Report from the 12th ICCVA in Beijing

By Albert Perrino
Chair, International Committee
Davy Cheng
Co-chair, ICCVA Program Committee

With a glittering opening ceremony and a gala welcoming banquet the 12th International Congress of Cardiothoracic and Vascular Anesthesia (ICCVA) convened in Beijing, China September 22-24, 2010.

This year’s meeting was noteworthy in that it marked the first ICCVA to be actively supported by each of the world’s major cardiac societies. The European Association of Cardiothoracic Anaesthesiologists (EACTA) and the Asian Society of Cardiothoracic Anesthesia (ASCA) joined with the SCA and the 2010 host organization, the Chinese Society of Cardiothoracic Anesthesiologists (CSCTA) to make this truly the first “world congress” of cardiac anesthesia.

Steve Konstadt, along with Pascal Colson (president EACTA) and Minoru Nomura (president ASCA) were recognized for their leadership in support of the ICCVA. This cooperation resulted in a remarkable scientific program supported by an international faculty of 143 speakers. It attracted a meeting attendance of 2,953 physicians, making it an unprecedented gathering of cardiac and thoracic anesthesiologists.

Many sessions provided simultaneous translation for the Chinese audience, and special recognition goes to Hong Liu and members of the Chinese American Society of Anesthesiologists for assisting with translation during the hands-on thoracic and echocardiography workshop sessions.

The venue of the newly constructed Chinese National Convention Center set inside Beijing’s Olympic village could not have been more symbolic of the spirit of cooperation embodied in this 12th international congress. Fascinating tours of Beijing city and its surrounding provinces complemented the meeting program.

The SCA thanks Professor Li, Weipeng Wang, and the entire CSCTA for hosting a remarkable and memorable ICCVA. A photographic gallery of the congress events is available for viewing on the SCA website.
When taking care of sick cardiac surgery patients, the scariest moments can be upon induction of anesthesia. It is the transition from an awake, spontaneously breathing patient to an anesthetized, mechanically ventilated one that can be so fraught with danger. In these cases, the choice of which induction agent to use becomes germane, and not just an academic debate. According to Miller’s Anesthesia, “The properties of etomidate include hemodynamic stability, minimal respiratory depression, cerebral protection, and pharmacokinetics enabling rapid recovery after a single dose.” This sounds like an ideal induction agent for cardiac patients.

Etomidate produces hypnosis largely, but not completely, through its action on GABA receptors, especially the β2 and β3 subunits. Etomidate causes a decrease in intracranial pressure through burst suppression of the EEG; therefore it is suitable in patients with head injuries as well. Etomidate’s hemodynamic stability may be due to its unique lack of effect on the sympathetic nervous system and on baroreceptor function. An induction dose of etomidate given to cardiac patients results in very stable hemodynamics with almost no change in heart rate, mean arterial pressure, mean pulmonary artery pressure, pulmonary capillary wedge pressure, central venous pressure, stroke volume, cardiac index, or pulmonary and systemic vascular resistance. A recent study of etomidate in pediatric patients with intracardiac shunt lesions showed that induction with 0.5 mg/kg produced minimal changes in hemodynamics or shunt fraction.

Etomidate has less effect on the ventilator system than other similar induction agents. It also has not been shown to cause histamine release like some other induction agents. This gives it an advantage in patients with reactive airway disease, making it less likely that they will have bronchospasm. It has been shown to cause a brief period of hyperventilation that may be followed by apnea, which may cause a small increase in PaCO2 but no change in PaO2.

Despite these beneficial cardiac and hemodynamic properties, it is the endocrine effects of etomidate that get so much attention. It causes a dose-dependent inhibition of the enzyme 11β-hydroxylase which converts 11-deoxycortisol to cortisol, thereby giving decreased cortisol levels. It is well known that even a single dose of etomidate can suppress adrenal function for up to 24 hours, and can mildly decrease serum cortisol levels. One group found slightly depressed cortisol levels for a short duration postoperatively after a single dose of etomidate, but the levels never fell out of the normal range. The real question is whether this adrenal suppression inhibits the body’s ability to adequately and appropriately respond to surgical stress. In an older study of patients undergoing CABG and receiving a total intravenous anesthetic with etomidate/fentanyl vs midazolam/fentanyl, measured cortisol levels were the same or higher in the cortisol group after the first hour than in the midazolam group. This suggests that the adrenal suppression is not clinically significant.

