SPA

Society for Pediatric Anesthesia
NEWSLETTER

Volume 4 Number 2 July, 1991

FIFTH ANNUAL MEETING IN SAN FRANCISCO

By Randall C. Wetzel, M.D.

The Fifth Annual Meeting of the Society for Pediatric Anesthesia (SPA) will be held on Friday, October 25, 1991 at the San Francisco Hilton Hotel, San Francisco, California (see schedule on page 3). As in past years, a buffet continental breakfast will be provided for SPA members beginning at 7:00 a.m. Aubrey Maze, M.B., SPA President, will open the meeting at 8:10 a.m.

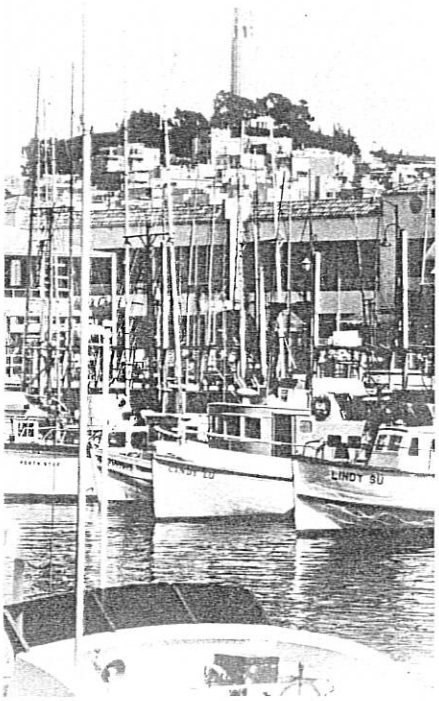
The morning session will explore the anesthetic issues involved in the treatment of congenital heart disease, both present and future. This session will be introduced and chaired by **Susan C. Nicolson, M.D.** of the Children's Hospital of Philadelphia, Pennsylvania. A broad view of pediatric cardiovascular medicine and surgery, and their relevance to anesthesia practice will be provided. The first speaker will be **David Teitel, M.D.** from the University of California, San Francisco. Dr. Teitel is a well-known pediatric cardiologist who has been involved in research for many years at the Cardiovascular Research Institute in San Francisco. His particular interests have been the developing myocardium and developmental changes in myocardial function. He will speak on "Left Ventricular Function in the Newborn: Evaluation of the Pressure-Volume Plane." Dr. Teitel's insights into the developmental and neonatal aspects of myocardial function will provide a basis for hemodynamic monitoring and manipulation in infants.

The next speaker will be **James Lock, M.D.,** Clinical Director of Pediatric Cardiology at Boston Children's Hospital. Dr. Lock is a Professor of Pediatrics with an extensive background in interventional pediatric cardiology. His national prominence in pediatric cardiology and many years of experience with children with congenital heart disease will provide a broad perspective on future developments in pediatric cardiology. The title of his talk is "Treatment of Congenital Heart Disease in the '90s and Beyond." Specific focus will be on interventional cardiology and future diagnostic possibilities.

After a morning coffee break, **William J. Greeley, M.D.,** Associate Professor of Pediatrics and Anesthesiology and Director of the Pediatric Cardiac Care Unit and Pediatric Cardiac Anesthesia at Duke University, Durham, North Carolina, will bring his extensive clinical experience, as well as his experience in peering through fences and keyholes, to bear in his talk entitled "Staring at the Operative Field."

Next, **Ross Ungerleider, M.D.,** Chief of Pediatric Cardiothoracic Surgery at Duke University, will present "Reality Testing and the Congenital Heart Surgeon." Dr. Ungerleider's interests are particularly centered around operating on infants at earlier ages than in the past and extending the realm of the pediatric cardiothoracic surgeon to the prenatal period. He also will present a prospective on future surgical therapy of congenital heart disease.

(Continued on page 2)



If you like seafood and sea air, Fisherman's Wharf is the place. Bay sightseeing boats put out from Pier 43 1/2, while Telegraph Hill's Coit Tower watches over this tranquil harbor scene.

SPA TO PROVIDE RESEARCH SUPPORT

"The specialty of pediatric anesthesia would benefit from investment and research focused on both age-related differences in anesthetic practice and in research involving the teaching of pediatric anesthesia."

Barbara W. Brandom, M.D., Associate Professor of Anesthesia and Critical Care, University of Pittsburgh, Pennsylvania, advocated this position at a recent SPA Board of Directors meeting. She commented that, as a Society, SPA should support research concerning the topics presented at its meetings and in the Newsletter. Research support is an appropriate way to demonstrate the seriousness and commitment of our organization and the advancement of our specialty.

At its recent meeting, the SPA Board of Directors agreed to dedicate a portion of SPA funds for the purpose of sponsoring pediatric anesthesia research. The exact mechanism by which this support will be available has not yet been worked out, but it is envisioned that an independent group of anesthesiologists will competitively review submitted grants and select appropriate proposals. It is hoped that this support will be available by 1992.

One possibility is that SPA will conjoin efforts with the Foundation for Anesthesia Education and Research (FAER) as an affiliated organization of ASA in sponsoring awards in pediatric anesthesia research.

If there are any questions, please contact Drs. William J. Greeley or Barbara W. Brandom. Further details will be announced at the SPA Annual Meeting in San Francisco. □

SPA Contents

Editor: Randall C. Wetzel, M.D., The Johns Hopkins Hospital, Baltimore, MD 21205; (301) 955-7612

Dues and Costs

Membership dues for the Society for Pediatric Anesthesia are $100 per fiscal year. The costs of the SPA Annual Meeting (guest speaker stipends, meeting place expenses and food) are underwritten by membership dues and by generous contributions from corporate donations and sponsors. For more information, interested physicians should write to:

THE SOCIETY FOR
PEDIATRIC ANESTHESIA
515 Busse Highway
Park Ridge, IL 60068-3189

SPA Editorial Board

At its Spring Board Meeting, the SPA Board of Directors decided that the Editor-in-Chief of the SPA Newsletter will be a full voting member of the Board. In order to make this appointment consistent with the other terms on the Board of Directors, the editorship will be limited to a four-year period. There will be an editorial board meeting following the SPA Annual Meeting in San Francisco during which the incoming SPA Newsletter Editor will be announced.

Current associate editors of the SPA Newsletter are Robert M. Spear, M.D. of the Children's Hospital of San Diego, James P. Viney, M.D. of Primary Children's Hospital in Salt Lake City and Steve M. Audenaert, M.D. of the University of Louisville. Anyone interested in serving as an associate editor or contributing to the SPA Newsletter should attend the editorial board meeting in San Francisco.

