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9008 Copenhaver Drive, Ste. M
Potomac, MD 20854 USA
Tel:+1.301.279.2005
Fax: +1.240.465.0692
www.CongenitalCardiologyToday.com

COMPLEX CONGENITAL HEART DISEASE: A 3T CMR PERSPECTIVE

By Marc D. Tischler, MD; George Gentchos, MD; Gretchen White, ANCC

Introduction

Echocardiography has traditionally been the procedure of choice for following patients with CCHD. However, echocardiographic studies can be hampered by poor acoustic windows due to pectus deformity, body habitus, large lung volumes or other anatomic limitations.[1] Additionally, accurate delineation of surgical conduits can be difficult using echocardiography.

The evaluation of patients with known or suspected congenital heart disease (CHD) is a well established application of CMR[2]. The strength of CMR lies in its ability to assess ventricular volumes and mass, flow mapping techniques to measure regurgitant flow and shunt flow (QP/QS), and MR angiography to examine surgical conduits and pathology involving the aorta. While most of the published work has been done using 1.5T magnets, 3T magnets are now coming into more widespread clinical use. We report our initial experience with 3T imaging in patients with CCHD.

CASE #1:

A 56 year old man was admitted to the hospital with atrial flutter and a rapid ventricular response. A transthoracic echocardiography revealed normal atrial size, mild right ventricular dilation and a dilated coronary sinus. He was referred for cardiac MRI to assess right ventricular function and size and to assess the atrial septum and pulmonary venous return.

> ***"Echocardiography has traditionally been the procedure of choice for following patients with CCHD. However, echocardiographic studies can be hampered by poor acoustic windows due to pectus deformity, body habitus, large lung volumes or other anatomic limitations.[1]"***

Magnetic resonance images were acquired using a 3T scanner (Philips, Intera Achieva). Turbo spin echo imaging (TE - 25ms, TR - 2000ms (2 beats), FOV - 34cm, matrix - voxels 1.33 x 1.76) revealed a persistent left-sided superior vena cava (Figure 1) with a dilated coronary sinus (Figure 2). Balanced FFE (TE -

Continued on Page 3

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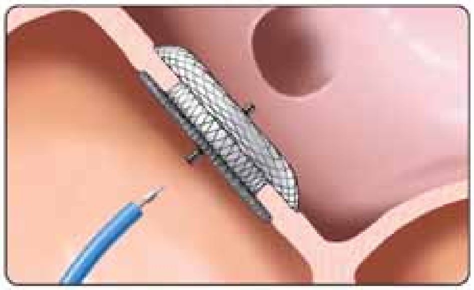

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Article continued from Page 1 - Complex Congenital Heart Disease: A 3T CMR Perspective

Figure 1. Turbo-spin echo revealing left sided SVC.

Figure 2. Turbo-spin echo revealing dilated coronary sinus.

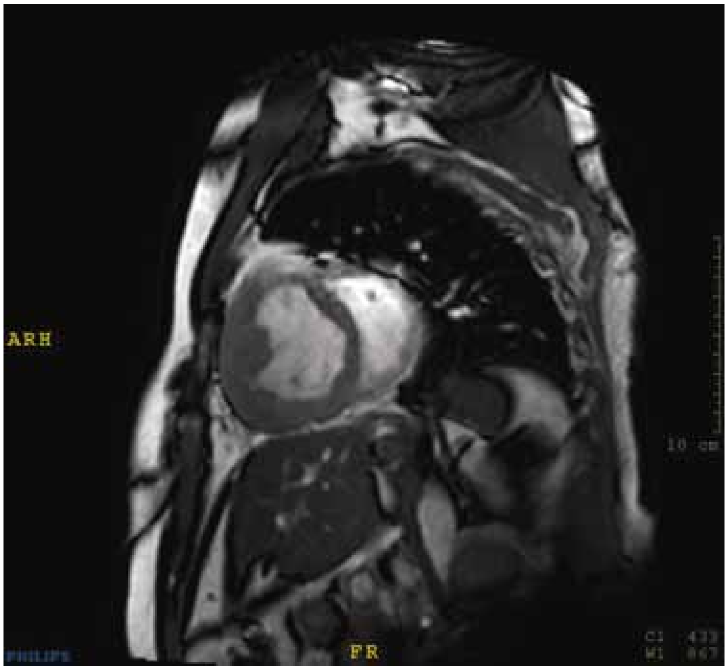

Figure 3. Balanced TFE demonstrating septal carving from RV to LV.

