SCA 2010 Board of Directors Nominees

All eligible SCA members may cast their votes using SCA’s online ballot. PLEASE CLICK HERE TO VOTE.

ALBERT T. CHEUNG, MD

Albert T. Cheung, MD is a Professor of Anesthesiology and Critical Care Medicine in the Clinician Educator Track at the University of Pennsylvania in Philadelphia.

He has been a member of the Society of Cardiovascular Anesthesiologists since 1991, and is completing his first term on the SCA Board of Directors. He serves as Co-Chair of the SCA Cardiopulmonary Bypass Meeting, committee member of the National Board of Echocardiography Basic PTE exam, speaker at the Annual Meeting, and speaker at the Perioperative Echocardiography Meeting.

He has also been a past chair of the SCA Newsletter Committee, member of the Annual Meeting Program Committee, and member of the Council of Intraoperative Echocardiography. As an SCA Board Member, he has been an advocate for programs to increase collaboration among anesthesiologists with other subspecialists involved in the care of the cardiothoracic surgical patient, to promote resident interest in cardiothoracic anesthesiology, and to enhance fellowship and postgraduate training in cardiothoracic anesthesiology.

MICHAEL P. EATON, MD

Dr. Michael Eaton is Associate Professor and Vice Chair for Clinical Affairs and Division Director of Cardiac Anesthesia at the University of Rochester School of Medicine and Dentistry, and has been a member of the SCA since 1994.

He joined the SCA Electronic Communications Committee in 2003, and has chaired the committee since 2007. During his tenure on the committee, the EOC has developed an electronic manual of cardiac anesthesiology, the initial chapter of which has been posted to the web-site for several months. The remainder of the manual is currently under review by the Publications Committee with plans to post the entire document by summer.

Dr. Eaton is also a member of the Web Based Fellowship Education Task Force led by Steven H. Ginsberg, MD, which is in the process of building a core lecture series for fellows in cardiothoracic anesthesia. Dr. Eaton would like to continue to serve the SCA at the next level, and would like to see the organization help lead the direction of discovery and education in cardiovascular anesthesiology.

ROBERT N. SLADEN, MD

Dr. Robert Sladen is Professor and Vice-Chair of Anesthesiology, and Chief of the Division of Critical Care at Columbia University.

He has been a member of SCA for thirty years and has served the society in several capacities. He has lectured at many SCA Annual Meetings and CPB Meetings, and served as a member of the Scientific Program Committee for six years. As Chair of the SCA International Committee, Dr Sladen co-chaired the successful 2008 ICCVA meeting in Berlin, and helped lay the groundwork for the 2010 ICCVA in Beijing. Dr Sladen is currently Editor of the 2010 SCA Monograph on Postoperative Cardiac Care.

Dr Sladen hopes to be able to serve SCA for a second term on the Board of Directors. He would like to continue to bring his strong interest in postoperative cardiac care, education and fellowship development, and relationships with national and international societies to the benefit of the SCA membership. >>> More candidates, next page
Michael H. Wall, MD, FCCM is Clinical Chief of Anesthesiology at Barnes-Jewish Hospital and Associate Professor of Anesthesiology and Cardiothoracic Surgery at Washington University in St Louis, School of Medicine.

Dr. Wall joined the SCA during his residency in 1992, and would be honored to serve on the Board of Directors. In the mid 90’s he and two other SCA members started an SCA sponsored pilot program to recruit anesthesia residents into CT fellowships, and CT fellows into academic medicine. This program has evolved into the current SCA mentorship program that Dr. Wall has coordinated since 2006.

Dr. Wall served on the SCA Education Committee from 2002 to 2003, then as an active member of the Newsletter Committee from 2003 to 2006. Since 2006 he has served on the Scientific Program Committee as the representative of the American Society of Critical Care Anesthesiologists. In 2009 he joined the FOCUS Fundraising and Public Relations Committees. Dr Wall wishes to continue to serve the SCA and expand the SCA’s leadership role in perioperative medicine and patient safety.

David A. Zvara, MD

Dr. David Zvara is currently the chair of the Scientific Program Committee and a member of the Board of Directors for the SCA. Dr. Zvara joined the SCA in 1989 and has attended nearly every meeting since this date. For the past six years, Dr. Zvara served as Vice Chair and Chair of the Program Committee. Dr. Zvara also served for two years on the Program Committee for the TEE meeting in San Diego. Prior to this, Dr. Zvara served on the Newsletter Committee. Dr. Zvara worked to enhance membership and participation in the annual meeting.

Dr. Zvara wishes to expand his contributions to the SCA in the areas of business development, strategic planning, and membership and as a liaison with the ASA and the AUA.

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**NEW! CRAM FOR THE EXAM**

The Basic Echo Boards Review Course

**October 15, 2010 • Marriott San Diego Hotel & Marina • San Diego, CA**

**Course Objectives**
At the conclusion of this course, attendees will:
1) be better prepared to take the Basic Echo Board Examination; and
2) have received a comprehensive review of the basic principles of hemodynamics and image acquisition and interpretation.