There are no good randomized, prospective studies that show a clinically significant adverse outcome from single-dose etomidate. There are, however, retrospective studies that show that etomidate does not increase mortality in septic patients, in emergency room patients, and in congenital heart disease patients. Because of its hemodynamic stability, even in the sickest patients, and no clear evidence of a clinically significant adrenal suppression or other serious side effects, I would choose etomidate for induction of cardiac patients.

10. Morgan M, Lumley J, Whitwam JG: Respiratory effects of etomi-
when titrated carefully, can achieve hemodynamic stability even in critically ill patients. Without large, prospective, randomized controlled studies to disprove the adrenal suppression or other serious side effects, it is better to select alternative induction agents for cardiac surgery patients.

References:

Hong Liu, MD.
University of California Davis Health System, Sacramento, CA

Although the use of continuous etomidate infusion in the intensive care unit fell out of favor secondary to reports of adrenal crisis, single-dose etomidate for induction of anesthesia is common for the hemodynamically unstable patient or in patients who may not tolerate wide variances in heart rate or blood pressure. It is characterized by rapid onset, very few side effects on cardiovascular and respiratory functions, as well as minimum histamine release in both adults and children. At present, it is still the most popular choice for anesthesia induction in patients undergoing cardiac surgery.

However, etomidate, a steroid synthesis inhibitor, potently blocked 11beta-hydroxylase (CYP11B1), aldosterone synthase (CYP11B2), and side chain cleavage enzyme (CYP11A1). This inhibition of steroidogenesis was associated with increased expression of steroidogenic acute regulatory protein (StAR), and CYP11A1 and 17alpha-hydroxylase/20-lyase (CYP17A1) protein levels and promoter activity of CYP11A1. The inhibition is considered dose-dependent and results in decreased cortisol levels. It has also been documented that even a single dose of etomidate can suppress adrenal function for at least 24 hours with decreased serum cortisol levels.

Recent studies in emergency medicine and critical care medicine have raised the question of the effect of a single induction dose of etomidate on the outcome of patients who have received it. In one study of 94 patients the authors found that a single-dose etomidate for RSI in severely injured trauma patients was associated with increased ARDS and multiple organ dysfunction syndrome, in part, because of the effect of etomidate on the inflammatory response. An animal study from Liu and colleagues found that intra-mitochondrial high-energy phosphate levels significantly decreased in the etomidate group compared to a control group. In another study, 655 patients were prospectively enrolled from 12 emergency medical services or emergency departments and 65 intensive care units. Patients were randomly assigned to receive 0.3 mg/kg of etomidate (n=328) or 2 mg/kg of ketamine (n=327) for intubation and the authors found that the percentage of patients with adrenal insufficiency was significantly higher in the etomidate group than in the ketamine group. Kim TY and colleagues even suggested that corticosteroid replacement therapy should be started once etomidate is administered in critically ill patients. Other side effects of etomidate include nausea/vomiting, pain at the injection site, myoclonus, hiccups, and less inhibitory effects on the pharyngolaryngeal reflex.

In conclusion, there is significant evidence demonstrating that etomidate, when used as an induction agent to facilitate intubation, causes transient adrenal insufficiency of uncertain clinical effect. As many patients undergoing intubation in the OR (especially those undergoing cardiac surgery) are under physiologic stress, this effect could be of concern. Other induction agents, when titrated carefully, can achieve hemodynamic stability even in critically ill patients. Without large, prospective, randomized controlled studies to disprove the adrenal suppression or other serious side effects, it is better to select alternative induction agents for cardiac surgery patients.

Hong Liu, MD.
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The use of etomidate as an induction agent in patients undergoing cardiac surgery

Recent studies on the use of etomidate as an induction agent in cardiac patients raise questions
Effect of anaesthesia and cardiopulmonary bypass on blood endocannabinoid concentrations during cardiac surgery


Reviewers: David S. Palilla, MD, and Theodore A. Alston, MD, PhD
Massachusetts General Hospital, Harvard Medical School

Abstract Excerpt:
Researchers in Munich measured endogenous cannabinoid levels in 30 patients undergoing cardiac surgery with the aid of CPB. The endocannabinoids are simple metabolites of arachidonic acid. The two molecules examined were N-arachidonylethanolamine (AEA, also known as anandamide) and 2-arachidonoylglycerol (2-AG). These are agonists for central and peripheral G-protein-coupled endocannabinoid receptors known as CB1 and CB2, respectively.