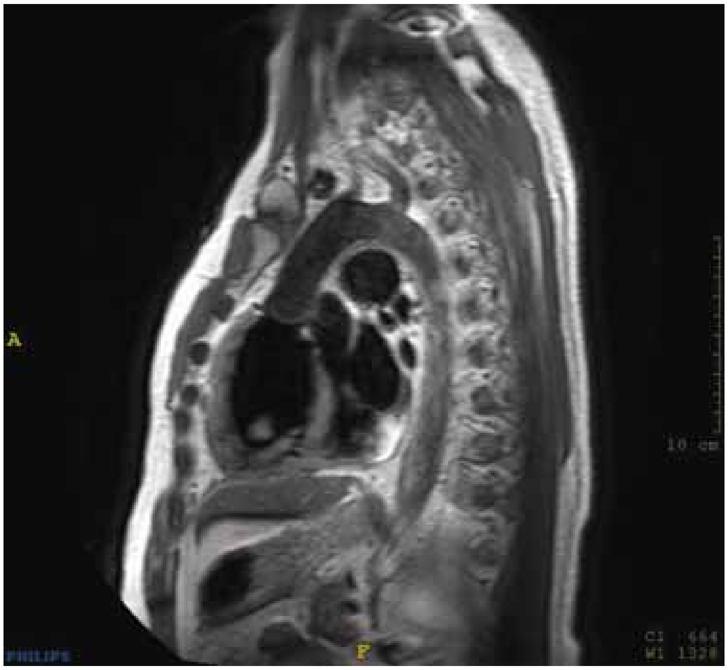

Figure 4. Turbo-spin echo revealing aorta arising from RV.

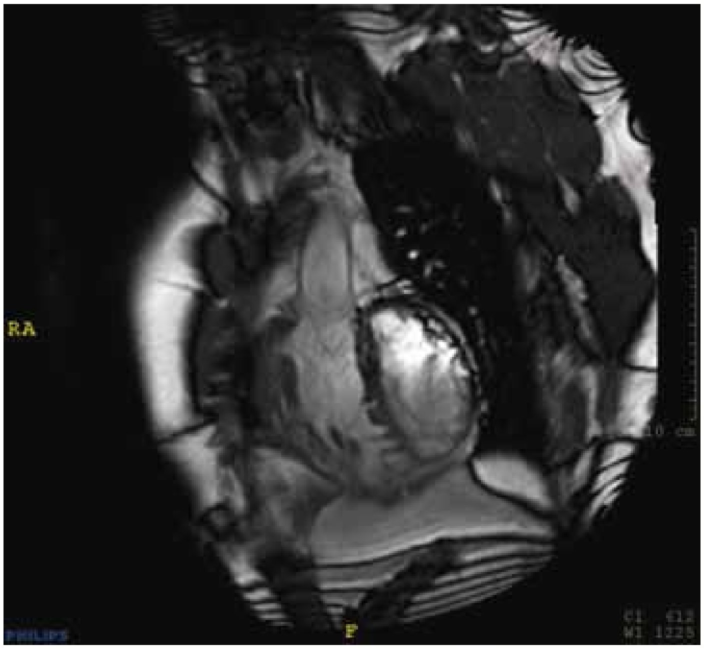

Figure 5. Balanced TFE revealing aorta arising from RV.

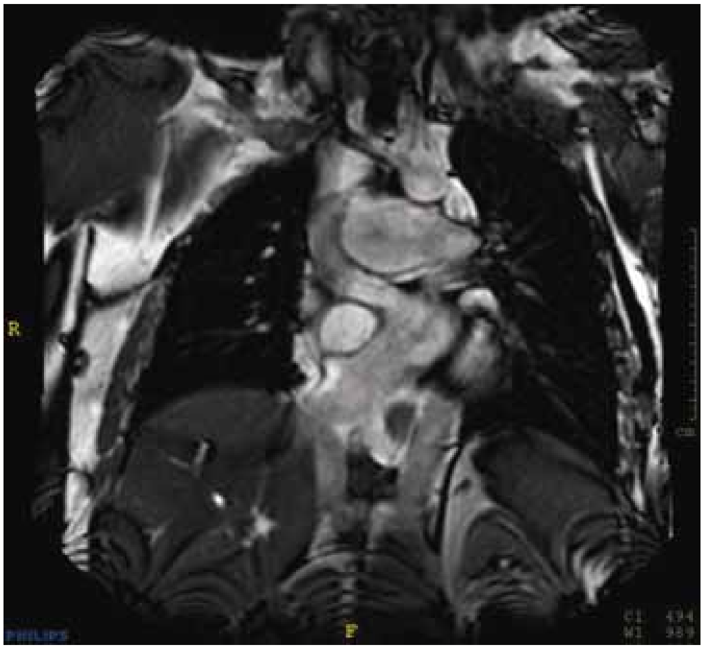

Figure 6. Balanced TFE revealing systemic venous return to the left atrium.

1.73ms, TR - 3.5ms, FLIP angle - 45, FOV - 34) imaging revealed a small jet of left-to-right flow through the interatrial septum at the level of the superior vena cava consistent with a small venosus type atrial septal defect. Velocity flow mapping in the right and left ventricular outflow tracts revealed a Qp/Qs of 1.2:1. All 4 pulmonary veins were identified and emptied appropriately into the left atrium.