FIFTH ANNUAL MEETING IN SAN FRANCISCO

(Continued from page 1)

The morning session will be capped off by **David L. Wessel, M.D.,** Director of the Cardiothoracic Intensive Care Unit of Children's Hospital, Boston, Massachusetts. Dr. Wessel's interest is in the perioperative management of children who have undergone cardiac surgery, and he has particular expertise in managing pulmonary hypertension. In his presentation "Perioperative Management of Congenital Heart Disease," he will address both pre- and postoperative management of children with congenital heart disease.

Following these presentations, there will be a panel discussion chaired by Dr. Nicolson. Members of the audience will be able to interact with the five speakers. At the end of the morning symposium, the SPA meeting participants will have been treated to a surgeon's, a pediatrician's, an intensivist's and an anesthesiologist's perspective on congenital heart disease.

The topic of the first afternoon session "The Use of Forbidden Drugs in Pediatric Anesthesia" will concern the various anesthetic agents which lack FDA approval for use in children. **Dennis M. Fisher, M.D.,** of the University of San Francisco, California, and **D. Ryan Cook, M.D.,** Director of Anesthesiology at Children's Hospital of Pittsburgh,

Ross Ungerleider, M.D.

Pennsylvania, will provide an east/west perspective on this controversial topic.

As regional anesthesia becomes an increasingly important mainstay of pediatric anesthesia, both intraoperatively and for pain management, equipment and techniques continue to multiply. **Charles B. Berde, M.D.,** Director of the Pediatric Pain Service, Boston Children's Hospital, and **Elliot J. Krane, M.D.,** Children's Hospital and Medical Center, Seattle, Washington, will bring their extensive clinical expertise to bear on the subject "Regional Anesthesia - 1991: Equipment, Techniques and Pitfalls." The presentation will include a discussion on new developments concerning the practice of regional anesthesia in pediatrics.

Dennis M. Fisher, M.D.

Finally, a lively session is anticipated with participation from **Frederic A. Berry, M.D.,** Professor of Anesthesiology and Director of Pediatric Anesthesia, University of Virginia, Charlottesville, and **Alan J. Schwartz, M.D.,** Associate Dean of Academic Affairs and Professor of Anesthesiology, Hahnemann University Medical School, Philadelphia, Pennsylvania, who will present their opposing viewpoints on the need for Board certification in pediatric anesthesiology. **Alvin Hackel, M.D.,** Professor of Anesthesiology and Pediatrics, Stanford University Hospital, Palo Alto, California, will moderate the session. These outstanding personalities will highlight and clarify the issues involved with the controversy of subspecialty certification in pediatric anesthesia.

The scientific session will be followed by the SPA Annual General Membership Meeting. Following the meeting, a reception will be provided at the San Francisco Hilton Hotel to allow friends, colleagues and new acquaintances to continue their discussion.

The 1991 SPA Annual Meeting is co-sponsored by the American Society of Anesthesiologists (ASA). ASA is approved by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor continuing medical education for physicians.

ASA designates this continuing medical education for six credit hours in category 1 of the Physician's Recognition Award of the American Medical Association. □

SPA ANNUAL MEETING PROGRAM SCHEDULE

Friday, October 25, 1991 - San Francisco Hilton Hotel

7:00-8:10 a.m.
Registration - Continental Ballroom Foyer

BREAKFAST
IMPERIAL BALLROOM

8:10-8:15 a.m.
Welcome
Aubrey Maze, M.B., President, Society for Pediatric Anesthesia

MORNING SYMPOSIUM
CONTINENTAL BALLROOMS 5-6

Treatment of Congenital Heart Disease, Present and Future

8:15-8:25 a.m.
Introduction
Moderator: Susan C. Nicolson, M.D.

8:25-9:00 a.m.
Left Ventricular Function in the Newborn: Evaluation of the Pressure-Volume Plane
David Teitel, M.D.

9:00-9:45 a.m.
Treatment of Congenital Heart Disease in the '90s and Beyond
James Lock, M.D.

9:45-10:00 a.m.
COFFEE BREAK

10:00-10:30 a.m.
Staring at the Operative Field
William J. Greeley, M.D.

10:30-11:00 a.m.
Reality Testing and the Congenital Heart Surgeon
Ross Ungerleider, M.D.

11:00-11:30 a.m.
Perioperative Management of Congenital Heart Disease
David L. Wessel, M.D.

11:30 a.m.-12:00 noon
Panel Discussion

12:00 noon-1:30 p.m.
LUNCHEON
IMPERIAL BALLROOM

AFTERNOON PANELS
CONTINENTAL BALLROOMS 5-6

1:30-2:15 p.m.
The Use of Forbidden Drugs in Pediatric Anesthesia
Dennis M. Fisher, M.D., and D. Ryan Cook, M.D.
Moderator: Aubrey Maze, M.B.

2:15-3:00 p.m.
Regional Anesthesia - 1991: Equipment, Techniques and Pitfalls
Charles B. Berde, M.D. and Elliot J. Krane, M.D.
Moderator: Charles H. Lockhart, M.D.

3:00-3:30 p.m.
COFFEE BREAK

3:30-4:30 p.m.
Board Certification in Pediatric Anesthesia: Can It Be Stopped?
Frederic A. Berry, M.D. and Alan J. Schwartz, M.D.
Moderator: Alvin Hackel, M.D.

4:30-5:30 p.m.
Annual General Membership Meeting

6:00-7:00 p.m.
RECEPTION
IMPERIAL BALLROOM

FACULTY

Charles B. Berde, M.D.
Children's Hospital
Boston, Massachusetts

Frederic A. Berry, M.D.
University of Virginia Medical Center
Charlottesville, Virginia

Dennis M. Fisher, M.D.
University of California
School of Medicine
San Francisco, California

William J. Greeley, M.D.
Duke University Medical Center
Durham, North Carolina

Alvin Hackel, M.D.
Stanford University Hospital
Palo Alto, California

Elliot J. Krane, M.D.
Children's Hospital
Seattle, Washington

James Lock, M.D.
Children's Hospital
Boston, Massachusetts

Susan C. Nicolson, M.D.
Children's Hospital of Philadelphia
Philadelphia, Pennsylvania

Alan J. Schwartz, M.D.
Hahnemann University Hospital
Philadelphia, Pennsylvania

David Teitel, M.D.
University of California
School of Medicine
San Francisco, California

Ross Ungerleider, M.D.
Duke University Medical Center
Durham, North Carolina

David L. Wessel, M.D.
Children's Hospital
Boston, Massachusetts

Society for Pediatric Anesthesia

515 BUSSE HIGHWAY
PARK RIDGE, IL 60068-3189

1991 Annual Meeting Registration Form

San Francisco Hilton Hotel
San Francisco, California
October 25, 1991

Responses to previous SPA Annual Meetings have been very positive. We STRONGLY recommend that you confirm your registration as early as possible.