The endocannabinoids were measured at various points perioperatively during a general anesthetic that included midazolam, sufentanil, and isoflurane. AEA (initially at 0.4 ng/ml) declined to 0.3 upon induction of anesthesia, and it further declined to 0.2 ng/ml upon arrival to the ICU. 2-AG (starting at 40 ng/ml) peaked at 420 ng/ml during CPB. Accordingly, the two molecules did not move synchronously.

Endocannabinoids inhibit endogenous adrenergic activity. Though AEA levels tended to decrease in these patients, the highest concentrations of AEA were associated with the administration of higher doses of norepinephrine. The authors note that CB1 antagonists have shown benefit in various types of experimental shock, and they propose that AEA-induced hypotension is part of the “post-pump syndrome.”

Reviewer’s Comments:
Cannabis has been used pharmaceutically since antiquity and was advocated by Paracelsus (1493-1541) and by Alice B. Toklas (1877-1967). An ethereal tincture of the substance was one of the inhaled anesthetics proposed by ether pioneer Elton Romeo Smilie (1819-1889) (1).

However, the isolated THC molecule was not identified until 1964. THC receptors were identified in the 1980s, but endogenous agonists were not found until the 1990s. AEA is produced by activated macrophages, while 2-AG comes largely from platelets. Both types of cells, of course, are impacted by CPB. The 10-fold increase in 2-AG likely reflects contact activation of platelets.

It should be noted that multiple drug interactions intraoperatively can affect the various effects of these agents. For example, heparin was historically noted to be a “plasma clearing factor” because it triggers release of lipoprotein lipase and so clarifies the blood plasma from turbid lipid particles. Interestingly, heparin administration also increases phospholipase A2 activity in the plasma (2). That enzyme releases free arachidonic acid from lipoproteins, and the acid is processed into prostaglandins and other bioactive molecules. With the widespread administration of aspirin, alprostadil (PGE1), and NSAIDs, the metabolism of arachidonic acid is of broad interest in cardiovascular anesthesia. Furthermore, it is not just the metabolism of arachidonic acid that is affected by agents that are commonly used by patients presenting for cardiac surgery. The anaglestic action of acetaminophen involves inhibition of the reuptake of AEA by neurons (3). Accordingly, the endocannabinoid receptors represent potentially intriguing targets for new pharmacological tools in cardiac anesthesia (4).


Late Outcomes After Carotid Artery Stenting Versus Carotid Endarterectomy. Insights From a Propensity-Matched Analysis of the Reduction of Atherothrombosis for Continued Health (REACH) Registry


Reviewer: Mohammed Minhaj, MD
University of Chicago Medical Center

Abstract Excerpt:
Patients with carotid artery disease are often treated with either carotid artery stenting (CAS) or carotid endarterectomy (CEA). There continues to be debate of whether one treatment modality is superior to the other. The purpose of this study was to examine if there was a difference in late events (defined as two years after intervention) between the two interventions.

The authors used the REACH (Reduction of Atherosclerosis for Continued Health) registry to review over 68,000 patients who had risk factor for, or established atherosclerotic disease. Patients who had either CAS or CEA were identified and followed prospectively for the occurrence of cardiovascular events. Primary outcome was death or stroke at 2-year follow-up. Of the over 68,000 patients, 3412 had a history of carotid revascularization, 1025 with CAS and 2387 with CEA. Propensity matching allowed the authors to identify comparable groups with respect to baseline characteristic, there were 836 patients in each group. At the end of 2 year follow-up there was no difference between CAS and CEA for the primary outcome (or for secondary/tertiary outcomes).

The authors concluded that CAS was comparable to CEA for late outcomes.

Reviewer’s Comments:
This paper has the advantage of reviewing a much larger database of pa-
patients when compared to previous studies in the same area. Additionally, since patients were enrolled across geographically diverse areas, it represents several different practice patterns. The results demonstrated with respect to stroke and TIA rates are similar to previous studies, as is the overall result of no difference at 2 years between CAS and CEA.

However, there are several limitations as well. While it may be advantageous to have representations from such diverse geographical regions, it removes the standardization of practice and care. Patients were referred for management based upon their physicians’ practice, not randomized into 2 specific groups. Additionally, before propensity matching there were several differences between the two groups, specifically in age, co-existing disease, and the use of baseline antiplatelet therapy. While propensity matching removed these baseline differences, it does not confer the same advantages of a prospective, randomized-controlled trial.