CASE #2:

A 35 year old male with a history of cyanosis and transposition of the great arteries, had a Rashkind balloon septostomy performed shortly after birth. At age 9 months, he underwent banding of his pulmonary artery. At the age of 26 months, a Mustard atrial baffle, ventricular septal defect patch, and pulmonary artery band removal were performed. Recently, he was noted to have atrial flutter with a ventricular rate of 220-240 beats per minute. By holter monitor, he was noted to have bradycardia as low as 30 b.p.m. without symptoms. He was referred for cardiac MRI for anatomic evaluation.

CMR imaging revealed preserved biventricular function. There was no residual ventricular septal defect. The right (systemic) ventricle carved significantly into the left ventricle in systole (Figure 3) and was demonstrated giving origin to the aorta (Figures 4,5). The systemic venous return to the left atrium was well demonstrated (Figure 6) as was the pulmonary venous return baffled to the right atrium (Figure 7).

CASE #3:

A 42 year old woman with tricuspid atresia, a large subaortic VSD and failed pulmonary artery banding at the age of 3 was referred for CMR to assess the pulmonary vasculature. CMR revealed a large ventricular septal defect with a rudimentary right ventricle (Figures 8,9). There was fibromuscular tricuspid atresia (Figure 10) with absent antegrade flow across the tricuspid valve into the rudimentary right ventricle. There was a large secundum-type atrial septal defect with mild-to-moderate left atrial enlargement and mild right atrial dilation. Right ventricular outflow was through a pulmonary valve followed by a pulmonary band. There was accelerated flow across the band with peak velocity of 2.3 mm/s. Distal to the pulmonary band, the main pulmonary artery was severely dilated measuring 38 mm in cross-sectional diameter. The right and left pulmonary arteries were also dilated with the left pulmonary artery measuring

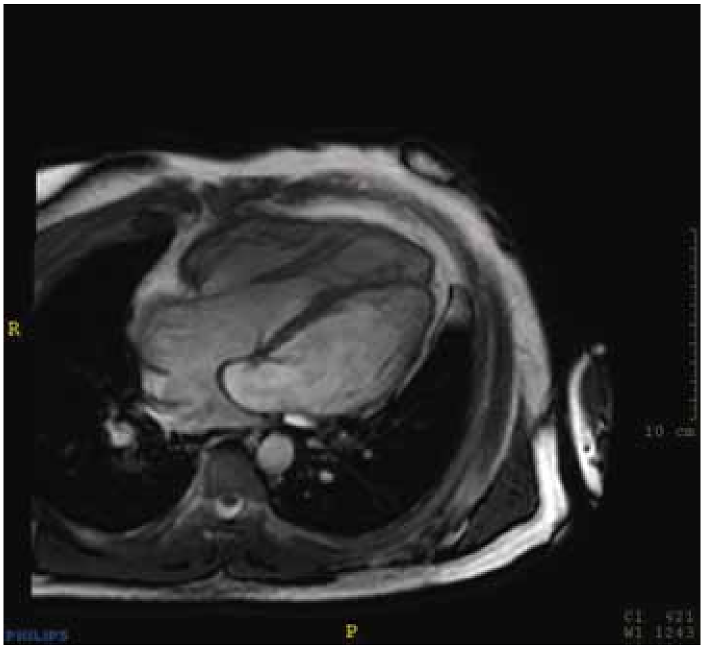

Figure 7. Balanced TFE revealing pulmonary venous return to the right atrium.

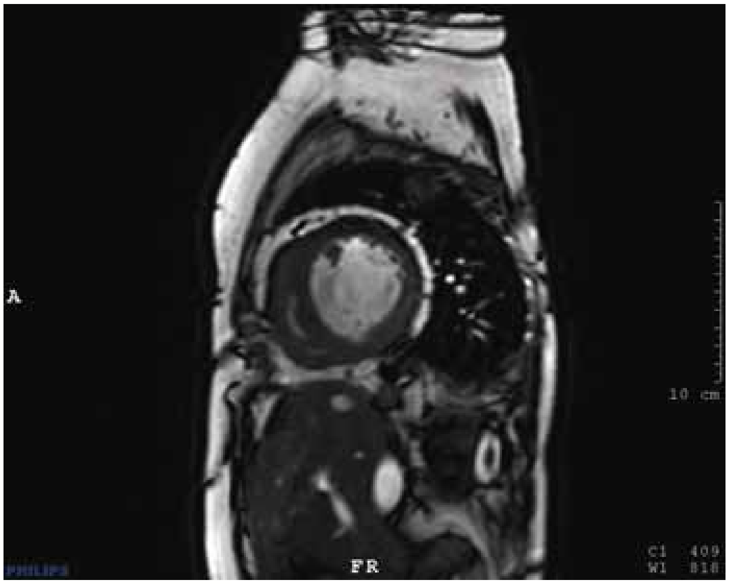

Figure 8. Balanced TFE revealing rudimentary RV.