**Course Description**
1) This course is designed to benefit anesthesiologists who plan on taking the Basic Echo Board Examination.
2) There will be an interactive review of the basic principles of ultrasound physics, image acquisition and anatomical interpretation.
3) Basic hemodynamic principles will be reviewed through interactive questions, answers and discussion.
4) There will be an interactive exam with audience response system consisting of video-based questions followed by explanations and discussions.

**Course Director**
Feroze Mahmood, MD
Assistant Professor of Anesthesiology
Beth Israel Deaconess Medical Center
Boston, MA

**Course Faculty**
George J. Guldan, III, MD
Assistant Professor of Anesthesia & Perioperative Medicine
Medical University of South Carolina
Charleston, SC

Adam B. Lerner, MD
Assistant Professor of Anesthesiology
Beth Israel Deaconess Medical Center
Boston, MA

Peter J. Panzica, MD
Assistant Professor of Anesthesiology
Vice Chair of Clinical Anesthesia
Beth Israel Deaconess Medical Center
Boston, MA
Making Good on New Year’s Resolutions

Welcome to 2010. The New Year has come and many of us have made resolutions that we now have to keep. Two years ago my resolution was to eat more chocolate and drink more red wine. Last year I amended it to eat darker chocolate and to drink better red wine. I’m proud to say I followed these resolutions all year.

The SCA has made two important New Year’s resolutions and we have already begun implementing them. Based on a combination of feedback from the membership, the International Committee, and the results of a strategic planning initiative, The Board of Directors has begun an initiative to enhance its multinational collaboration with other active cardiac anesthesia societies. This collaboration will improve professional networking, create international multicenter research opportunities, and improve information exchange.

This enhanced collaboration is taking several forms. At the leadership level, the SCA has invited a member of EACTA to join our annual Board of Directors Meeting. Similarly, a member of our Executive Committee will attend the Annual EACTA Board of Directors meeting. The goal of this exchange is to explore possible synergies for the two Societies. On a more operational level, new members from Europe, Japan, and Australia have joined the Meeting Program Committees. The aim of this expansion is to ensure that our Meeting Programs cover the most relevant topics and include the best speakers to offer the highest level of education possible.

Our second resolution is also aimed at optimizing the educational value of our Meetings. It’s a well known educational principle that active education is better:

• Tell me, I will forget
• Show me, I may remember
• Involve me and I will always remember

Studies have clearly demonstrated that active teaching is far more effective at reaching attendees, and that the knowledge learned by the attendees is retained for a longer time. Additionally the instructor gets immediate feedback and can see if the lessons are being understood.

Going forward, all SCA meetings will utilize an Audience Response System (ARS). Initially the ARS will be incorporated in selected sessions, but over time, our plan is to incorporate the use of ARS to most if not all large format sessions. Speakers will incorporate questions into their presentations and the audience will then get a chance to answer the questions. The group’s tabulated results are then displayed on the screen. Immediately, the audience members will know if they understood the material and the speaker will know if the material was clearly presented.

Another function of the ARS is that it will facilitate future meeting planning and help us make sure that the memberships’ needs are met. The meeting planners will pose questions to the audience about possible future topics and the membership will then vote. It will then be clear to the planners what topics are of paramount interest.

ARS is not a new technology, but recent advances have made it far more manageable. There are several different approaches in use. Some systems rely on dedicated hand-held devices to answer the questions. Newer systems employ SMS and web-based responses placed by the use of smart phones. Based on evaluations by the Electronic Communications Committee, Ruggles, and the Board of Directors, the SCA has opted to employ an SMS/web-based technology marketed by Poll Everywhere http://www.poll everywhere.com. To be ready to use this technology, you may want to go the website and demo the technology before you attend the meetings. Just to be clear, every system has its advantages and disadvantages. We feel this system had the best balance: it is readily accessible and easy to use for the faculty and the meeting participants. In order to vote with this system, you must have a SMS or web enabled phone and there must be mobile service in the lecture hall. In places without mobile service we are exploring the alternatives. To avoid interruptions during the sessions, we will also need the cooperation of the attendees to silence the ringers on their phones. There will be a learning curve for the speakers and the attendees, but the benefits are clearly worth the effort.

Multinational collaboration and the implementation of the ARS are two major steps for the SCA. They will provide the membership with tremendous value by enhancing the breadth and quality of the educational sessions. We look forward to your participation in future meeting planning and in the didactic sessions. We also ask for your patience as we incorporate the new ARS technology into our educational activities.
Is Minimally Invasive Hemodynamic Monitoring Ready for Cardiac Surgery?

By Ryan Young, MD and Hong Liu, MD
University of California Davis Health System
Sacramento, CA

Accurate volumetric and cardiac assessment is essential to the perioperative management of patients undergoing cardiac surgery. Traditional means of evaluation have relied on the use of a pulmonary artery catheter which utilizes right-sided pressures and flows to estimate the performance of systemic or left-sided function. Many would consider this method as the “gold standard” for hemodynamic monitoring especially in the intensive care and cardiac surgery setting. However, its efficacy and performance have remained to be justified by means other than its wide use through time. Intraoperatively, what has been commonly utilized to examine cardiac function and hemodynamic parameters is transesophageal echocardiography (TEE). With this tool, direct observation of the left side of the heart with ultrasound permits evaluation of information such as left ventricular end systolic and end diastolic volumes which can be used to guide management and intervention to optimize a patient’s volume and cardiovascular status. However, it is highly invasive and associated with a set of significant complications. More recently, new advances have led to the development of minimally invasive techniques to monitor hemodynamic function and have been used to provide perioperative hemodynamic monitoring for cardiac surgery patients.