While patients referred for CAS tended to have more co-morbidities suggesting that these patients were deemed too “high-risk” for surgery (CEA), the fact that there were no outcome differences between CAS and CEA in the matched groups reflects positively for CAS as an option in patients with carotid disease. Overall, long-term outcomes comparing CAS to CEA continue to be needed. While this study suggests that both are viable options, a large randomized-controlled trial looking at long-term outcomes would benefit physicians in making recommendations to patients.

**Comparison of Shunt Types in the Norwood Procedure for Single-Ventricle Lesions**


**Reviewer: Mojca Remskar Konia, MD**

*University of Minnesota, Minneapolis, MN*

**Abstract Excerpt:**

Ohye et al present the long awaited data of the first larger prospective randomized study of congenital heart disease. Patients with hypoplastic left heart syndrome (HLHS) or a related single, morphologic right ventricle anomaly with a planned Norwood procedure were included. Infants were randomly assigned to receive either the modified Blalock-Taussig shunt (MBT) (275 infants) or right ventricle-pulmonary artery shunt (RVPA) (274 infants). The primary outcome of the study was death or transplantation 12 months after inclusion into the study. The secondary outcomes were cardiovascular interventions, right ventricular size at 14 months post-randomization, and transplant-free survival at 14 months. By 12 months after randomization there were 72 patients that died or required transplantation in RVPA shunt group and 91 patients in MBT shunt group. The difference was significant *(p=0.01)*. The relative risk of primary outcome events with RVPA shunt as compared to MBT shunt was 0.72 (95% CI, 0.56-0.95). During long-term follow up (32+/11 months) the difference in transplant-free survival was no longer significant *(p=0.06)*. RVPA shunt group had more unintended interventions, primarily balloon dilation and stenting of RVPA shunt, then MBT shunt group (220 vs. 168, *(p=0.003)*). Right ventricular size and function at 14 months were similar in both groups. In the nonproportional-hazard analysis the extent of the treatment effect differed before and after 12 months. The authors concluded that the transplant-free survival during the first 12 months was better in RVPA group. The effect subsided after 12 months. The number of unintended interventions within the first 12 months was increased in RVPA shunt group.

**Reviewer's Comments:**

The presented study introduces the first large prospective randomized study in pediatric heart surgery and the authors need to be congratulated for undertaking this difficult task.

The classical Norwood procedure significantly improved the prognosis for infants with HLHS. The success of Norwood procedure is, however, limited with high peri-operative (7-19%) in inter-stage mortality (4-15%). Poor outcomes are at least in part believed to be due to aortic diastolic run-off through the MBT shunt with decreased diastolic coronary blood flow. With introduction of RVPA shunt into surgical practice a better immediate hospital survival was demonstrated in some smaller studies (89-93% vs. 53-70%) and no benefit in other studies (81-84% vs. 81-86%). Surgical techniques and shunt sizes differed between studies, which made it difficult to compare and interpret the data. Also, the studies were retrospective cohort studies or prospective observational single center studies with limited numbers of included patients. The observed improvement in survival with RVPA shunt was explained by a more stable postoperative hemodynamics, increased coronary artery flow, improved splanchnic perfusion followed by improved growth and lower inter-stage mortality, all due to the absence of diastolic run-off. On the other hand, concerns were raised about ventricular dysfunction caused by ventriculotomy with RVPA shunt, wide-opened pulmonary insufficiency through the shunt, decreased pulmonary artery growth due to the absent forward flow during diastole and occasional need for early stage 2 procedure due to hypoxemia.

Even though the presented trial also has limitations, such as inability to blind and a number of patients that did not give the study enough power to detect differences in some of the secondary outcomes, the study did provide answers. RVPA has survival benefit over MBT within the first 12 months, but is complicated with more unintended cardiovascular interventions. Long-term outcomes between the two shunts seem to be the same.

**Cardioprotection by a nonerythropoietic, tissue-protective peptide mimicking the 3D structure of erythropoietin**


**Reviewers: Matthew J. Sigakis, MD, and Theodore A. Alston, MD, PhD**

*Massachusetts General Hospital, Harvard Medical School*

**Abstract:**

EPO isn’t just for red cells anymore. Accordingly, investigators from Japan and New York have prepared an analog in order to better exploit the cytoprotective actions of the hormone/cytokine.