Registration Fee (Make checks payable to the Society for Pediatric Anesthesia):

SPA Members	$ 50
Non-SPA Members	$200

Attention non-SPA Members: Join the Society for Pediatric Anesthesia and attend the 1991 Annual Meeting at the discounted SPA Member registration fee. A SPA membership application is on page 11 of this newsletter.

Name _____

Home Address _____

City _____

State _____ ZIP _____

Hospital Affiliation _____

Business Address _____

City _____

State _____ ZIP _____

Business Telephone ( ) _____

Home Telephone ( ) _____

Preferred Mailing Address (check one):

☐ Home ☐ Business

Mail this completed form with your registration fee to:
Society for Pediatric Anesthesia
515 Busse Highway
Park Ridge, Illinois 60068-3189

Reorganization of Membership Fees

Several factors have led the SPA Board of Directors to initiate, for the first time, a charge for the Annual Meeting. The annual membership fee will remain the same. These factors include increasing cost of publication for the newsletter and administrative costs. In addition, the cost of the SPA Annual Meeting continues to increase. This additional fee also will be used to assist in fulfilling the Society's financial commitment to supporting research relevant to pediatric anesthesia.

The new structure will create a resident membership category. The new schedule of fees is:

SPA Annual Membership	$100
SPA Annual Resident Membership	$ 25
Annual Meeting Registration fee for SPA members	$ 50
Annual Meeting Registration fee for non-SPA members (includes annual membership)	$200

All members of SPA are encouraged to register for the Annual Meeting at the earliest possible date. This will ensure continuation of the superb, smooth organization that we have seen in recent years and avoid the logistical difficulties that arise with large numbers of on-site registrations. ☐

PRELIMINARY ANNOUNCEMENT

3RD EUROPEAN CONGRESS

OF

PAEDIATRIC ANAESTHESIA

1 - 3 SEPTEMBER 1993

LIVERPOOL

FOR FURTHER INFORMATION CONTACT
DR.P.D. BOOKER, ALDER HEY CHILDRENS HOSPITAL, LIVERPOO

PEARLS AND PERILS

The purpose of PEARLS AND PERIL *is to allow communication by practitioners of pediatric anesthesiology of their clinical pearls, patient care nuggets and tips relevant to the art of pediatric anesthesiology. If you have anything that you would like to share with your colleagues, please mail it to Steve M. Audenaert, M.D., Director of Pediatric Anesthesia, University of Kentucky, Chandler Medical Center, Lexington, Kentucky 40536-0084. We will publish your contribution(s) on a space-available basis.*

New Drug for Postoperative Pain Control

By Robert Valley, M.D.

Now that we have established the need for postoperative pain control, both as a humanitarian service and for its moderation of the postoperative stress response, we are left with the burden of providing analgesia that is both effective and safe with a tolerably low incidence of side effects. The current anesthesia literature is repleat with reports on efforts to provide effective and safe postoperative pain control. Only a modest number of these deal with children. Judging from these reports, it would appear that we are limited in our armamentarium to various routes and combinations of local anesthetic agents and narcotics. Both of these classes of drugs carry significant risks if used inappropriately or in excess.

The nonsteroidal anti-inflammatory drugs (NSAIDs) are receiving a well-deserved surge in interest. As potent cyclooxygenase inhibitors, NSAIDs exert their analgesic effects peripherally by blocking the production of arachidonic acid metabolites. These metabolites are thought to facilitate or act synergistically with other tissue mediators such as bradykinin, seratonin and histamine to stimulate peripheral pain receptors.

NSAIDs have a number of attractive features, including a lack of effect on respiratory drive and a peripheral site of action with no affinity for opiate receptors.[1,2] Thus, their analgesic effects are additive to those of opiates, and there is no evidence of enhanced narcotic side effects when used concomitantly. Urinary retention and constipation are not side effects of NSAIDs. Known side effects of NSAIDs such as gastric irritation, prolongation of bleeding times and redistribution of renal blood flow have not resulted in clinically apparent problems when these drugs are used parenterally for acute postoperative pain management.[3,4]

Oral NSAIDs have been used in children since the 1960s for management of inflammatory diseases such as juvenile rheumatoid arthritis, and the safety profile has been similar to the experience in adult patients. European studies have appeared reporting the use of NSAIDs such as ibuprofen and diclofenac for management of pain in children following tonsillectomies and dental extractions. Oral ibuprofen has received FDA approval for use in children and is now available with a prescription.

In 1988, Maunuksela and colleagues reported on the efficacy of intravenous indomethacin in reducing morphine requirements and improving pain scores following general surgery or orthopedic procedures.[5] Unfortunately, the intravenous form of indomethacin has only been approved and marketed for one indication, the pharmacologic closure of patient ductus arteriosus in neonates. Subsequent reports on its use as an analgesic agent in children have not appeared in the literature.

In 1990, FDA approved ketorolac tromethamine for intramuscular use in the short-term management of acute pain. Studies in adults have been very encouraging. Ketorolac has been demonstrated to provide effective analgesia for pain following dental extractions, tonsillectomies, major abdominal procedures, gynecologic surgery and orthopedic procedures. Ketorolac's analgesic potency has been studied in comparison to that of narcotics. Estimates of potency have found a single dose ranging from 30 to 90 mg IM equivalent to 12 mg morphine, 100 mg of meperidine or 30 mg of pentazocine.[4,6,7] Gillies and colleagues demonstrated significantly lower morphine requirements in patients receiving a continuous infusion of ketorolac following upper abdominal surgery.[8]

Since ketorolac became available, we have been using it extensively in both adult and pediatric patients. Our clinical impression is that ketorolac provides significant analgesia that reduces or, on occasion, eliminates the need for narcotic administration. It also has been useful as an adjunctive agent for breakthrough pain following epidural narcotic administration. Unfortunately, there are no published reports of ketorolac use in children.

An unpublished study by Maunuksela and colleagues from Finland reports on the pharmacokinetics of intravenous ketorolac in children following strabismus repair.[9]

This is particularly exciting since the intramuscular route of administration in awake children is considered taboo by many involved in postoperative pain management. The formulation of ketorolac used for intravenous administration is exactly the same as that approved for intramuscular use. We have used the intravenous route for many of our pediatric patients with good results and no untoward effects. One 14-year-old patient with cystic fibrosis and severe chest wall pain that precluded chest physiotherapy reported significant improvement with ketorolac following failed trials of intravenous meperidine and oral naproxen. He received four to five intravenous injections daily for three days.

We also have used intravenous ketorolac in the Postanesthesia Care Unit to control pain in high-risk infants (e.g., history of prematurity). We are currently conducting a double-blind, placebo-control study to compare the effects of intraoperative administration of ketorolac versus morphine on pediatric postoperative analgesic requirements.

