Student Paper Abstracts

Intravenous Emulsified Isoflurane for Cardioprotection Against Myocardial Ischemic Injury in High-Risk Patients
Jeremy D. Johnson, RN, BSN and Amanda Hope Q. Gu, RN, BSN

Surgery increases the morbidity and mortality for patients with ischemic heart disease. Inhalational isoflurane has demonstrated cardioprotective effects in animal studies. Intravenous emulsified isoflurane may have the same benefits and provide an alternative route of administration. The authors’ purpose is to evaluate the cardioprotective effects of emulsified isoflurane in animal models for potential attenuation of myocardial ischemic injury in high-risk patients.

A literature search was conducted using the Google Scholar, Medline, ScienceDirect, Academic Search Premier, and PubMed databases to obtain relevant information pertaining to the research question. Eight randomized trial studies were selected for this paper.

Based on the animal models, intravenous emulsified isoflurane maintained the cardioprotective effects of inhalational isoflurane. Intravenous emulsified isoflurane reduced myocardial infarction size, and attenuated cellular injury as evidenced by abatement of rise in cardiac enzyme activities. Immunohistochemical analysis of postexperimential myocardial tissue also revealed advantages of emulsified isoflurane. In addition, analysis of cardiomyocyte apoptosis indicated that emulsified isoflurane treatment significantly decreased the apoptotic index. Emulsified isoflurane could have the potential in providing cardioprotection against myocardial ischemic injury in high-risk patients undergoing surgery.

Is Prophylactic Epidural Blood Patch as Effective as Other Means for Treating Post Dural Puncture Headache?
Rebecca Weaver, RN, BA

The purpose of this article is to evaluate the current literature concerning the effectiveness of a prophylactic epidural blood patch compared to conservative treatment and saline patch for post dural puncture headache. Multiple electronic databases were searched and limited to the last 30 years, patient age 16 years or older, and a prophylactic epidural blood patch within 24 hours of dural puncture. The outcomes evaluated were incidence, severity, and duration of post dural puncture headache. Four out of five trials had reduced incidence (p < 0.05) of headache with the prophylactic epidural blood patch compared to the other treatments. The severity of headache with the prophylactic epidural blood patch compared to the other treatments was analyzed in two trials and was found not significant (p > 0.05) in one trial but significant in another trial on days 1, 2, 3 not significant days 4, 5, 6. The duration of post dural puncture headache was assessed in only one trial. The prophylactic epidural blood patch was significant (p < 0.05) compared to other treatments. There are too few participants and studies to draw reliable conclusions. Large trials of prophylactic epidural blood patch versus other treatments at multiple medical facilities are necessary.
ABSTRACTS

Medical Complications of Eating Disorders and their Effects on Anesthesia Delivery
Heather Marcella, RN, BAN, TNCC and Christine Strandquist, RN, BSN, CCRN, TNCC
The prevalence of eating disorders has increased over the last 25 years but remains underestimated. Anorexia Nervosa and Bulimia Nervosa, collectively known as eating disorders, are mental illnesses that have many serious physiologic and anatomical consequences to multiple body systems. The complications that result from eating disorders present unique challenges to delivering anesthesia throughout all phases of the operative period. This paper will review current research on the cardiac, gastrointestinal, and pain perception complications in patients suffering from eating disorders and the anesthetic implications that evolve. Methods used to access the current literature include: MESH database, PubMed, EBSCO HOST, and Google scholar databases were searched and 24 articles reviewed. For this paper 4 review articles, 15 experimental trials, 3 case reports, and 1 comparative case study will be used. The adjusted interventions necessary for providing anesthesia to eating disorder patients are presented systematically to include the preoperative, intraoperative and postoperative period. To conclude, while Anorexia Nervosa has been recognized for over 1500 years, there is still more to be studied. Research is warranted that examines male subjects, pain perception, or the different physical manifestations at different courses of the disease.