Several novel methods use dilution analysis to measure cardiac output. These include the LiDCO (LiDCO, London, UK) and PiCCO systems. The difference between these tools and PACs is that both LiDCO and PiCCO allow for dilution through the systemic or left-sided circulation versus just the right heart.

Initially described by Linton et al., lithium dilution was reported to have high correlation with PAC thermodilution cardiac output. This technique involves the administration of a bolus of isotonic lithium chloride (0.002-0.004 mmol/kg) into a central or peripheral vein. Detection of lithium is later measured with a lithium ion specific electrode which is attached to an arterial line. The plasma concentration of lithium as it varies over time is then incorporated into the derivation of cardiac output. Advantages of lithium are that it is neither protein bound nor normally present in blood allowing for more accurate measurements at levels that are within the nontoxic range.

In practice, LiDCO is commonly applied with a pulse contour or pulse power analysis which allows continuous monitoring of cardiac output. This system has been shown to be effective clinically at predicting volume responsiveness even when compared to TEE. Belloni et al. compared the reliability of hemodynamic markers obtained via PAC, LiDCO, and TEE in predicting fluid responsiveness in patients undergoing off-pump coronary artery bypass (OPCAB) surgery. Findings from this prospective study suggested that LiDCO/PCO was superior to PAC and TEE in identifying pathophysiologic states in which cardiac performance was improved by fluid administration.

The PiCCO (Pulsion Medical Systems, Munich, Germany) system uses transpulmonary thermodilution to calibrate continuous cardiac output monitoring. Initial measurements are attained when cold saline injected into a central vein causes temperature fluctuations detected by a thermistor tipped arterial catheter placed in an axillary or femoral artery, although some studies suggest that the usage of a radial artery catheter provides similar accuracy. Cardiac output is calculated with the Steward-Hamilton equation and applied with the pulse contour method to monitor beat to beat variability in cardiac function. The basis of the calculations made in the pulse contour method rely on an algorithm derived by Wesseling et al. In this model, aortic flow pulsations are influenced by three elements: arterial compliance, systemic vascular resistance, and lastly aortic impedance which is obtained through transpulmonary thermodilution. PiCCO has been shown to more accurately reflect left ventricular filling and...
between transpulmonary and transthoracic thermodilution but a discrepancy with pulse contour analysis, which was suspected to be due to time periods of hemodynamic instability.

Others, as referenced above, have studied the ability of pulse contour devices to predict fluid responsiveness in OPCAB surgery. Still others have documented the behavior of SVV as it is influenced by known changes in volume loading through altering physical positioning (between Trendelenberg and reverse Trendelenberg) in post CABG patients. In addition, Sander et al suggested that global end diastolic volume, SV, and PPV were more valuable than static parameters as indicators of changes in cardiac index under open chest conditions.

What is needed in the further validation of minimal invasive devices is additional investigation of outcomes measurements and goal-directed therapy using these new tools. Kapoor et al explored the effects of using FloTrac to guide early goal directed therapy (EGDT) in a small group of 30 patients undergoing CABG under CPB. Parameters such as cardiac index, stroke volume index, oxygen delivery index, SVV, and central venous oximetry were monitored with the FloTrac device and continuous central venous oxygen saturation. Volume loading and/or the altering of vasoactive agents were used to maintain theses parameters within a predetermined range. Despite inconclusive results, those within the EGDT group were observed to require shorter periods of ventilation, less days of ICU stay, and fewer days of inotropic support than the control group.

In conclusion, minimally invasive devices have rising promise in the effort to improve continuous hemodynamic monitoring during cardiac surgery. More recently, they have been used to replace the pulmonary artery catheters in certain cardiac surgical patient populations. There may not be one ideal method that preserves accuracy all the time, as each has its own set of limitations. But corroboration of new technology and innovation should justify the movement towards less invasive means of patient monitoring that would reduce morbidity, cost less, yield similar if not higher quality physiologic data, and improve patient outcomes.

References:
Review

Association of Cytochrome P450 2C19 Genotype With the Antiplatelet Effect and Clinical Efficacy of Clopidogrel Therapy

Alan R. Shuldiner; Jeffrey R. O’Connell; Kevin P. Bliden; Amish Gandhi; Kathleen Ryan; Richard B. Horenstein; Coleen M. Damcott; Ruth Palyz; Udaya S. Tantry; Quince Gibson; Toni I. Pollin; Wendy Post; Afshin Parsa; Braxton D. Mitchell; Nauder Faraday; William Herzog; Paul A. Gurbel

Background and Objective

Clopidogrel therapy improves cardiovascular outcomes in patients with acute coronary syndromes and following percutaneous coronary intervention by inhibiting adenosine diphosphate (ADP)–dependent platelet activation. However, nonresponsiveness is widely recognized and is related to recurrent ischemic events. The objective of this study was to identify gene variants that influence clopidogrel response in patients.