We believe that drugs such as ketorolac will add significantly to the pediatric anesthesiologists armamentarium for management of postoperative pain. The manufacturers of ketorolac hope to have FDA approval for intravenous ketorolac within a year. Unfortunately, no studies are being funded in children, and there are no immediate plans for pursuing its approval for intramuscular or intravenous use in children.[10]

Why? Stringent FDA requirements regarding therapeutic trials in children and a smaller market potential are two reasons that come to mind. Until we can convince FDA and drug companies that carefully designed, well-supported clinical trials are at least as important, if not more important in pediatric patients, the burden (and cost) of providing proof of efficacy and safety in pediatric patients will rest with the clinician — as will the medicolegal liability of using a drug for nonapproved indications and by a nonapproved route.

References:

1. Brandon Bravo LJC, Mattie H, Spierdijk J, et al: The effects on ventilation of ketorolac in comparison with morphine. *Eur J Clin Pharmacol* 1988. 35:491-494.
2. Yee JR, Waterbury LD: Ketorolac tromethamine is a new analgesic agent with efficacy comparable to morphine that does not bind to opioid receptors and has low addictive potential (abstract). *Clin Res* 1987. 35:163a.
3. Brown CR: Results from three studies of the multiple-dose safety and efficacy of intramuscularly (IM) administered ketorolac tromethamine in patients with pain from major

(Continued on page 6)

Robert Valley, M.D. is Assistant Professor of Anesthesia and Pediatrics at the University of North Carolina at Chapel Hill.

ASK THE EXPERTS

By Alvin Hackel, M.D.

Pediatric Anesthesia and the Community Anesthesiologist

Recently, an anesthesiologist working in a small rural hospital several hours away by car from a pediatric center wrote to the Society for Pediatric Anesthesia (SPA) for advice. He is one of two anesthesiologists practicing in the hospital. Their pediatric practice is limited to T&As, myringotomies and an occasional inguinal herniorrhaphy. The operating room suite has capnography and pulse oximetry capabilities, but the hospital does not have a specialty pediatric unit, specialized pediatric anesthesia equipment or personnel specifically trained to handle pediatric anesthesia emergencies.

Several months ago, his partner provided anesthesia to a 9-month-old child, the youngest patient anesthetized in their hospital in three years. He is faced with a decision concerning the appropriateness of providing anesthesia to small children and asks, "...What (are) the standards of safe practice and what limitations should be considered on age, procedures, presurgical evaluations, monitoring, equipment, recovery, observation and liability in the event of a misadventure at a hospital such as ours?"

A complete reply to his questions is beyond the scope of this article and, in fact, beyond the reach of our field at the present time. Nevertheless, they are important questions and merit serious discussion among anesthesiologists. The May *NEWSLETTER* of the American Society of Anesthesiologists (ASA) contained a report from the Committee on Subspecialty Representation which stated, in part:

"While ASA members are expected to function in all areas of anesthesiology, many elect to focus their time and attention to specialized areas. Without their efforts, the continued development and advancement of both practice and training programs in these important areas would not occur. Modern anesthesiology practice has become too broad for individuals to be expert in all areas; hence, the need for development and growth of the specialized societies and areas of specialization within anesthesiology.

"The Committee on Subspecialty Representation has begun to study and inquire into the development of a core curriculum within the various subspecialties of anesthesiology. The committee is currently polling the various groups represented on the committee to determine the need for such a core curriculum and to gain insights into the need for development of a certificate of special qualifications."

The field of anesthesia has undergone revolutionary changes in recent years. To the younger practitioners in the field, it is difficult to believe how primitive our knowledge base was and how primitive the tools for the administration of pediatric anesthesia were as recently as 1965. The equipment used for routine monitoring of vital signs consisted of a blood pressure cuff and the "hand on the pulse." The esophageal stethoscope had not been placed into routine practice, neither had continuous temperature monitoring. The precordial stethoscope was used intermittently. Even the electrocardiogram was not used routinely. A spectrum of "modern" inhalation agents was not available, neither were oral preoperative medications, short-acting narcotics or muscle relaxants.

We and our patients should be very thankful for the advancements that have been made. A "gold standard" for pediatric anesthesia has been created. No pediatric patient is too small or too sick to be anesthetized safely. That gold standard continues to change as the morbidity associated with the administration of anesthesia diminishes. The public demands the application of that standard in every hospital and, in many cases, believes it can be attained only by anesthesiologists with special training in pediatric anesthesia who practice it on a regular basis in a pediatric hospital setting.

Each hospital's department of anesthesia sets its own criteria for the credentialing of its members and the granting of privileges for special cases. At the present time, neither ASA nor the American Board of Anesthesiology has set limitations on the credentialing of anesthesiologists for pediatric anesthesia. Nevertheless, anesthesia department chairmen and individual anesthesiologists must be cognizant of the public's thoughts on this matter and the emerging concept among official anesthesiology bodies that the practice of pediatric anesthesia is an area of subspecialization within anesthesiology. □

Alvin Hackel, M.D. is Professor of Anesthesiology and Pediatrics at Stanford University Hospital, Palo Alto, California

Pediatric Anesthesia and the Journals

The SPA Board of Directors has been asked to address the question of supporting the publication of a journal specifically dedicated to pediatric anesthesia. After some discussion, it was the consensus of the SPA Board of Directors that the current anesthesiology journals have provided an adequate forum to present research relevant to pediatric anesthesia.

The journal, *Anesthesiology*, continues to publish relevant pediatric research. Dennis M. Fisher, M.D., San Francisco, California, and James L. Robotham, M.D., Baltimore, Maryland, both members of SPA, are now Associate Editors of *Anesthesiology*. Also, in the reorganization of *Anesthesia and Analgesia* under Ronald D. Miller, M.D., Mill Valley, California, Paul Hickey, M.D., Boston, Massachusetts, has been appointed as Associate Editor for Pediatrics.

SPA wishes to encourage the submission of relevant pediatric research to these widely read publications in order to inform all anesthesiologist of advances in the field of pediatric anesthesia. □

PEARLS AND PERILS

Continued from page 5

surgery. *5th World Congress on Pain* 1987. Abstract 4.

4. O'Hara DA, Fragen RJ, Kinzer M, et al: Ketorolac tromethamine as compared with morphine sulfate for treatment of postoperative pain. *Clin Pharmacol Ther* 1987. 41:556-561.

5. Maunuksela E-L, Olkkola K, Korpela R: Does prophylactic intravenous infusion of indomethacin improve the management of postoperative pain in children? *Can J Anaesth* 1988. 35(2):123-127.

6. Yee JR, Bradley R, Stanski E, et al: A comparison of analgesic efficacy of intramuscular ketorolac tromethamine and meperidine in postoperative pain (Abstract IV-D). *Clin Pharmacol Ther* 1986. 39:237.

7. Estenne B, Juulien M, Charleux H, et al: Comparison of ketorolac, pentazocine, and placebo in treating postoperative pain. *Curr Ther Res* 1988. 43:1173-1182.