Airway Ultrasonography to Confirm Correct Endotracheal Tube Position
Brian Jacobs, RN, BSN and Joseph Pruis, RN, BSN
Confirming endotracheal tube (ETT) placement is essential to prevent untoward complications associated with tube misplacement. Ultrasonographic airway examination may be a viable alternative to standard methods of ETT placement confirmation. Using the Medline database, we searched for studies evaluating the feasibility of ultrasonography for ETT placement confirmation. Of the 207 articles retrieved, 16 articles are shared in the review. Three approaches to ETT confirmation were identified: transtracheal, transthoracic, and diaphragmatic. The transtracheal approach was most studied and placement confirmation was reliable compared to standard placement confirmation techniques. All techniques were learned by study participants with relative ease in a short training period, and could be performed in a timely manner. Airway ultrasonographic techniques to confirm ETT placement may be of most benefit in specific populations including pediatrics, obese patients, and patients requiring emergent intubation. Ultrasonography is a viable secondary confirmation technique but this approach may be less applicable for routine clinical use, especially in light of current advanced airway management devices and techniques.

Should Glidescope Video Laryngoscopy Replace Direct Laryngoscopy for Routine Endotracheal Intubations?
Julie Tait, RN, BSN and Heidi Haider, RN, BSN
Tracheal intubation is a necessary skill performed by anesthesia providers. Video laryngoscopy is technology that originally was made available to help aid visualization of anticipated difficult airways. Currently, many providers are utilizing video laryngoscopy for routine endotracheal intubations. The purpose of this review of literature is to evaluate if video laryngoscopy should replace direct laryngoscopy for routine endotracheal intubations. A literature search was conducted using the PubMed/Medline and Google Scholar databases for research articles including information on direct laryngoscopy and video laryngoscopy. Two meta-analysis articles, 11 comparative studies, 1 observational study, and 6 case studies were selected for use in our review. Generally, video laryngoscopy was found to take more time than direct laryngoscopy, first attempt to intubation was higher than direct laryngoscopy, and video laryngoscopy was found to improve the glottic view when compared to direct laryngoscopy. Hemodynamic measures were unchanged when comparing video laryngoscopy and direct laryngoscopy. Sore throat, dental damage, and tissue injury were complications seen with direct laryngoscopy and/or video laryngoscopy. Because tracheal intubation is a necessary skill for anesthesia providers to have, information on different intubating devices and techniques is important to explore. This information will be helpful guiding providers to make knowledgeable decisions with their choices.
Effect of Needle Selection on Post Dural Puncture Headache Risk Following Lumbar Puncture
Louie Arcenas, RN, BSN, Mark Walz, RN, BSN

Viscoelastic Assays as Predictors of Mortality After Acute Traumatic Injury
Brandon Alt, RN, BSN and Aaron M. Hall, RN, BSN

Are Closed-loop Anesthesia Delivery Systems Safer and More Effective Than Manual Delivery of Propofol in General Anesthesia
Jonathan Jensen, RN, BSN Shannon McCrory, RN, BSN

The Use of Dexmedetomidine for Planned Awake Fiberoptic Intubation
Benjamin Gillmer, RN, BSN, Travis Leigh Krumholz, RN, BSN

Are Sevoflurane and Nitrous Oxide Effective Analgesics During Stage 1 Labor?
Kaitlin J Huth, RN, BSN, Crystal Smith, BSN, CCRN

Intravenous Emulsified Isoflurane for Cardioprotection Against Myocardial Ischemic Injury in High-Risk Patients
Jeremy D. Johnson, RN, BSN, Amanda Hope Q. Gu, RN, BSN

Should Glidescope Video Laryngoscopy Replace Direct Laryngoscopy for Routine Endotracheal Intubations?
Julie Tait, RN, BSN and Heidi Haider, RN, BSN

Anesthetic Considerations for the Patient with Congenital Long QT Syndrome
Jodie L. Lester, RN, CCRN

Airway Ultrasonography to Confirm Correct Endotracheal Tube Position
Brian Jacobs, RN, BSN and Joseph Pruis, RN, BSN