Methods

In the Pharmacogenomics of Antiplatelet Intervention (PAPI) Study (2006-2008), clopidogrel was administered for 7 days to 429 healthy Amish persons and the response measured by ex vivo platelet aggregometry. A genome-wide association study was performed following the loss-of-function cytochrome P450 (CYP) 2C19*2 variant (rs4244285). Findings in the PAPI Study were extended by examining the relation of CYP2C19*2 genotype to platelet function and cardiovascular outcomes in an independent sample of 227 patients undergoing percutaneous coronary intervention. The main outcome measurement is ADP-stimulated platelet aggregation in response to clopidogrel treatment and cardiovascular events.

Results

Platelet response to clopidogrel was highly heritable (h2 = 0.73; P < .001). Thirteen single-nucleotide polymorphisms on chromosome 10q24 within the CYP2C18–CYP2C19–CYP2C9–CYP2C8 cluster were associated with diminished clopidogrel response, with a high degree of statistical significance (P = 1.5 x 10−13). The rs12777823 polymorphism was in strong linkage disequilibrium with the CYP2C19*2 variant, and was associated with diminished clopidogrel response, accounting for 12% of the variation in platelet aggregation to ADP (P = 4.3 x 10−11). The relationship between CYP2C19*2 genotype and platelet aggregation was replicated in clopidogrel-treated patients undergoing coronary intervention (P = .02). Furthermore, patients with the CYP2C19*2 variant were more likely (20.9% vs. 10.0%) to have a cardiovascular ischemic event or death during 1 year of follow-up (hazard ratio, 2.42; 95% confidence interval, 1.18–4.99; P = .02).

Conclusion

CYP2C19*2 genotype was associated with diminished platelet response to clopidogrel treatment and poorer cardiovascular outcomes.

Comments

Dual antiplatelet therapy, as with clopidogrel and aspirin, inhibits platelet function, prevents ischemic events, and potentially improves outcomes following acute coronary syndromes and percutaneous coronary intervention (PCI). To exert an antiplatelet effect, clopidogrel requires conversion to an active thiol metabolite (SR 26334) by hepatic cytochrome P450 (CYP) isoenzymes.

Studies have shown the decreased inhibitory effect of clopidogrel on platelet action is associated with patients who also take lipophilic statins, calcium channel blockers, proton pump inhibitors, St John’s wort, and smoking. It has also been suggested that decreased efficacy of clopidogrel is likely caused by multiple factors that includes increased age, BMI, and triglyceride levels and decreased levels of high-density lipoprotein cholesterol.

Web-based lecture series under development

The SCA is developing a web-based lecture series for the Cardiothoracic Anesthesia Fellows and other SCA members who would like to experience this exciting new offering. The lectures consist of topics that may not be readily available at each fellow’s institution. The topics that will be covered include: Adult Congenital Heart Disease, Coagulation Management & Heparin Alternatives, Minimally Invasive Cardiac Surgery, Ethical Issues in Cardiothoracic Anesthesia Practice, Heart Transplantation and Mechanical Assist Devices, Non-cardiac Major Vascular Surgery, Professionalism in the CT ORs, Management of CPB, Pathophysiology and Prevention of Adverse CNS Outcomes, Pathophysiology and Prevention of Adverse Renal Outcomes, Anesthesiology in the Electrophysiology and Cath Lab, Research Methods and Statistical Analysis, and Practice Management for the Cardiothoracic Anesthesiologist.

Each of these topics will be peer-reviewed and presented by a renowned speaker for that specialty. Each talk will be on SCA’s web site and will conclude with an open discussion of the topic with a colleague.

More information can be found on the SCA web site (www scahq org) by scrolling down to “Cardiothoracic Fellowship” section on the bottom left of the home page. Click on: “Fellowship Lecture Series”, then click on “Lecture Series” which will have the lectures posted. We anticipate having them in place by April of 2010. We look forward to the addition of this new feature.

Web Based Fellowship Education Task Force

Steven H. Ginsberg, MD – Chair
James H. Abernathy, MD
Christina Mora Mangano, MD
Michael P. Eaton, MD

Lecture Review Board

James H. Abernathy, MD
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Philip E. Greilich, MD
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Albert T. Cheung, MD
Steven H. Ginsberg, MD
Steven M. Haddy, MD
Douglas Shook, MD
However, these factors combined account for less than 10% of the variation, suggesting the presence of other, unidentified causes of the variability in response to clopidogrel and it has been suspected that genetic variations in clopidogrel metabolism may play a role in the variability of the response to clopidogrel treatment.

In this study the authors found the first genome-wide association of clopidogrel response and show that the common loss-of-function of the CYP2C19*2 variant is a major determinant of ADP-stimulated platelet aggregation. Individuals with this genotype have reduced protection from clopidogrel in preventing cardiovascular disease-related events following PCI. Prospective randomized clinical trials will be necessary to determine the efficacy of CYP2C19 genotype-directed therapy in evidence-based clinical decision making.