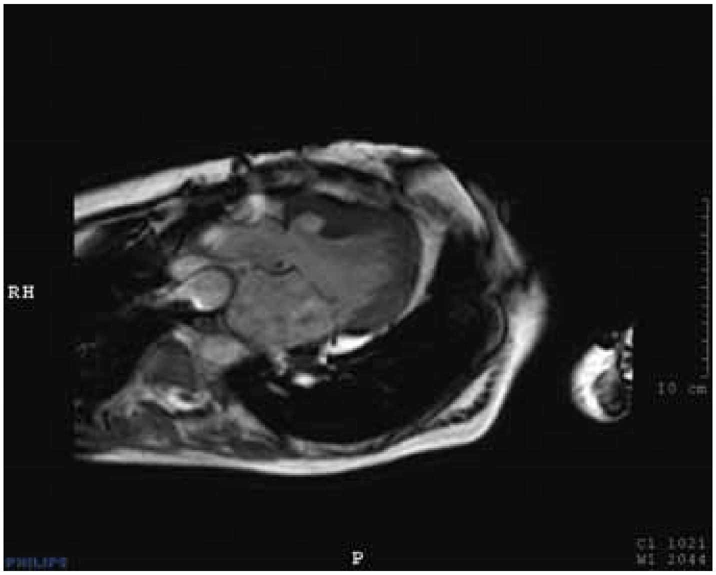

Figure 9. Balanced TFE revealing large VSD.

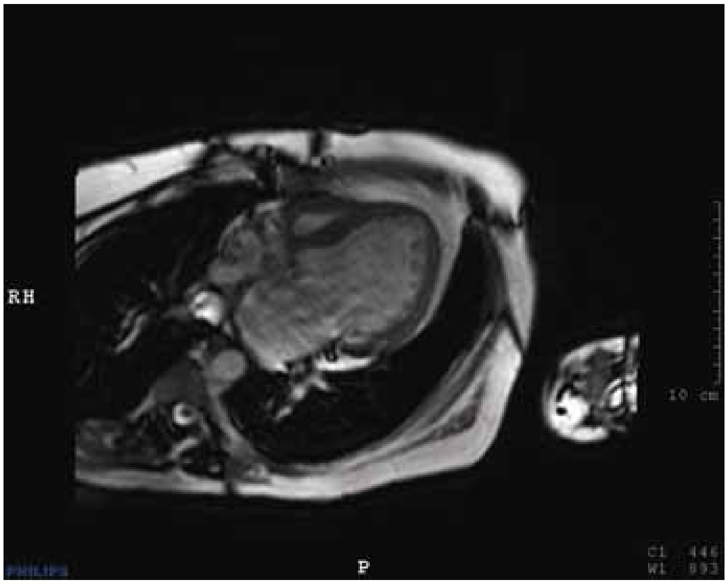

Figure 10. Balanced TFE revealing fibromuscular tricuspid atresia.

Figure 11. Turbo-spin echo demonstrating severe RV dilation.

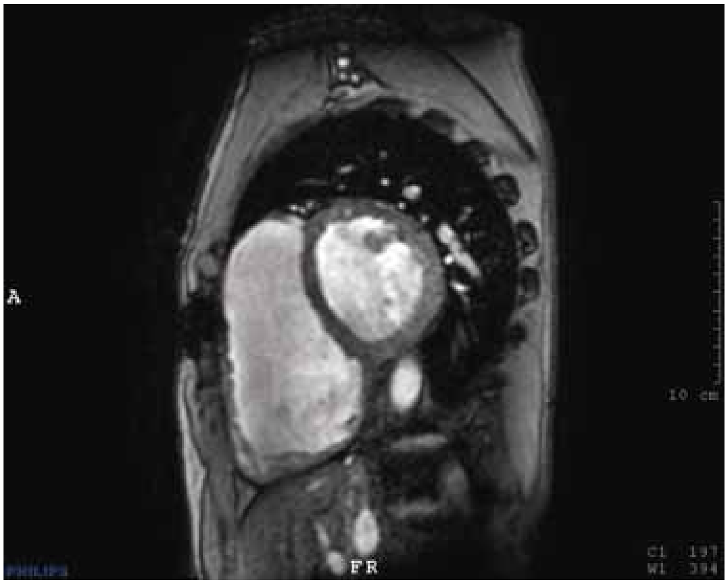

Figure 12. Balanced TFE demonstrating aneurysmal dilation of the RV free wall. There was profound dyskinesis on the cine sequence

30 mm and the right pulmonary artery measuring 26 mm.