8. Gillies G, Kenny G, Bullingham R, et al: The morphine sparing effect of ketorolac tromethamine. A study of a new, parenteral nonsteroidal anti-inflammatory agent after abdominal surgery. *Anaesthesia* 1987. 42:727-731.

9. Maunuksela E-L, Olkkola K: An open study to investigate the pharmacokinetics of ketorolac tromethamine, following intravenous administration to relieve postoperative pain in children. Unpublished study.

10. Personal communication from T. Maneatis, M.D., Associate Director - Analgesics, Syntex Laboratories, Inc. □

COMBINED SPA AND APSA MEETING — 1992

The Society for Pediatric Anesthesia (SPA) and the American Pediatric Surgical Association (APSA) will conduct a joint meeting on May 15-16, 1992 at The Broadmoor in Colorado Springs, Colorado. APSA is the major organization of pediatric surgeons (general surgery, urology, trauma, cancer, transplant and critical care) in North America.

This is a unique opportunity for the two largest specialty groups dealing with the surgical management of children to meet and to discuss issues of scientific and clinical importance to both subspecialties.

The SPA program committee is composed of Aubrey Maze, M.B., Phoenix, Arizona; William J. Greeley, M.D., Durham, North Carolina; Jerrold Lerman, M.D., Toronto, Ontario, Canada; and Myron Yaster, M.D., Baltimore, Maryland. Working in concert with the chairman of the APSA program committee, David Wesson, M.D., Toronto, Ontario, Canada, they have proposed a program that should appeal to the memberships of both societies.

The morning sessions at the APSA meeting will feature poster and abstract scientific sessions emphasizing scientific quality, relevance to pediatric surgery and originality. A joint scientific session on issues relevant to pediatric anesthesia and surgery will be held on May 16 from approximately 9:00 a.m. to 12:00 noon.

A call for abstracts will be made this August, due on November 15, 1991. Abstract forms can be obtained from:

American Pediatric Surgical Association
750 Terrado Plaza
Suite 119
Covina, California 91723-3419

There will be symposium sessions during the afternoons of May 15 and 16 that will be similar in format to the SPA Annual Meeting Program. The following symposium schedule has been tentatively arranged.

Provisional Schedule SPA-APSA Symposiums

May 15

1:00-3:00 p.m.
Controversies in Pediatric Ambulatory Anesthesia and Surgery

The preoperative hematocrit, is it really necessary?
W.L. Roy, M.D.
Hospital for Sick Children
Toronto, Ontario, Canada

Is the preoperative fast justified?
Mark S. Schreiner, M.D.
Children's Hospital of Philadelphia
Philadelphia, Pennsylvania

The child with an acute upper respiratory tract infection — Should surgery be cancelled?
Jerrold Lerman, M.D.
Hospital for Sick Children
Toronto, Ontario, Canada

What are appropriate discharge criteria for children following same-day surgery?
Steven C. Hall, M.D.
Children's Memorial Hospital
Chicago, Illinois

3:30-5:00 p.m.
Perioperative Pain Management
Moderator: William J. Greeley, M.D.
Duke University Medical Center
Durham, North Carolina

Pain management, the multi-disciplinary team approach
Charles B. Berde, M.D.
Children's Hospital
Boston, Massachusetts

Developmental aspects of opioid and local anesthetic pharmacology
Myron Yaster, M.D.
The Johns Hopkins Hospital
Baltimore, Maryland

Caudal/epidural anesthesia/analgesia
Linda Jo Rice, M.D.
Children's National Medical Center
Washington, D.C.

Patient/parent-controlled analgesia
David E. Cohen, M.D.
Children's Hospital of Philadelphia
Philadelphia, Pennsylvania

May 16

8:00 a.m.-12:00 noon
Joint SPA-APSA abstracts

1:00-3:00 p.m.
The Management of Congenital Diaphragmatic Hernia

Fetal surgical correction
Michael Harrison, M.D.
University of California
San Francisco, California

Neonatal intensive care — Is the midnight "dash" to the operating room justified?
Desmond J. Bohm, M.D.
Hospital for Sick Children
Toronto, Ontario, Canada

ECMO
Robert Bartlett, M.D.
University of Michigan
Ann Arbor, Michigan
Robert K. Crone, M.D.
Children's Hospital and Medical Center
Seattle, Washington

3:30-5:00 p.m.
The Ex-Premie: Controversies and Dilemmas
Moderator: Robert S. Spear, M.D.
Children's Hospital
San Diego, California

Postanesthesia apnea: Who is at risk? When is it safe to anesthetize?
Mark A. Rockoff, M.D.
Children's Hospital
Boston, Massachusetts

The child with an inguinal hernia — Does it make a difference when to schedule surgery?
Joseph Zerella, M.D.
Phoenix Children's Hospital
Phoenix, Arizona

Caffeine for the prevention of postanesthesia apnea
Leila G. Welborn, M.D.
Children's National Medical Center
Washington, D.C.

Pain management in children less than 3 months of age
Anne M. Lynn, M.D.
Children's Hospital and Medical Center
Seattle, Washington

LITERATURE REVIEW

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The following literature reviews have been selected from recent issues of international journals concerning pediatric and surgical studies which may be of interest to the pediatric anesthesiologist.

Ingestion of clear fluids is safe for adolescents up to 3 h before anaesthesia
Splinter and Schaefer. *Br Anaesth* 66:48-52, 1991.

These investigators from Ottawa compared NPO after midnight to ingestion of unlimited clear fluids until three hours prior to surgery in 152 adolescents, ages 13-19. Patients with a history of gastrointestinal disease or on medications affecting gastric contents were excluded. The aspirated gastric volume and pH was the same in both groups. Those who received clear fluids were less thirsty, but hunger was unaffected. The authors did not suggest changing ingestion guidelines for solids or nonclear fluids.

Comment: This study is consistent with other recent studies suggesting that infants, children, adolescents and adults all handle clear liquids in a similar manner, and that a three-hour fast is sufficient for acceptable gastric emptying. - *JPV*

The effect of standard and high dose epinephrine on coronary perfusion pressure during prolonged cardiopulmonary resuscitation
Paradis et al. *JAMA* 265(9):1139-1144, 1991.

Potential complications of high dose epinephrine therapy in patients resuscitated from cardiac arrest
Callaham, Barton and Kayser. *JAMA* 265(9):1117-1122, 1991.

(Accompanying editorial) High dose epinephrine during resuscitation, a word of caution
Ornato 265(9):1160-1162.

If you've been regularly attending all the SPA meetings like good members should, then the appearance of these articles is no surprise to you. At our Atlanta meeting, it was pointed out that the suggested dosage of epinephrine for CPR was not strongly grounded in scientific data, and that researchers were investigating this topic.