In our clinical anesthesia practice, more and more patients who are on clopidogrel present needing urgent surgeries (in the setting of emergent surgeries the choice is usually obvious to proceed with the operation). However, these urgent procedures sometimes have been postponed because of the concern for intra-operative and post-operative bleeding complications associated with the use of clopidogrel. Given the genetic variations that affect clopidogrel function suggested in this study, there may not be an absolute cut-off (e.g. 5-7 days) since the last dose of clopidogrel prior to when one should proceed with surgery. Rather, perhaps there is a role for perioperative platelet function testing to assess if patients are suitable for urgent surgery.
cheal secretions and urine cultures were all performed on these patients. The primary outcome measured was all-cause mortality at the time of discharge and after 1 year with secondary outcomes including length of intensive care unit (ICU) stay, mechanical ventilation, total hospital stay, and postoperative hemodialysis. Of the 83 patients with DSWI, 66 (79.5%) had non-Candida etiology and 17 (20.5%) had Candida etiology with the overall incidence in this cohort being 0.4%. In hospital mortality in patients with and without Candida etiology was 35% vs. 15% respectively (p=0.061). The 1-year all-cause mortality rate in patients with and without Candida etiology was 41% and 23%, respectively (p=0.124). Patients with Candida DSWI experienced significantly longer ICU stays compared to those without Candida etiology (26 days vs. 5 days respectively) and required mechanical ventilation 10 times longer versus those without Candida etiology (23 days vs. 2 days, respectively). The most commonly isolated pathogens in the non-Candida group was Staphylococcus epidermidis, S. aureus, and gram-negative rod shaped microbes. With the exception of one (C. lusitaniae), all of the isolates of Candida spp were that of C. albicans.

**Reviewer’s Comments**

Sternal wound infections carry a substantial risk and are associated with increased morbidity and mortality. Some reports have demonstrated mortality rates as high as 33% in patients with Candidemia. [1] This study, although retrospective in nature, demarcates striking differences in patients with Candida DSWI versus those patients with non-Candida DSWI. Furthermore, the authors reveal remarkable differences with respect to ICU stay and mechanical ventilation. This can have potential implications on our approach to these patients. More importantly, delineation of risk factors for the development of Candida infections would help to identify these patients early. This study demonstrated that those patients with isolates of Candida in the tracheal secretions and urine were at an increased risk for the development of Candida DSWI which opens the discussion for antifungal prophylaxis. One potential disadvantage to prophylaxis would be the subsequent development of pathogen resistance. Furthermore, although this study did not evaluate the cost of Candida infections, given the increased ICU stay and duration of mechanical ventilation, one can assume that the cost implications would be noteworthy as well.

The limitations of this study include its retrospective nature and its single center design. Another possible limitation is the increased incidence of Candida DSWI compared with other published series. The authors claim that this increased incidence could possibly be explained by differences in surgical management of sternal exploration, a patient population that may be susceptible to opportunistic infections, and the follow-up system employed.

Overall, this study highlights the changing role of inciting infective agents in patients undergoing sternotomy for cardiac surgery. Although large, prospective, multi-centered studies are needed to further establish the incidence, risk factors and mortality associated with Candida DSWI, the authors of this study conclude that Candida is an important and emerging cause of DSWI and is associated with significantly increased morbidity and mortality.

**References**

Literature Reviews, continued

Comments
The use of endovascular stent-grafts for the repair of AAAs was first reported in 1991. In last two decades, the obvious superior early postoperative outcome, including lower morbidity and mortality, compared with traditional open repair has supported its popularity. Studies have demonstrated that there is a significant reduction of early postoperative morbidity, length of intensive care and hospital stay, and improved hospital resource utilization and cost. Because of these early encouraging reports, many vascular surgeons switched from traditional open repair to endovascular stents. This therapeutic approach has been widely accepted as a valid treatment option for repairing AAAs both by academic and community practices, particularly for high-risk patients. Recently however, both observational trials and case control studies have questioned the long-term advantage of endovascular repair versus open repair regarding quality of life and survival. The results of the currently reviewed randomized, multicenter clinical trial in the early postoperative period are not much different than those previously reported by the European trial, except that the overall morbidity and mortality rate in both endovascular and open repair groups were even lower than previously reported. The overall lower morbidity and mortality reported in this study can be attributed to several factors: 1) Patient selection and relative small diameter of AAA. (Majority of cases < 5.5cm) 2) Surgical skill and postoperative care improvement compared to early stage of AAA repair 3) Continued evolving new generation of endovascular systems.

What some may find surprising from this study is that there was no observed difference in survival rate, quality of life and erectile dysfunction after a two-year follow up in both groups. However, these findings are not totally unexpected, since two earlier published studies that compared the endovascular stent versus open surgical repair on descending thoracic aortic aneurysms have reported similar results.

Despite being a well-designed and multicenter randomized trial, this study also has a number of limitations:

1) Patients selected in this study were not from a heterogeneous population, since all patients were veterans.
2) The fact that there was no difference between the two groups associated with secondary therapeutic procedure was misleading, since the endovascular group of procedure failures (4.1%) was all due to surgical failure (endoleaks), whereas procedure failures (incision hernia) in the open repair group (4.9%) may have been associated with collagen defects or the disease itself.
3) The study did not address whether the choice of anesthesia had any impact on the overall outcome (regional versus general anesthesia).

In our opinion, there is still insufficient evidence to suggest the endovascular approach has long-term superior benefit compared to open surgical repair for the patient with AAA. Several major problems must be resolved (e.g. endoleaks, stent fractures, stent migration and visceral organ vessel branch revascularization) before the endovascular method can claim to be the primary therapeutic choice for repair of AAA. Continued research and long-term follow up are necessary to validate the preferred therapeutic options for patients with AAA.