CASE #4:

A 43 year old man with repaired Tetrology of Fallow was referred for CMR to assess his right ventricular function. CMR revealed severe right ventricular dilation (Figure 11) and severely-diminished right ventricular systolic function. The right ventricular free wall was severely thinned and dyskinetic, consistent with aneurysmal dilation (Figure 12). The mouth of the aneurysm measured approximately 10 cm. The measured RVEF was 11%. There was free PR. The patient was referred to the Mayo Clinic for RV volume reduction surgery, pulmonic valve replacement and ICD implantation.

CASE #5:

A 29 year old woman with an SLL transposition with dextrocardia, valvar pulmonic stenosis with a peak gradient of 70-80 mm Hg, a nonrestrictive subpulmonic ventricular septal defect, and a persistent left superior vena cava was referred for surgical correction due to chronic cyanosis, dyspnea, and dizziness. In 2000, she underwent an anatomic repair which involved pericardial baffling of the venous inflow towards the left-sided tricuspid valve and included unroofing of the coronary sinus which carried the left vena cava. The left ventricle was diverted through the ventricular septal defect to the aorta using a Dacron patch and the right ventricle was diverted through a pulmonary artery homograft for RV to PA continuity. The patient did well post operatively. Subsequent transthoracic echocardiograms were difficult due to poor acoustic windows. The patient was subsequently referred for cardiac MRI to better elucidate the post operative cardiac anatomy.

The patient was found to have profound dextrocardia (Figure 13) with a massively dilated coronary sinus (Figure 14). The RV to PA conduit was well visualized and widely patent (Figure 15). The aorta arose from the LV and was free of significant stenosis or regurgitation (Figure 16).

Discussion

This small series describes an initial single center experience using 3T CMR imaging in the assessment of patients with either known or suspected CHD in whom 2-dimensional and Doppler echocardiographic images were unable to clarify the anatomy. In each case, CMR identified the congenital defect that was not apparent with routine echocardiography and in some cases revealed additional findings that were not suspected by the clinical team.

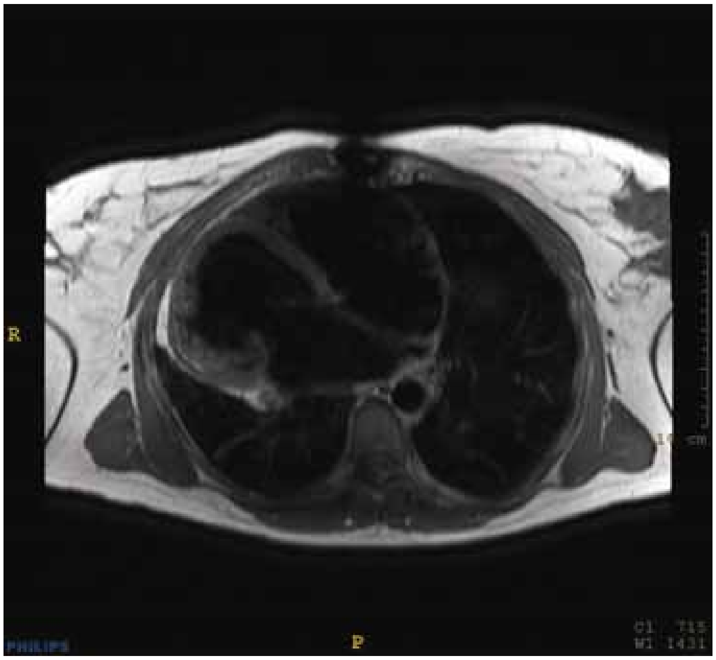

Figure 13. Turbo-spin echo demonstrating profound dextrocardia.

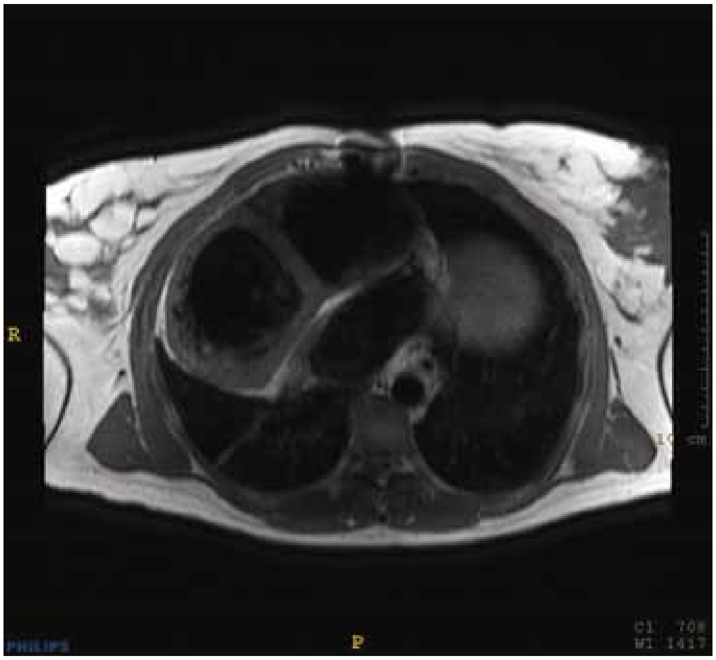

Figure 14. Turbo-spin echo demonstating massively dilated coronary sinus.