Is Prophylactic Epidural Blood Patch as Effective as Other Means for Treating Post Dural Puncture Headache?
Rebecca Weaver, RN, BA

High Thoracic Epidural Anesthesia as the Sole Anesthetic in Coronary Artery Bypass Graft Surgery
Shirmyl Alviza, RN, BSN, Manita Dhungel, RN, BSN

Does the Use of Intracuff Alkalized Lidocaine Reduce Endotracheal Tube-Induced Emergence Phenomena?
Erika L. Beining, RN, BSN and Nancy R. Reiland, RN, BSN

Is Chloroprocaine Superior to Lidocaine and Bupivacaine for Subarachnoid Block in the Outpatient Setting?
Elizabeth A. Cleary, RN, BSN and Carissa R. Currier, RN, BSN

Medical Complications of Eating Disorders and their Effects on Anesthesia Delivery
Heather Marcella, RN, BAN, TNCC and Christine Strandquist, RN, BSN, CCRN, TNCC

Saturday, May 17, 2014
0800 – 1600

Twin Cities Campus
Saint Mary’s University Center
2540 Park Avenue South
Minneapolis, MN 55404

Cost $60.00 – CRNA’s
$30.00 – Students

Application for 5 CEU credits is in process

Continental Breakfast, Coffee, Tea, Soft Drinks and Lunch provided

Additional information and the registration form are located on the last page.
Abstracts

Effect of Needle Selection on Post Dural Puncture Headache Risk Following Lumbar Puncture
Louie Arcenas, RN, BSN and Mark Walz, RN, BSN

Statement of research question: Post-dural puncture headache is a common complication after a lumbar puncture. Many variables are implicated in its pathogenesis. Needle gauge and design are two important variables responsible for the prevalence of post-dural puncture headache. This synthesis paper studies the effect of needle selection in reducing the incidence of post-dural puncture headaches.

Methods of the study: A search of Google Scholar, Cochrane, and PubMed databases for articles in English on the topic of post-dural puncture headache in humans occurred. Inclusion criteria included articles comparing needle size and design. Twenty-eight articles met the criteria, which included 2 meta-analyses. Assessment and grading of randomized controlled trials left 12 studies. Other articles included 2 prospective experimental studies, 2 retrospective studies, 8 nonexperimental descriptive/correlational studies, and 2 case studies.

Results: Articles searched demonstrated a 2% incidence rate of post-dural puncture headache using 29 gauge needles and a significant increase to 32% when using 20 gauge needles. Traumatic needles have a 7.1%-49% post-dural puncture headache incidence rate while atraumatic needles have a 3.1%-36% incidence of post-dural puncture headaches.

Conclusion: The use of smaller gauge needles can result in a lower incidence of post-dural puncture headache than large gauge needles. The use of traumatic needles increases the incidence of post-dural puncture headaches more than atraumatic needle designs. To decrease the risk of post-dural puncture headache, practitioners should utilize the smallest gauge atraumatic needle with which they are proficient.

Viscoelastic Assays as Predictors of Mortality after Acute Traumatic Injury
Brandon Alt, RN, BSN and Aaron M. Hall, RN, BSN

Viscoelastic assays, such as thrombelastography and rotational thromboelastometry have been proposed as point-of-care coagulation studies that may be beneficial in early recognition and treatment of the coagulopathic trauma patient. The purpose of this review is to determine the relationship between these assays and coagulation-related mortality. A search of the literature using PUBMED identified several recent prospective and retrospective studies. The viscoelastic components clot and hyperfibrinolysis were consistently associated with mortality across all studies. Based on these findings, viscoelastic assays may possess clinical utility for anesthesia providers in the guidance of resuscitation efforts toward successful outcomes after traumatic injury. Further prospective, randomized research is warranted.