Dr. Paradis and colleagues examined the effects of 1 mg doses of epinephrine versus 0.2 mg/kg doses of epinephrine in 32 adult patients refractory to advanced cardiac life support. They measured right atrial and central aortic pressures to calculate coronary perfusion pressures. The higher dose of epinephrine gave a signficantly greater increase in coronary perfusion pressure, and only after the high dose did any patient have a rise in coronary perfusion pressure to above 15 mm Hg. The four patients who were transiently resuscitated after high dose therapy all remained comatose and died within 48 hours. This study suggests high dose epinephrine is more effective when given late during resuscitation and begs the question as to its efficacy when given early in resuscitation.

The Callaham study looked at the complication rates in patients successfully resuscitated with either high dose epinephrine (>50 mcg/kg bolus or > 2.8 mcg/kg/min) or standard dose (any dose less than the above.) The patients studied survived at least six hours. The only significant difference was a lower serum calcium in the high dose group. Post arrest hypertension, neurological status, myocardial damage, pulmonary edema and a variety of biochemical studies were otherwise comparable between the two groups. This was a retrospective, nonrandomized study, but it suggests high dose epinephrine in the arrest victim is not more harmful to survivors than a standard dose.

The editorial points out some of the limitations in the above studies and comments on prospective studies now being done that should help define what is the proper dose for epinephrine for maximally effective CPR with minimal complications. - *JPV*

Midazolam-fentanyl intravenous sedation in children: Case report of respiratory arrest
Yaster, Nichols, Deshpande and Wetzel. *Pediatrics* 86(3):463-466, 1990.

Frequent hypoxemia and apnea after sedation with midazolam and fentanyl
Bailey et al. *Anesthesiology* 73(5):826-830, 1990.

Drs. Yaster et al. describe a case of a 14-month-old sedated for bone marrow aspiration with a total of .11 mg/kg of midazolam and 10 mcg/kg of fentanyl. The patient became cyanotic and hypopneic and needed mask ventilation and naloxone therapy. They pointed out that there was no recording of vital signs during the procedure and no use of a pulse oximeter.

Drs. Bailey et al. point out that more than 80 deaths have been reported after use of midazolam sedation, frequently in conjunction with opioids (57 percent). Of the 80 deaths, 78 percent were due to respiratory causes. They studied 12 healthy adults in three separate conditions: after fentanyl 2 mcg/kg, after midazolam .05 mg/kg and after both. Midazolam alone produced no changes in respiration. Fentanyl alone produced hypoxemia (O_2 sats of < 90 percent) in 50 percent of the subjects and the expected decrease in ventilatory response to CO_2. The combination did not change the CO_2 response but increased the incidence of hypoxemia (11 of 12); 6 of 12 had apnea for at least 15 seconds. They point out that this is a small dose of midazolam and that others have found respiratory effects using larger doses of midazolam. They believe the explanation for their findings is a significant blunting of the hypoxic drive by the combination of these two drugs.

Comment: Drs. Yaster et al. point out the desirability of policies concerning adequate patient evaluation, patient monitoring and the availability of appropriately trained personnel and equipment to ensure the safety of sedation practices throughout the health care system. I have been told that the JCAHO requires that anesthesiologists be involved in setting up such policies. Having been personally involved in setting up such policies, it is clear that specific dosing recommendations by age of patients and types of procedures are precious few and not necessarily well-evaluated. Policies concerning appropriate monitoring and patient evaluation can be hard to come by. The implementation of policies afterward is yet another matter. - *JPV*

Celiac plexus blockade for a 3-year-old boy with hepatoblastoma and refractory pain
Berde et al. *Pediatrics* 86(5):779-781, 1990.

Dr. Berde presents his experience with a 3-year-old oncology patient who initially had good pain control via thoracic epidural that had to be discontinued due to a febrile episode. He was then treated with celiac plexus block and had excellent pain relief for the remaining eight weeks of his life. Both the thoracic epidural and the celiac plexus blocks were performed with CT guidance under general anesthesia, which Dr. Berde recommends for precision of placement. - *JPV*

Myocardial infarction leading to sudden death in the Williams syndrome: Report of three cases
Conway et al. *J Pediatr* 117(4): 593-595, 1990.

This case report presents three patients with Williams syndrome (elfin facies and supravalvular aortic stenosis) who died suddenly at ages 16, 59 and 8 months with myocardial ischemia after cardiac catheterization. The autopsies all showed stenotic lesions of the coronaries and evidence of old and new myocardial infarctions. None of the patients had precatheterization evidence of ischemia on EKG. - *JPV*

Plasma concentrations of midazolam in children following intranasal administration

Walbergh, Wills and Eckhert. *Anesthesiology* 74(2):233-235, 1991.

This study compared the plasma concentrations of midazolam administered either intravenously or intranasally in doses of 0.1 mg/kg in anesthetized children undergoing cardiac surgery (repair of ASD or VSD). The time to peak dose was 10 minutes in the intranasal group, and the peak concentration was 57 percent of the intravenous group. This confirms the clinical impression of rapid onset of action via intranasal administration. After making some assumptions about the concentration necessary to have a satisfactory effect based on studies looking at rectal midazolam, they concluded that 0.2 mg/kg should be an effective rapid dosing regime with an effect lasting at least 30 minutes. - *JPV*

Making oral midazolam palatable for children

Peterson M. *Anesthesiology* 73:1053, 1990.

Dr. Peterson has been able to successfully hide the bitter taste of midazolam by mixing a dose of 0.5 mg/kg in 5 to 10 ml of concentrated grape Kool-Aid.®

Comment: Hungry children in Salt Lake City were as easily taken in as those in Corpus Christi by this ploy when we tried it after reading her letter. - *JPV*

Caudal morphine for postoperative analgesia in infants and children: A report of 138 cases

Valley and Bailey. *Anesth and Analgesia* 72:120-124, 1991.

Drs. Valley and Bailey retrospectively analyzed 136 pediatric patients ranging in age from 1 day to 16 years old who received caudal morphine in a dose of 0.07 mg/kg for postoperative analgesia. Most (98 percent) of the operations were for abdominal or thoracic problems. About half of the patients (54 percent) were 1 year of age or younger. Pain control seemed good, being rated excellent in 81 percent and fair in 7 percent; the remaining 12 percent could not be adequately evaluated on review. The average time until first needing supplemental analgesics was 10 hours. Pruritis was diagnosed in two patients. Vomiting needed to be treated on six occasions. There were 82 patients who had urinary catheters placed. Of the remaining 56, 28 had urinary retention for which 19 were catheterized. Five cases had excessive sedation and were treated with naloxone (the age range in these cases was not given). Eleven patients had respiratory depression. Six patients had apnea with or without associated excessive sedation, arterial desaturation or bradycardia. Five patients had no apnea but did have arterial desaturation associated with bradycardia, hypopnea, periodic breathing or excessive sedation. Of those 11 patients, 10 were 12 months of age or younger. All patients with respiratory depression had received either intravenous narcotics or had caudal catheters in place. All cases of respiratory depression occurred within 12 hours of caudal injection (although one was just barely so at 11.5 hours).