Natural EPO is a glycosylated protein containing 166 amino acids. As the name says, it stimulates red cell production. In addition, it generally inhibits programmed cell death, but it is prothrombotic. The authors’ peptide is an EPO fragment containing only 16 amino acids. In cultured rat cardiomyocytes, the peptide prevents TNF-alpha from inducing apoptosis. Like intact EPO, the peptide activated intracellular anti-apoptotic factors called Akt, ERK1/2, and STAT3. The proteins were equally potent, but the peptide acted more rapidly than EPO.

DCM hamsters (J2N-k) spontaneously suffer dilated cardiomyopathy. Given SC three times weekly to those animals, the peptide showed myocardial anti-apoptotic benefit within five weeks. There was more prominent activa-
EPO shown to have cytoprotective benefit in brain, kidney and heart, particularly in case of ischemia/reperfusion. A recombinant EPO (slightly different from natural EPO in glycosylation) is available as darbepoetin (1). However, hypertension and thrombosis have encouraged development of derivatives mimicking the cytoprotective benefits without serious adverse effects (2).

In addition to many studies in laboratory animals, a small pilot study from Slovenia suggests human brain protection by recombinant EPO in cardiac surgery (3).

References:

A Controlled Trial of Sildenafil in Advanced Idiopathic Pulmonary Fibrosis


Reviewer: Jenny Kwak, MD
Loyola University Medical Center, Maywood, IL

Background:
Sildenafil is a phosphodiesterase-5 inhibitor that is used to treat pulmonary hypertension. This study hypothesized that by improving blood flow in well-ventilated areas of the lung, sildenafil would improve walk distance, dyspnea, and quality of life in patients with advanced pulmonary fibrosis.

Methods:
This was a double-blind, randomized, placebo-controlled trial. The primary outcome was an increase in the 6-minute walk test distance of 20% or more. Secondary outcomes were changes in oxygenation, degree of dyspnea, and quality of life.

Results:
There was no significant difference in the primary outcome between the sildenafil and placebo groups. There were small but significant differences in the secondary outcomes of arterial oxygenation, carbon monoxide diffusion capacity, degree of dyspnea, and quality of life favoring the sildenafil group.

Reviewer’s Comments:
Although this study did not show any difference in the primary outcome, the small differences found in the secondary outcomes may be significant to patients with advanced idiopathic pulmonary fibrosis. The data in this study may help guide further research involving sildenafil as medical therapy in the context of cardiothoracic surgery.

Using sildenafil as a component of lung preservation solution has been shown to improve microcirculation, suggesting a possible role in lung procurement and preservation. There is also evidence in an animal model of sildenafil augmenting myocardial protection in heart transplantation.

Sildenafil may be useful for bridging patients to lung transplantation and improving pulmonary hypertension in patients otherwise ineligible for heart transplantation. Sildenafil is being considered in patients requiring cardiothoracic surgery for congenital heart defects, heart or lung transplantation, and left ventricular assist devices.

Literature regarding the use of sildenafil to treat pulmonary hypertension in the perioperative period surrounding cardiothoracic surgery is growing, and the results of this study may influence ongoing future research.
The SCA Foundation Announces 2011 Research Grants

By Hilary P. Grocott, MD, FRCPC, FASE
Chair, SCA Research Committee

“If you have a good project plan and institutional support, apply for an SCA/IARS Starter Grant! It is a great opportunity and well worth the time and effort.”

― Timo Brandenburger, M.D.
University Hospital Dusseldorf, Germany
2010 SCA/IARS Starter Grant
Effects of microRNA-1 knockdown on IGF-1 and cMet expression and Impact on hypoxia-induced cell death in rat myoblast cells H9c2

The SCA Foundation is proud to announce the 2011 Research Grants to be awarded:
- SCA/IARS Starter Grant - $25,000 a year for two years
- SCA/IARS Mid-Career Grant - $50,000 a year for two years.

Grant applications are due by January 14, 2011. Detailed information about the grant application can be found online at the SCA Foundation website at http://www.scahqgive.org/2011grants.asp

With the support provided by the SCA Foundation, the SCA, and the IARS, this program will continue to grow and prosper. Help support the next generation of researchers and leaders by making a charitable donation to the SCA Foundation for research grants or its other programs, through a visit to our website at www.scahqgive.org and give online. For more information on the SCA Foundation, you can email us at foundation@scahq.org or call us at 804-565-6324.