Drug-Eluting Stents vs. Coronary-Artery Bypass Grafting in Multivessel Coronary Disease

Hannan EL, Wu C, Wilford G et al.
New England Journal of Medicine 2008;358:331-341

Reviewers: Steven P. Ewert, MD
Philip E. Greilich, MD, FAHA
UT Southwestern Medical Center
Dallas, TX

Background
Percutaneous coronary interventions (PCI) have long been considered inferior to surgical revascularization for multivessel disease given their high rates (15-40%) of restenosis. In patients with two or more diseased vessels, the largest (n=59,314) study to date found that CABG is associated with higher long-term survival rates when compared to bare metal stents (BMS) (NEJM 2005;352:2174-83). In 2003, drug-eluting stents (DES) were released and several randomized, controlled trials have since documented lower rates of restenosis, target-lesion revascularization, and major adverse events (compared to BMS). The same investigators that published the study comparing BMS to CABG performed another observational analysis to determine if PCI is still inferior to CABG when DES are used for coronary revascularization.

Methods
This study collected data from the Cardiac Surgery Reporting System and Percutaneous Coronary Intervention Reporting System in the state of New York to find patients who were treated with DES or CABG from October 1, 2003 to December 31, 2004. From these databases, 9963 patients with DES and 7437 patients receiving CABG who did not meet exclusion criteria (previous revascularization, left main disease, recent myocardial infarction [MI], or not residents of New York) were followed through December 31, 2005. Differences in risk-adjusted, long-term (18 months) rates of death and death or MI between patients undergoing the two procedures were investigated by developing stepwise Cox proportional-hazards models. A propensity model was then used to test for selection bias.

Results
Those undergoing CABG were more likely (than the DES group) to be older, had lower ejection fractions, other coexisting diseases (DM, previous MI, CVD, PVD, CHF, present in shock, etc) and multi-vessel disease. The adjusted 30d mortality rates did not differ between the CABG and DES groups. At 18 months, the adjusted hazard ratios (CABG compared to DES) were 0.80 (95%CI 0.65 to 0.97) for 3-vessel disease and 0.71 (95%CI 0.57 to 0.89) for 2-vessel disease. This resulted in an absolute difference in survival rates of 1.3% (p=0.03) for 3-vessel disease and 1.4% (p=0.003) for 2-vessel disease. The survival advantage of CABG was present in all high risk subgroups (diabetes, age>80yrs, EF<40%) in patients with 2-vessel disease and included those without involvement of the proximal LAD (adjusted HR 0.69; 95%CI 0.48-0.98). A similar trend was observed in those with 3-vessel disease, yet required the combined endpoint of death or MI in order to reach significance in all 15 subgroups that were analyzed. Repeat revascularization rates were

>>>>> Continued, next page
Serum C-reactive protein concentrations were determined before and 1 day after surgery. Within 5 days of surgery, 9 of 29 placebo-treated patients met criteria for delirium, whereas only 1 of 29 patients receiving the single dose of ketamine did \( (p = .01) \).

The authors postulated that the protective effect of ketamine is based on an anti-inflammatory mechanism and also checked C-Reactive protein concentrations before and 1 day after surgery. Consistent with that hypothesis, they found a lower postoperative elevation in levels of C-reactive protein in the ketamine group as compared to the placebo group (8.3 v. 10.4, with baselines of 0.7 and 0.6 mg/dL).

Comments

Postoperative delirium may reflect subtle brain damage that occurs perioperatively and may be a result of the inflammatory process associated with cardiac surgery and the use of cardiopulmonary bypass. It is impressive that the simple one-time administration of an inexpensive, venerable drug such as ketamine could dramatically improve the quality of recovery from major surgery. However, this is not the first time that ketamine has been associated with neuroprotective benefits. Previously another study demonstrated that ketamine has appreciable value as a rapidly acting antidepressant drug.1

It is almost paradoxical that ketamine should inhibit delirium. As a “disso-ciative anesthetic,” it is related to phencyclidine (PCP), which can be associated with both hallucinations and seizures. In sub-anesthetic doses, ketamine has also been called a “hallucinogen” and a “psychotomimetic.” Though the possibility of these side effects occurring is reduced by the administration of benzodiazepines, the use of ketamine has been associated with unpleasant emergences. This makes many practitioners reluctant to administer this agent perioperatively. It should be noted that the authors used a dose of ketamine previously demonstrated to reduce the inflammatory response to surgery without the potential behavioral disturbances that can occur postoperatively.

The major receptor for ketamine is thought to be the brain NMDA receptor. NMDA is an artificial agonist. The normal agonist for the excitatory receptor is glutamate, and ketamine is an antagonist. There is abundant evidence that excessive glutamate stimulation can damage nerves, and ketamine may block that deleterious effect.

Potential limitations included the fact that the study was small and besides CRP no other markers of inflammation were checked. In addition, while CRP concentrations were elevated in patients receiving the placebo, CRP concentrations did not independently predict the diagnosis of postoperative delirium.