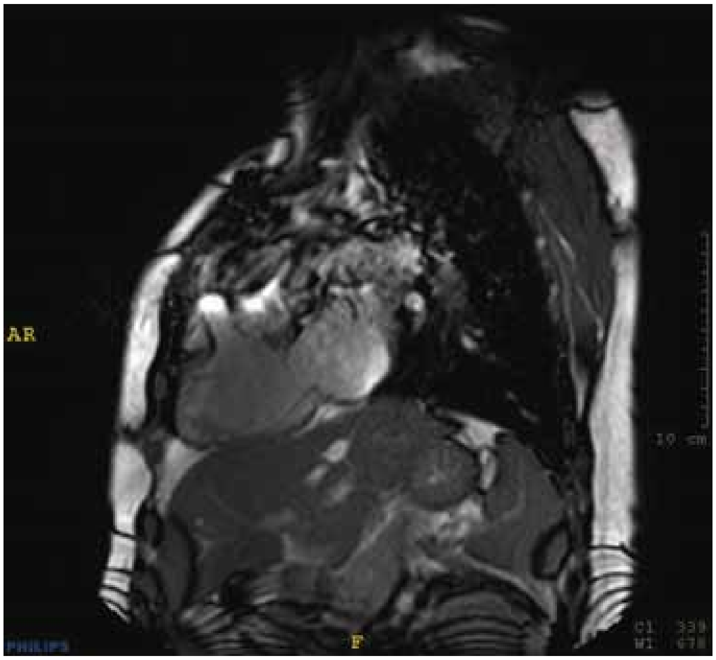

Figure 15. Balanced TFE demonstrating RV to PA conduit.

Figure 16. Balanced TFE demonstrating aorta arising from the LV.

Despite the improved SNR, early experiences with 3T imaging have been challenging largely due to difficulties with contrast on balanced sequences, gating, RF field nonuniformity and various artifacts. With time and experience, these difficulties are slowly being overcome with the dividend of high SNR, high contrast and relatively brief breath holds. In the near future, the promise of real time imaging will likely be realized.

> ***"Despite the improved SNR, early experiences with 3T imaging have been challenging largely due to difficulties with contrast on balanced sequences, gating, RF field nonuniformity and various artifacts. With time and experience, these difficulties are slowly being overcome with the dividend of high SNR, high contrast and relatively brief breath holds."***

Our patients had non-diagnostic echocardiograms. 3T CMR clarified the anatomy in each case. The number of adult patients with CCHD is anticipated to rise precipitously in the ensuing decades as surgical interventions improve and more patients survive into adulthood. In the future, 3T CMR may enhance our ability to follow complex congenital defects and repairs reliably in a longitudinal fashion.

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Corresponding Author:
Marc D. Tischler, MD
Cardiology Unit, McClure 1
Fletcher Allen Health Care
Burlington, VT 05401 USA
Tel: +1.802.656.3734
Fax: +1. 802.656.3637

Marc.Tischler@vtmednet.org

George Gentchos, MD
Department of Radiology
Fletcher Allen Health Care

Gretchen White, ARRT, MR
Fletcher Allen Health Care

Caring for a Child with Congenital Heart Disease: *Practical Tools and Resources*

By Debbie Hilton Kamm

This is second in the series of two articles by Debbie Hilton Kamm, the co-founder and president of California Heart Connection, a nonprofit support network for those with heart defects. She is also the creator of the HLHS Information Page (www.HLHSinfo.org), a site for parents expecting a child with Hypoplastic Left Heart Syndrome (HLHS). The first article, "Receiving a Child's Diagnosis of Complex CHD: Parents' Perspectives and Communication Tools," appeared in December 2005. She has a 5-year-old son with HLHS and Total Anomalous Pulmonary Vein Return (TAPVR), who underwent the 3-stage surgeries and vein repair. She has a Master of Business Administration and a background in health care marketing.

Introduction

Parents of children with complex congenital heart disease (CHD) have the difficult task of understanding their child's medical condition and learning how best to care for them. Unfortunately, many parents of children with CHD have significant knowledge gaps[1] that may impact care, possibly due to a lack of understanding or remembering important instructions. Some hospitals provide excellent detailed care manuals upon discharge from surgery to help families care for a child post operatively.[2] These types of materials have broader applications and may be beneficial for children who have not been hospitalized, or have not needed surgery. Any parent responsible for administering medications, identifying the signs and symptoms of congestive heart failure, coping with feeding and developmental issues or other heart-related concerns can benefit by receiving clear written instructions and comprehensive resources. Physicians who provide this information can help decrease parental anxiety and help children receive the best care possible.