Does the Use of Intracuff Alkalinized Lidocaine Reduce Endotracheal Tube-Induced Emergence Phenomena?
Erika L. Beining, RN, BSN and Nancy R. Reiland, RN, BSN

Endotracheal tubes are invaluable as ventilatory devices in the management of the anesthetized patient. The mechanical stimuli from the endotracheal tube and its cuff may elicit exaggerated airway responses with extubation. The purpose of this review is to assess the effectiveness of intracuff alkalinized lidocaine in reducing indicators associated with endotracheal tube-induced emergence phenomena. A literature search was conducted using the Google Scholar, PubMed, and Medline databases for relevant articles pertaining to the effects of intracuff alkalinized lidocaine on intracuff volume, intracuff pressure, emergence phenomena, and hemodynamic parameters. When intracuff alkalinized lidocaine is compared to intracuff air, the evidence indicates that it is effective (P<0.05) in facilitating diffusion of alkalinized lidocaine across the cuff improving endotracheal tube tolerance and hemodynamic parameters. Intracuff alkalinized lidocaine stabilizes intracuff pressures and decreases the incidence of a sore throat, hoarseness, and coughing. When intracuff alkalinized lidocaine is compared to intracuff saline, the evidence is not statistically significant (P>0.05). Intracuff alkalinized lidocaine offers a therapeutic option to attenuate complications associated with extubation, but further evidentiary support from large-scale trials is needed to evaluate its long-term effectiveness in reducing endotracheal tube-induced emergence phenomena.
The Use of Dexmedetomidine for Planned Awake Fiberoptic Intubation
Benjamin Gillmer, RN, BSN, Travis Leigh Krumholz, RN, BSN

Purpose: Anesthesia providers may encounter difficult airways during their practice. An awake fiberoptic intubation can provide a safe, effective way to manage the difficult airway. There are many methods used to perform an awake fiberoptic intubation including the use of local anesthetics, regional techniques, and intravenous sedatives. Dexmedetomidine, an α2 agonist, may provide a safe, effective means to achieve ideal intubating techniques when performing an awake fiberoptic intubation.

Methods: A MeSh search using PubMed was conducted, and a literature review performed. The search was restricted to case series, randomized control trials, adults 19 years of age or older, written in English, and conducted in the last 5 years. Of the 21 returned articles 8 studies were selected. Those included 5 randomized control trials, and 3 case series.

Results: While dexmedetomidine provided adequate sedation and hemodynamic stability for successful awake fiberoptic intubations, there wasn't a significant difference when compared to propofol, remifentanil, and midazolam. In addition, both patient and care provider satisfaction resulted in positive outcomes with no significant differences.

Conclusion: When evaluating medications for safe and effective awake fiberoptic intubating conditions, consideration should be given to the use of dexmedetomidine as an adjunct or alternative to remifentanil, propofol, or midazolam.

High Thoracic Epidural Anesthesia as the Sole Anesthetic in Coronary Artery Bypass Graft Surgery
Shirnyl Alviza, RN, BSN and Manita Dhungel, RN, BSN

Purpose: This is a research paper to examine the feasibility and safety of high thoracic epidural anesthesia for cardiac surgeries. High thoracic epidural anesthesia has been known to suppress the sympathetic nerve excitation of the heart and dilate the coronary arteries reducing myocardial oxygen consumption and intraoperative ischemia. Patients with an ASA physical status of II through IV and with symptomatic coronary artery disease may achieve a faster recovery time and shorter hospital stay with high thoracic epidural anesthesia during coronary artery bypass graft.

Methods: Google search, PubMed and Medline were used to gather studies for the research. Search term such as thoracic epidural, thoracic epidural for coronary artery bypass graft, and general anesthesia vs thoracic epidural for CABG were used. Various arrangements of the terms were applied and search parameters were set within last 20 years. All abstract were reviewed to include article that used HTEA as a sole anesthetic for cardiac surgeries. Seven nonrandomized prospective studies, one clinical study and one case report were acquired.

Results: All studies found a mean length of hospital stay significantly shorter among HTEA group (p<0.05). Expect one study, all others found hemodynamic fluctuation maintained between 20% of baseline among HTEA group. In all studies no fatalities were recorded. However changes in PaO2 and ETCO2 were found to be clinically none significantly in both HTEA and GA groups.