Comment: The low incidence of vomiting is felt by the authors to be due to the high incidence of nasogastric tubes in this patient group. The authors conclude that caudal morphine is an efficacious mode of pain control, and they raise appropriate concerns about the under-12-month age group. They also outline what they feel are appropriate guidelines for monitoring patients, which are important for all patients, as 1:82 over 1 year of age also needed therapy for respiratory depression. - *JPV*

A comparison between bupivacaine instillation versus ilioinguinal/iliohypogastric nerve block for postoperative analgesia following inguinal herniorrhaphy in children

Casey, Rice, Hannallah, Broadman, Norden and Guzzetta. *Anesthesiology* 72(4):637-639, 1990.

These investigators compared local instillation of 1/4 percent bupivacaine into the incision for two minutes to ilioinguinal nerve block with the same drug in 60 randomly assigned ASA 1-2 children having hernia repairs. No patients got intraoperative narcotics; all received halothane, N_2O and O_2. The patient groups were comparable. Both groups had comparable pain reduction postoperatively and the same total duration of stay in the hospital. Either of these methods can be easily employed by the surgeon intraoperatively. - *JPV*

Postoperative pain after inguinal herniorrhaphy with different types of anesthesia

Tverskoy, Cozacov, Ayache, Bradley and Kissin. *Anesth and Analgesia* 70:29-35, 1990.

Dr. Tverskoy et al. compared general anesthesia, general anesthesia with local infiltration along the incision line with 0.25 percent bupivacaine and spinal anesthesia in 36 adults in a randomized double-blind manner. Local anesthesia significantly decreased all types of pain, and the effect lasted up to 10 days postop. Spinal anesthesia was better than general but not better than a general plus local infiltration. For completeness, it would have been nice to see a group with spinal anesthesia plus local infiltration. - *JPV*

Timing of caudal block placement in relation to surgery does not affect duration of postoperative analgesia in paediatric ambulatory patients

Rice, Pudimat and Hannallah. *Can J Anaesth* 37(4):429-431, 1990.

Drs. Rice, Pudimat and Hannallah compared the effectiveness of pain relief, duration of analgesia postoperatively and time until discharge in 40 ASA 1-2 patients randomly assigned to receive a caudal anesthetic at the start of surgery or at the end of surgery before awakening. For surgeries (hernia repairs) of less than 40 minutes with a total O.R. stay of about one hour, they found no essential differences between the two groups. They pointed out that for longer surgeries this might not be the case, and a caudal at the end of surgery may provide better postoperative pain relief. - *JPV*

Severe burns from a pulse oximeter

Murphy, Secunda and Rockoff. *Anesthesiology* 73(2):350-352, 1990.

This is a case report of a neonate who received two burns from the application of a Physio-Control oximeter sensor that was connected to an Ohmeda oximeter. The sensors did not function properly and were in place a short time (estimated at three minutes). The thin skin of a neonate probably contributed to the development of a burn in such a short time, but the problem is possible for any patient. The appropriate sensor must be used for each monitor. - *JPV*

Hidden mortality rate associated with extracorporeal membrane oxygenation

Boedy, Howell and Kanto. *J Pediatr* 117(3):462-464, 1990.

When these investigators at the Medical College of Georgia included those infants who were accepted to their program but died as a result of transport, the survival statistics were not as good as if they were excluded. Deaths

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associated with transport accounted for 39 percent of all deaths. An increased incidence of infants with congenital diaphragmatic hernia died during transport. They suggest that transfer of infants earlier in the course of their illness may improve overall survival. An associated issue is the deaths each year of transport personnel flying during bad weather: each winter, the risks to medical personnel making the transport also should be considered. - *JPV*

Intubation with propofol augmented with intravenous lignocaine

Mulholland D and Carlisle JT. *Anaesthesia* 46:312-313, 1991.

These authors evaluated intubating conditions in healthy adults after oral premedication with diazepam 10 mg and intravenous propofol 2.5 mg with or without intravenous lidocaine 1.5 mg/kg. There was no added advantage offered by lidocaine, as measured by intubating conditions or successful intubations. Nearly 30 percent of patients were not able to be intubated with this induction technique.

This and similar techniques deserve investigation in hope of finding a combination of drugs that can be used for rapid-sequence intubation in children by those of us who suffer from "succinylcholine-phobia." - *RMS*

Effect of lignocaine on pain during injection of propofol

Stafford MA, Hull CJ and Wagstaff A. *Brit J Anaesth* 66:406, 1991.

Optimal dose of lignocaine for preventing pain on injection of propofol

Gehan G, Karoubi P, Quinet F, LeRoy A, Rathat C. and Pourriat JL. *Brit J Anaesth* 66:324-326, 1991.

These two studies attempted to quantify the minimum effective dose of lidocaine necessary to prevent pain upon injection. Both studies mixed lidocaine with propofol in a syringe prior to injection. The minimum dose was 0.1 mg/kg in the study by Gehan et al.; minimum concentration of 0.025 percent (0.5 percent lidocaine 1 ml in 19 ml propofol) was effective in the study by Stafford et al. In practical terms, 1 ml of lidocaine (0.5-2 percent) can be added to propofol, thus minimizing pain on injection without concern of administering toxic doses of local anesthetic. - *RMS*

Subhypnotic doses of thiopentone and propofol cause analgesia to experimentally induced acute pain

Anker-Moller E, Spangsberg N, Arendt-Nielsen L, Schultz P, Kristensen MS and Bjerring P. *Brit J Anaesth* 66:185-188, 1991.

These authors showed that small doses of thiopental (0.5 mg/kg) or propofol (p.25 mg/kg) reduce the sensitivity to pain (increase pain threshold) as tested by an argon laser being applied to skin of the forearm. Earlier studies showed that subhypnotic doses of thiopental had a hyperalgesic effect on somatic pain. The plausible explanation for these new findings is based on the method used to elicit pain. The older studies used an algesimeter, a metal disc that applied pressure to the anterior tibia. This method not only stimulated nociceptive receptors but also pressure receptors. The laser stimulates primarily A-delta innervated nociceptors. This study lends support to the commonly used technique of small, intermittent thiopental doses (0.5-1.0 mg/kg) immediately prior to painful stimuli such as lumbar puncture, bone marrow aspiration or chest tube removal in conscious patients. - *RMS*

Hemodynamic effects of ketamine, hypoxia and hyperoxia in children with surgically treated congenital heart disease residing 1,200 meters above sea level

Wolfe RR, Loehr JP, Schaffer MS and Wiggins JW. *Amer J Cardiology* 67:84-87, 1991.