This article presents practical tools physicians can use to help parents during two critical timeframes: preparing for a child's heart surgery, and caring for a child at home. It is based upon hundreds of interactions with parents through:

- California Heart Connection (www.caheartconnection.org;
- The HLHS Information Page (www.HLHSinfo.org);
- online support forums
- and personal experience caring for a now 5-year-old child with Hypoplastic Left Heart Syndrome (HLHS).

Handouts and forms referenced throughout the article have been created to improve communication with parents regarding the care of their child and can be downloaded for free from www.caheartconnection.org.

Prior to surgery

Preparing A Child For Surgery. (Handout) Preparing for surgery is an emotional and anxious time for parents and children. Providing simple instructions for what to bring to the hospital and suggestions for children of different ages can make this time much easier. Tips such as making sure young children are used to eating clear liquids and foods well before surgery can help with the pre- and post-op feeding requirements. Toddlers can be taught simple sign language prior to hospitalization to help them communicate their needs and not feel isolated when recovering from surgery. This handout provides valuable tips for parents and outlines services provided by social workers and child life specialists in preparing a child for surgery.

> ***"This should be required reading for all physicians (let alone parents).… A well-informed parent makes our jobs easier. Honest discussions covering all issues only serve to prepare parents and avoid surprises or misunderstandings."***
> *~Edward L. Bove, MD*
> *Head, Section of Cardiac Surgery*
> *Director, Pediatric Cardiac Surgery*
> *University of Michigan*

Medical Specialties. (Form) Many families are confused between the roles of the many medical professionals they may encounter. Providing a handout with the titles and roles of each medical personnel and appropriate questions for each will help parents get answers more quickly.

Support. Connecting with other parents who have children with CHD can provide much needed support and information. Physicians may create their own patient contact list, or refer families to an established support network. Physicians are encouraged to contact support organizations to determine if the information and support provided is appropriate for their patients.

The following support organizations offer information, parent-matching and online support groups in addition to the other listed services:

- California Heart Connection – events, downloadable handouts and forms. www.caheartconnection.org
- Little Hearts, Inc. – newsletter, stories, large annual picnic. www.littlehearts.org
- TCHIN – portrait gallery, list of local support groups. www.tchin.org

At Home

Caring for a child with congenital heart disease can be daunting for parents, whether or not the child requires surgery. Parents are sometimes told to "Treat the child normally." However, they are expected to know the signs of congestive heart failure, watch for developmental delays, and administer multiple medications – far from the norm for most parents. Parents need clear, written information on medications, signs to watch for and available resources to which they can refer as needed.

Home Monitoring Tools

Pulse oximeters and scales. Some hospitals have found improved survival of infants post Norwood when parents were given a pulse oximeter and scale to monitor the child's oxygen saturation levels and weight daily.[3] The home use of pulse oximeters can alleviate the parents' anxiety about having to identify cyanosis, especially in cases where children may not exhibit obvious signs of this condition. The lower cost of handheld units is making pulse oximeters more accessible to families. Some insurance companies will pay for their use, or some families may choose to invest in one themselves if their insurance will not cover the cost. The home use of pulse oximeters for children with complex CHD can help reduce parents' stress levels and help them to identify when to get prompt medical attention for their child.

Sound and Motion Monitors. A major source of stress for parents is lack of sleep, often due to worrying about the child throughout the night. Sound and motion monitors sound an alarm if no motion is detected for a certain period of time. While there is a slight risk of occasional false alarms, they may be reduced or eliminated completely by placing the sensor on top of a plywood board under the mattress. Most parents are more than willing to accept the possibility of a few false alarms to be assured of their child's safety throughout the night. Getting more sound sleep is essential in reducing anxiety and stress levels, and helping parents care for their child more effectively.

Emergency Information

When to Call The Doctor. (Form) Parents are often confused as to what signs and symptoms warrant a call to the doctor or to 911. This form allows physicians to give clear written instructions to the parents to have on hand for future reference.

Emergency Information Sheet. (Form) This form can be filled out and kept at home, in the car, at child care, school, etc. to give to medical personnel in case of an emergency.

Medic Alert bracelets. (www.medicalert.org) These bracelets can be invaluable in relaying emergency information to medical personnel if an Emergency Information Sheet is not readily available, the parents are not present, or if they do not accurately recall important information during a crisis.

Medical Information

Medication Summary. (Form) Parents are often confused about the functions and possible side effects of their child's medication.[1] They may not know what to do if a dose is missed or regurgitated, or when medications should be discontinued. This form lists common medications used for congenital heart patients and has space for any special instructions such as over-the-counter medications that should be avoided, and circumstances under which medications should be discontinued (such as aspirin during fever or prior to surgeries, where appropriate).