Conclusion: All studies agreed on the feasibility of HTEA as the sole anesthetic regimen for cardiac surgeries. The data showed that high thoracic epidural aids in the faster recovery time and shorter hospital stay in CABG patients.

Class of 2016 Demographics
In May of 2014 we will welcome 32 new students into the program. Of the 32, 62% are female and 38% are male. These 32 were chosen from a pool of 188 who applied. The overall science/math grade point average is 3.2 on a 4.0 scale. They all have at least 2 years of ICU experience. These students are coming from all over the USA. Home states include MN, WI, AZ, MI, SD, CO, VA, CA, TX, GA, NV, and IL.

Orientation for the new class will take place on May 1-2. A reception for the new class and their families will take place at 3:00 p.m. on Friday, May 2, 2014.

This Semester’s Courses

<table>
<thead>
<tr>
<th>JUNIORS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>◆ Principles of Anesthesia 2</td>
<td></td>
</tr>
<tr>
<td>◆ Pharmacology</td>
<td></td>
</tr>
<tr>
<td>◆ Anatomy and Physiology 2</td>
<td></td>
</tr>
<tr>
<td>◆ Clinical Practicum 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SENIORS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>◆ Clinical Practicum 4</td>
<td></td>
</tr>
<tr>
<td>◆ Comprehensive Exams Begin</td>
<td></td>
</tr>
</tbody>
</table>

VOLUME 9 ISSUE 3 JANUARY 2014
NEWS

Welcome New Staff

Elise Riveness
Program Coordinator

Elise Riveness graduated from Bethel University in May 2013 with a B.A. in Communication Studies and a minor in Leadership Studies. She is a proud native of Minneapolis, MN and loves running, biking and baking. This past October she ran the Twin Cities Medtronic Marathon, raising money for World Vision. She also volunteers at her churches’ youth group. Elise is our new program coordinator replacing Veronica Murphy. Veronica is still here and serving other programs. Elise can be reached at erivenes@smumn.edu or (612) 728-5132

Alumni News

Don Beissel, CRNA (‘01)

Don is the current and past-President of the Missouri Association of Nurse Anesthetists (MoANA). He has also provided his patients with non-surgical pain management (NSPM) for the past 5 years. Don has forwarded the cause of pain management practice by writing items for NBCRNA for pain management certification and by working with AANA professional practice committee on creating and revising pain management practice standards.

The below photo shows Don using fluoroscopy to guide the placement of a block.
The nurse anesthesia program has had 737 GRADUATES between 1953 and 2013.

TRANSCRIPTS
To obtain your transcript please send a request to the Assistant Registrar of the Twin Cities Campus. Please include your name, student ID number, the years of attendance, the number of transcripts needed, where you want them sent, and your signature. We do not have copies of diplomas.

Assistant Registrar
Saint Mary’s University of Minnesota
2500 Park Avenue
Minneapolis, MN 55404-4403

VERIFICATION OF EDUCATION FOR EMPLOYERS
In accordance with federal regulation, the student/alumni must give permission for any information to be released by the University. Verifications cannot be done over the phone. Please sign a consent form from your employer or send a request with your signature to:

Assistant Registrar
Saint Mary’s University of Minnesota
2500 Park Avenue
Minneapolis, MN 55404-4403
FAX: (612) 728-5121

STUDENT SEMINAR RESERVATION FORM

NAME: ____________________________________________

ADDRESS: _______________________________________

CITY / STATE / ZIP: ______________________________________

AANA NUMBER: ______________________________________

PLEASE MAKE CHECK OUT TO: GNA GRANT ACCOUNT 5309

Cost $60.00 – CRNA’s
$30.00 – Students
Application for 5 CE credits is in process

Please send application and registration fee to:

Saint Mary’s University of Minnesota
Nurse Anesthesia Program
2500 Park Avenue
Minneapolis, MN 55404
ATTN: Elise Riveness