In conclusion, the authors of this randomized, controlled trial demonstrate that a single dose of ketamine peri-induction can decrease delirium one week postoperatively in patients undergoing cardiac surgery. While the authors suggest that future work may elucidate a more defined mechanism of action, they propose the anti-inflammatory effects of ketamine are probably responsible for this.


Ketamine attenuates delirium after cardiac surgery with cardiopulmonary bypass.


Reviewer: Theodore A. Alston, MD, PhD
Massachusetts General Hospital, Harvard Medical School

Abstract

In this prospective trial, researchers in Milwaukee enrolled 55 men undergoing coronary or valve surgery requiring cardiopulmonary bypass. Patients had to be at least 55 years old in order to be eligible for inclusion and the ages of study patients ranged from 55 to 84. The patients were randomized to receive either a placebo saline solution or ketamine, 0.5 mg/kg, as a component of their anesthetic induction. All procedures included the use of cold cardioplegia and systemic hypothermia (30-32oC). Delirium was assessed by using the Intensive Care Delirium Screening Checklist before and after surgery. Serum C-reactive protein concentrations were determined before and 1 day after surgery.

Discussion

Hannan et al. demonstrate that despite the reported advantages of DES (over BMS), risk-adjusted survival with PCI remains inferior to surgical revascularization. Significant differences in mortality were observed in the CABG group even in two-vessel CAD disease without involvement of the proximal LAD. In contrast to their previous report (BMS vs. CABG), higher risk-adjusted survival rates for CABG were detected in only 12 of the 15 subgroups analyses (2-vs. 3-vessel disease, +/- proximal LAD, diabetes, EF < 40%, age > 80yrs) when compared to DES. A loss of power to detect differences in all 15 subgroups may have occurred since this study had fewer patients (n=17400 vs. 59,314) with a shorter follow-up period (18mo vs. 36mo) than their previous report.

The observational design of this study makes complete elimination of preprocedural selection bias impossible. The use of a propensity analysis in conjunction with adjustments for the effects of preprocedural risk factors insured that the outcome measures were not severely compromised by selection bias. The short follow-up period is problematic as studies now suggest that the survival advantages of CABG (over PCI) may increase with time given the risk of late-stent thrombosis (JAMA 2007;297:159-68).

Comments

These findings, in conjunction with several large, prospective and observational studies, strongly support a long-term survival advantage of CABG over PCI in patients with multivessel disease. This report now extends this survival benefit to those with 2-vessel CAD even when DES are used. The translation of these findings into clinical practice will be complex given current incentives, patient concerns for prolonged recovery and the risk of complications following CPB. Several recent analyses have questioned the cost-benefit of DES (Am J Cardiol 2009;103:338-344) given the high incidence of repeat revascularization and risks of late stent thrombosis. Although the quality and cost-effectiveness of CABG surgery continues to improve (J Thorac Cardiovasc Surg 2009;137:65-9), our ability to further reduce morbidity (stroke, etc), costs (length of stay, etc) and recovery (degree of surgical trauma, etc) will aid patients in selecting the best long-term treatment option.
Are Changes in Cardiovascular Disease Risk Factors in Midlife Women Due to Chronological Aging or to Menopausal Transition?


Abstract Excerpt

A causal link between increased rates of coronary heart disease (CHD) in women and the postmenopausal state has been established in numerous studies. It remains unclear however whether this risk is due to alterations in endogenous hormone levels, as a result of the onset of increasing age or menopause (either natural onset or surgically-induced) (1-6). Adding to the complexity of this debate, some investigators have suggested that heart disease risk might determine menopausal age rather than the reverse (7, 8). Studies which have examined these issues have been limited by one or more of the following: predominantly Caucasian participants and therefore a lack of diversity in the patient population, insufficient precision in the definition of pre, peri and postmenopausal periods, concomitant changes in independent risk factors that parallel the different periods studied, an incomplete inclusion of all risk markers known to be associated with CHD, and failure to adjust for non-menopausal related cardiovascular risk factors such as lifestyle and pharmacological interventions. The aim of the current study was to describe the change in cardiovascular risk factors, independent of age and other confounding variables, in a multi-ethnic group of women before, during and after their final menstrual period (FMP). The investigators further sought to ascertain whether changes in these risk factors were related to ovarian aging or chronological aging (9).

The SWAN (Study of Women's Health Across the Nation) was a longitudinal, multicenter, community-based, prospective cohort study that included 1,054 women of diverse ethnic backgrounds. Risk factors assessed in a serial fashion included: a complete lipid panel, lipoproteins, CRP, glucose, insulin, blood pressure and hemostatic factors. For each risk factor the magnitude of change was evaluated in the pre, peri and postmenopausal time periods. The data were analyzed in order to assess the quality of fit into either a piecewise linear model, representative of changes driven by ovarian age, or into a linear model, reflecting changes in chronological age and independent of FSH levels.