This study examined the effects of intravenous ketamine 1 mg/kg, hypoxia and hyperoxia on the pulmonary and systemic vasculature in children with congenital heart disease. All children had a prior left-to-right shunt with a pulmonary vasculature resistance ≥ 50 percent of their systemic resistance. All children had clinical or historical evidence of increased reactivity to hypoxia, plus ≥ 2 risk factors for increased pulmonary vascular reactivity. These risk factors included: 1) residence at or above 2,500 meters; 2) preoperative pulmonary flow greater than systemic flow; 3) Down Syndrome; 4) baseline hypoventilation; 5) upper airway obstruction; 6) frequent colds; and 7) chronic lung disease.

The authors used a premedication (meperidine 2 mg/kg and hydroxyzine 1 mg/kg) that has been shown to have no effect on hemodynamics. $PaCO_2$ values were similar for groups 1, 2 and 3 (39, 37, 40 torr respectively). These did not change with hypoxia, hyperoxia or ketamine. Patients were divided into three groups based on their response to hypoxia. Group 1 (n=4) did not respond to hypoxia. Group 2 (n=6) showed an intermediate response to hypoxia. Group 3 (n=4) identified patients with hyperresponsivity to hypoxia as measured by increases in resistance ratio. These hyperresponders had an elevated resistance ratio (0.42) in room air and a striking change in resistance index when exposed to hyperoxia (-0.17), hypoxia (+0.65) and ketamine (0.49).

Furthermore, hypoxia and ketamine had a greater effect on resistance ratio than hypoxia alone in patients with reactive pulmonary vasculature. The authors give plausible reasons to explain previous studies that showed ketamine to have trivial effects on the pulmonary vascular bed. One report (Hickey et al., *Anesthesiology* 62:287-293, 1985) studied ketamine in intubated infants ventilated with FiO_2 0.3-0.4; another report (Mooray et al., *Anesth and Analgesia* 63:895-899, 1984) identified some patients who had increases in pulmonary artery pressure with ketamine while breathing room air.

The authors' final conclusion deserves consideration: "Ketamine should not be used in children undergoing procedures to establish operability based on pulmonary vascular resistance or pulmonary vascular reactivity." - *RMS*

Respiratory complications and hypoxic episodes during inhalation induction with isoflurane in children

Warde D, Nagi H and Raftery S. *Brit J Anaesth* 66:327-330, 1991.

These authors compared three techniques of inhalational induction in children with isoflurane. They evaluated induction time, respiratory complications and lowest SpO_2. In group A, induction was performed with 60 percent nitrous oxide, 40 percent oxygen and initial isoflurane concentration of 0.5 percent which was increased by 0.5 percent every 10 breaths. In group B, the technique was identical to group A until 2 percent isoflurane was reached; this concentration was then maintained for two minutes. In group C, 4 percent isoflurane in 100 percent oxygen was given from the outset.

The fastest and most uncomplicated induction technique was using 4 percent isoflurane with 100 percent oxygen. Coughing, breath-holding and laryngospasm were more common in groups A and B. Also, desaturation occurred in conjunction with respiratory complications in groups A and B; however, in group C, respiratory complications were not associated with desaturation, a possible benefit of increased oxygen reserves during induction with 100 percent oxygen.

The authors speculate that using 4 percent isoflurane from the outset was frought with less complications because the duration of stage 2 was lessened.

For those who like excitement during induction (not due to stage 2), it appears that isoflurane offers the most possibilities. - *RMS*

Combined morphine-bupivacaine caudals for reconstructive penile surgery in children: Systemic absorption of morphine and postoperative analgesia

Wolf AR, Hughes D, Hobbs AJ and Prys-

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Roberts C. *Anaesth and Intens Care* 19:17-21, 1991.

These authors compared the effect of caudal epidural bupivacaine 0.25 percent with or without epidural morphine 0.05 mg/kg for analgesia following reconstructive penile surgery. Peak serum morphine levels occurred 10 minutes following injection and are less than those commonly associated with systemic analgesia.

All children were awake and pain-free one hour postoperatively. By 12 hours postoperatively, eight children in the bupivacaine only group received IM nalbuphine, whereas none in the bupivacaine with morphine groups received IM nalbuphine. At 24 hours, none of the children who received bupivacaine with morphine had received intramuscular nalbuphine. The incidence of side effects was similar in both groups.

It appears that the addition of morphine 0.05 mg/kg to bupivacaine 0.25 percent substantially improves the duration of analgesia following penile surgery in children. - *RMS*

Fluosol DA-20 in the treatment of severe anemia: Randomized, controlled study of 46 patients

Spence RK, et al. *Crit Care Med* 18:1227-1230, 1990.

Although this paper does not concern children, it is still of interest as it provides a current discussion of the use of blood substitutes. In this interesting study, Jehovah's Witnesses with hemoglobins < 7 g/dL were randomly given fluosol. It is of interest to note that dissolved oxygen content was increased by 50 percent, albeit this was quite a small increase: control group 1.0 ± 0.27 ml/dL compared to 1.58 ± 0.47 ml/dL. The other interesting result of this study was that 19 patients died: 12 in the treatment group and seven in the control group. Fluosol made no difference to survival, and there was greater than a 50-percent mortality in patients with hemoglobins < 7 g/dL. All changes were gone within 12 hours.

Comment: This study is somewhat disappointing for those of us who are hoping for hemoglobin alternatives. No clinical benefit occurred in these patients with fluosol transfusion. In addition, knowledge that anemia is life-threatening was confirmed. Future developments will have to demonstrate improved clinical outcomes to justify the use of these agents. This goal has not as yet been demonstrated. - *RCW*

The laryngeal mask airway in paediatric anaesthesia

Johnston DF, et al. *Anaesthesia* 45:924-927, 1990.

The authors herein describe 48 children between the ages of 2-10 who were day patients. Laryngeal airway anesthesia was compared to face mask anesthesia in children undergoing myringotomies and insertion of PE tubes. The laryngeal airway was safely placed on the first attempt in 67 percent of cases. During the procedure, there were less frequent episodes of hypoxia and fewer interruptions in surgery than with facemask anesthesia. The authors conclude that the Bain laryngeal mask can be used safely in children.

Bain introduced the laryngeal mask and subsequently sold it to Portex. It has been showing increasing popularity in the United Kingdom. Its use is apparently for those patients who require a more stable airway than can be provided with mask and who require surgical procedures that would make a mask anesthetic difficult while avoiding the complications of intubation.

Comment: Personally, I don't consider an airway controlled until I have eliminated the possibility of laryngospasm with an endotracheal tube through the cords. The incredibly low risk of endotracheal intubation, when properly performed, during general anesthesia sets a very high standard for comparison. A clear potential advantage is that these masks appear not to cause sore throats, unlike endotracheal tubes. I am concerned that they are only placed correctly the first 60 to 70 percent of the time. It will be interesting to see if a role develops for these descendents of insufflation in pediatric anesthesia in this country. - *RCW*