Pemberton, and Shyamali Dharmage

The QoR-40 score is a useful instrument with which to assess quality of recovery in cranial surgery and spinal surgery patients.

Efficacy, Safety, and Pharmacokinetics of Levobupivacaine with and without Fentanyl after Continuous Epidural Infusion in Children: A Multicenter Trial 1166

Jerrold Lerman, Judith Nolan, Rob Eyres, Mark Schily, Peter Stoddart, Christopher M. Bolton, Frank Mazzeo, and Andrew R. Wolf

When infused as a continuous epidural solution, 0.0625% levobupivacaine without fentanyl is effective for perioperative pain after lower abdominal and urologic surgery in children. Mean plasma concentrations of levobupivacaine (0.125% or 0.0625%) and fentanyl (1 $\mu\text{g/ml}$) after a 24-h epidural infusion at 0.3 $\text{ml} \cdot \text{kg}^{-1} \cdot \text{h}^{-1}$ are low.

◆ Cyclooxygenase-1 in the Spinal Cord Is Altered after Peripheral Nerve Injury 1175

Xiaoying Zhu and James C. Eisenach

Cyclooxygenase-1 isoenzyme increases in superficial laminae of the spinal cord in two animal models of peripheral nerve injury and hypersensitivity to mechanical stimulation, suggesting that this isoenzyme may be important in the pathophysiology of neuropathic pain.

◆ Inhibition of Spinal Prostaglandin Synthesis Early after L5/L6 Nerve Ligation Prevents the Development of Prostaglandin-dependent and Prostaglandin-independent Allodynia in the Rat 1180

Michael P. Hefferan, Darren D. O'Rielly, and Christopher W. Loomis

This study provides evidence that spinal prostaglandins, synthesized by cyclooxygenase-1 in the first 4–8 hours after nerve injury, are critical in the pathogenesis of allodynia and that their early pharmacologic disruption affords protection against this neuropathic state in the rat.

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The Critical Role of Concentration for Lidocaine Block of Peripheral Nerve *In Vivo*: Studies of Function and Drug Uptake in the Rat 1189

Tadashi Nakamura, Frederique Popitz-Bergez, John Birknes, and Gary R. Strichartz

Concentrated lidocaine is more potent than dilute lidocaine containing the same dose for producing functional rat sciatic nerve block. When administered at doses that give equal inhibition of nociception, however, intraneural lidocaine content is actually lower with concentrated lidocaine than with dilute lidocaine.

■ REVIEW ARTICLE

Cyclooxygenase-2 Inhibitors in Postoperative Pain Management: Current Evidence and Future Directions 1198

Ian Gilron, Brian Milne, and Murray Hong

Published postoperative trials of cyclooxygenase-2 inhibitors suggest a therapeutic profile comparable to nonselective nonsteroidal antiinflammatory drugs. Future comparative trials powered to evaluate adverse outcomes such as bleeding, gastrointestinal ulceration, and cardiovascular events are needed to demonstrate whether cyclooxygenase-2 inhibitors offer any benefit over nonselective nonsteroidal antiinflammatory drugs.

■ SPECIAL ARTICLE

◇ Reporting of Ethical Approval and Informed Consent in Clinical Research Published in Leading Anesthesia Journals 1209

Paul S. Myles and Nicole Tan

A review of publications in six leading anesthesia journals found differences in the rates of ethical approval and informed consent for human research.

■ CLINICAL CONCEPTS AND COMMENTARY

Target-Controlled Drug Delivery: Progress toward an Intravenous “Vaporizer” and Automated Anesthetic Administration 1214

Talmage D. Egan

Based on a drug's typical pharmacokinetic behavior, target-controlled infusion systems calculate and deliver the infusion rate that is necessary to achieve and maintain a user-designated drug concentration in the blood or theoretical effect site. Employed in both clinical and research settings, target-controlled infusion technology represents an important advance in the delivery of intravenous anesthetics.

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🌐 Biotransformation of Halothane in Humans 1220

Kai Rehder



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Bruce Kleinman



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