FOCUS Update

By Bruce D. Spiess, MD
Chair, FOCUS Committee

The FOCUS team, together with our research collaborators, the Quality and Safety Research Group (QSRG) at Johns Hopkins University, continue to forge ahead. The data collected during the literature review, analysis of the National Learning Reporting System, and observations at the five FOCUS sites, are being prepared for publication. Three publications, with joint authorship between SCA and QSRG members, have been submitted, with 5 additional manuscripts in preparation. The next phase of FOCUS is well underway, with QSRG developing tools to enhance teamwork and safety in cardiac surgery. FOCUS sites that indicated a primary interest in the Learning Collaborative are participating in the development of these tools, and will be pilot testing them in the near future.

The FOCUS team continues to seek participation and collaboration with the key societies involved in the cardiac operative setting. On September 16, a Society Summit was held in Boston and was attended by representatives from the Society of Thoracic Surgeons (Dr. Doug Mathisen, president), the American Society of ExtraCorporeal Technology (Susan Englert, president), and the Society of Cardiovascular Anesthesiologists (Dr. Sol Aronson, president-elect). Dr. Bruce Spiess presented the history of FOCUS, and Dr. Elizabeth Martinez presented the work done to date, as well as the planned work. Although the FOCUS Steering Committee includes thoracic surgeons, perfusionists and nurses, participation and collaboration at the society level will enable the innovations and teamwork improvements of FOCUS to be disseminated and adopted more broadly.

The FOCUS team attended the Lucian Leape/National Patient Safety Foundation Forum in Boston on the afternoon and evening of September 16, 2010. A number of speakers reported on progress and recommendations from work groups within the Lucian Leape Institute. It was clear from listening to these reports that FOCUS is now and will be providing a vital research/interventional force to the movement to make medical care safer.

As a result of attendance at the Lucian Leape Forum, FOCUS has secured Paul O’Neill as the keynote speaker for the SCA Annual Meeting, in Savannah, Georgia, on May 2, 2011. Mr. O’Neill will speak on “Leadership in High Reliability Organizations: Methods to Reduce Human Error.” This keynote address will dovetail with the FOCUS session, held from 3:30 pm - 5:15 pm on May 2, 2011, where Mr. O’Neill will again speak on the panel to answer questions and provide discussion regarding FOCUS data and future programs.

Paul O’Neill has had an important career in private industry as well as public service. Mr. O’Neill served as the 72nd Secretary of the Treasury under George W. Bush (first term). Prior to this service, he was CEO of Alcoa Corporation and the Rand Corporation. His experience from these leadership positions will form the basis for his address to the SCA and his participation in FOCUS. We hope as many members as possible will attend his address and believe hearing him speak is itself a reason to come to Savannah for the Annual Meeting.

Earl Wynands Lecture Gift Announced

By Joyce A. Wahr, MD
Board Chair, SCA Foundation

The Canadian Anesthesiologists’ Society (CAS) CVT Section, like the SCAF, has an Earl Wynands Fund. The CVT section has decided to use these funds to support the SCA Earl Wynands Lecture, starting with the 2011 lecture.

This collaboration has been in the discussion stages since the inception of the SCA Foundation. Jamie Ramsay, MD has been working to make this a reality and with the help of Peter Slinger, MD, we have finalized the details to have the Canadian members of the SCA (and CAS) involved in honoring Earl Wynands and his significant contributions to cardiac anesthesiology. Dr. Wynands dedicated his career to furthering the advancement of knowledge and education in cardiac anesthesiology. He was a beloved mentor and teacher as well as an international leader. He served as President of the both the Society of Cardiovascular Anesthesiologists and the Canadian Anesthesiologists Society.

The 2011 Earl Wynands Lecture will be held on Sunday, May 1, 2011 from 8:00 am – 9:00 am at the SCA Annual Meeting. The topic, “Is it Possible to Create a New Heart” will be presented by Doris Taylor, PhD. Dr. Taylor is the Director of the Center for Cardiovascular Repair at the University of Minnesota Academic Health Center. Doris Taylor gained international recognition by developing a process called whole-organ decellularization and creating a beating heart in the laboratory.

The Canadian Anesthesiologists’ Society (CAS) CVT Section, like the SCAF, has an Earl Wynands Fund. The CVT section has decided to use these funds to support the SCA Earl Wynands Lecture, starting with the 2011 lecture.
The National Board of Echocardiography announces the 2011 administration of the

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The National Board of Echocardiography announces the 2011 administration of the

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