The study results showed that changes in the following risk factors were better described by the piecewise linear model: total cholesterol, LDL-C, apolipoprotein (Apo) B, HDL-C and Apo A-I. Therefore, they concluded that these changes were caused by increasing ovarian age. The greatest increase in total cholesterol, LDL-C and Apo B occurred in the 1-year interval surrounding the FMP. On the other hand, the greatest increase in HDL-C and Apo A-I occurred before the 1-year interval surrounding the FMP, with subsequent levels either staying constant or declining. Changes in levels of glucose, t-PA-ag, PAI-1 and fibrinogen were better described by a linear model and thus interpreted to be independent of ovarian age. Finally, changes in systolic and diastolic blood pressures, Lp(a), insulin, factor VIIc fit equally in either model. Notably, the patterns of change in all these risk factors were independent of ethnicity.

Reviewer's Comments

The present study is the first to conduct a careful, prospective analysis of covariate adjusted risk factors with precisely defined transitional periods: prior, during and immediately after FMP. Furthermore, the investigators included a large number of patients from multiple institutions, and their diverse patient cohort included multiple ethnicities. The results from this study have important clinical implications because a specific time period has been identified in which known and measurable cardiovascular risk factors can be assessed. Consequently, the clinician is able to identify and closely monitor modifiable risk factors in the appropriate time period. Ultimately, this understanding could lead to lifestyle changes and therapeutic interventions aimed at minimizing the cardiovascular risks associated with menopause.

The current study has a number of limitations. Women who had undergone hormone therapy or who had a hysterecomy or bilateral oophorectomy were excluded. Thus, the results cannot be applied to these patient populations. Additionally, by including these patients they could have further demonstrated a chronological age-independent and ovarian age-dependent set of changes in patients that would not normally have natural onset menopause. Long-term follow-up of these patients would have provided valuable insights into the strength of correlation between these risk factors and clinical endpoints of cardiovascular disease. Additionally, a substantial 25% of women were lost to follow-up as a result of administrative reasons.

With regards to the risk factors assessed, apo A-I continues to increase after the final menstrual period while HDL-C levels decline; this trend represents a discrepancy between cholesterol and apoprotein trajectories. In assessing a woman's cardiovascular risk, computation of the post-menopausal apo B/A-I ratio would convey a lower risk profile than computation of the LDL-C/HDL-C ratio, as eloquently described by Bittner (6). This discrepancy would have profound effects on the validity of using these two different lipid ratios to determine cardiovascular risk in these patients.

Overall the authors of this review conclude that the current study provides valuable insights into the precise timing of specific changes in a subset of known cardiovascular risk factors that have the potential to increase the risk of CHD in postmenopausal women. Further follow-up will be critical in order to determine the true prognostic power of the changes seen in these risk factors during the studied time periods surrounding menopause. Although future studies are needed to further explore some of the discrepant results found in this study in comparison with previously published data, this analysis provides strong evidence to support close monitoring of cardiovascular risk factors of peri-menopausal women. Whether or not interventions based on these practices will lead to reduced CHD events will need to be determined by future clinical trials.

References


 >>>> Continued, next page
There is much we have learned from Phase I of the FOCUS research project. As with all great research, more questions were asked than answered. What is the best method to improve patient safety in cardiac operating rooms? Can we help our colleagues evaluate and improve safety performance? How do we design and build better operating room equipment and machines to help us deliver safer patient care? These questions will drive the research, divided into three projects, for Phase II:

Develop a learning collaborative within the cardiac surgical teams to enhance patient safety. This process will use the Michigan Keystone model developed by Dr. Pronovost and the QSRG team that has been so successful in eliminating catheter based infections in the ICU setting. The FOCUS learning collaborative will use reduction in wound infections as the metric that will inform us of how we are doing.

Develop a peer-to-peer assessment tool that can be used by operating room teams to assess their own safety performance, or be used by an invited visiting team to provide feedback regarding areas for improvement in safety. This non-judgmental, for-internal-use-only peer-to-peer assessment tool will be based on the highly successful WANO (World Association of Nuclear Operators) process that has made the nuclear industry a “highly reliable” industry.

Design the operating room of the future. Tackle the issues of equipment and OR design to improve the interfaces between humans and the machines they use to deliver patient care in the operating room.

We often read studies that are underpowered and poorly represent reality. The applicability of the conclusions outside of the narrow confines of the study population is therefore suspect. Cardiac anesthesiology is practiced in many different environments, from large private practices to small academic groups and everywhere in between. As the FOCUS project embarks on its next steps we must ensure that conclusions drawn from the research translate into all of our practices.

Whether you work in a large academic center or an agile, efficient private practice, we ask that you consider participating as a research FOCUS site. The FOCUS Committee is soliciting sites willing to participate in Phase II of FOCUS. If your institution is interested in participating, please complete the site application form found on the SCA Foundation’s website in the FOCUS Section. The deadline for submission is June 15, 2010. Those institutions that applied and or participated in Phase I are asked to complete the new application for Phase II. There was a great response for Phase I and we are confident Phase II will garner the same amount of support from the SCA membership. Decisions will be made by the Site Selection Committee based upon the needs of each research project. For more information, you can contact me with the Site Selection committee or John Melleky with the SCA Foundation.

Save The Date

Annual SCA Foundation Reception
Sunday, April 25, 2010 in New Orleans
6:30 pm – 8:30 pm

Email the SCA Foundation for more information

Support the SCA Foundation

Donate to the SCA Foundation and support our research grants, education programs such as the upcoming Fellows Leadership program, the FOCUS Initiative, and the creation of a cardiovascular anesthesiology module for the STS database.

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