Dental Health. Parents may not realize the importance of good dental health for their child with CHD or they may be reluctant to subject the child to additional procedures such as teeth cleaning. However, good dental health should be emphasized for children with CHD. Poor dental status has been found to occur frequently in those with CHD and daily activities such as eating, chewing and brushing teeth represent a major risk.[4] Length of time on digoxin has been found to be significantly correlated with the prevalence of dental caries.[5] In addition, parents' lack of knowledge of antibiotic prophylaxis and lack of compliance can put their children at risk of infective endocarditis.[1] The American Academy of Pediatric Dentists (AADP) suggests: cleaning the baby's gums with a soft infant toothbrush and water starting at birth; the first dental visit by the first birthday; and a dental check-up at least twice a year for most children. Rinsing or brushing a child's teeth after administering oral medications may also promote better dental health. Parents should be made aware of these suggestions due to the increased risk of caries and infective endocarditis in the CHD population. Good dental hygiene may also prevent future dental procedures that may require anesthesia, for which CHD can be a complicating factor.

Follow-up Care

Follow-up Care. (Form) Remembering all of the types of follow-up needed can be difficult for parents as they become consumed with the child's daily care. This form allows parents to have a written timeline of future appointments, testing, lab work and seasonal shots such as the flu and RSV vaccines. It can be used as a guide to answer questions pertaining to follow-up care and as a reminder of future procedures which may help increase compliance by parents.

> ***"California Heart Connection has compiled an invaluable list of resources to help parents who care for children with congenital heart disease. This information provides answers to the inevitable questions that arise once families have left the hospital or office. We make certain that each new family receives a copy of the Resource Guide."***
>
> ***~Michael Rebolledo, MD***
> ***Director of Echocardiography***
> ***Children's Hospital of Orange County***

Feeding and Developmental Concerns

Infant Feeding Issues. Many parents feel great frustration when their baby or child has difficulty eating; they don't understand the connection between feeding problems and the heart condition. They may inadvertently exhaust the child during feedings or underestimate the importance of appropriate caloric intake. Well-meaning family and friends often tell parents, "The baby will eat when he's hungry." Parents should be aware of the connection between feeding issues and CHD and be guided to appropriate resources for help. Feeding specialists available through early intervention programs can help determine the cause of the feeding issue and help the parents with specific techniques to help with feeding. Occupational therapists can help with oral stimulation, oral motor skills and bottle-feeding.[2]

Developmental Concerns. Gross and fine motor delays as well as global delays have been found in children after heart surgery.[6] Infants with CHD have also been found to have a significant degree of hypotonia and retardation of motor development prior to any surgical intervention.[7] Children with CHD often qualify for free developmental evaluations by Early Intervention programs which can help children catch up to age-appropriate milestones. Services are provided regardless of the parents' insurance or income and can often be provided at home, reducing the exposure to contagious illnesses. A listing by state of these free resources is available at: www.nichcy.org/states.htm. School-aged children can often obtain services or accommodations through an Individualized Education Program (I.E.P.) or 504 plan through the school district. See the IEP Guide at www.ed.gov.

Physical Activity Level

Physical Activity. (Form) Physicians should be aware of potential barriers to physical activity that those with CHD face and address the concerns with parents. One study found that almost half of parents studied did not understand the impact of their child's CHD on exercise capacity.[1] Some teachers or coaches may not allow the child to participate in any physical activities, while others may consider the child "lazy" and disregard information on physical limitations. Providing clear written instructions for parents and school officials can help children with CHD participate in appropriate activities, creating health benefits and promoting normal social activities with their peers.

Helpful Products. Physicians can make parents aware of helpful tools that may encourage safe participation in certain activities. Wetsuits for babies and children often help them stay warmer in the water and encourage more frequent swimming activity. Shopping cart covers can reduce exposure to germs, potentially decreasing the risk of illnesses. Their use in grocery stores and restaurant high chairs can help make parents feel more comfortable taking the baby or toddler out in public. The use of chest protectors for use in baseball is controversial, but may be beneficial. Physicians should be aware of products which may be beneficial for certain patients.

Conclusion

Parents face the sometimes daunting task of caring for their child with complex CHD. Physicians can help parents understand and retain information while reducing parental anxiety by the use of the tools mentioned above. Making parents aware of the many resources available can reduce their emotional burden and help them provide the best care possible for their child.

The following handouts and forms can be downloaded for free from the California Heart Connection web site at www.caheartconnection.org.

- Preparing A Child For Surgery – handout with tips and suggestions for preparing for a hospital stay.
- Medical Specialties Form – a list and description of different medical specialties with space to provide contact information for each.
- When to Call the Doctor Form – form to be filled out by physician which delineates which symptoms warrant a call to the doctor, or a trip to the ER.
- Emergency Information Sheet – information every parent should have available in case of emergency.
- Medication Summary Form - benefits and possible side effects of common cardiac medications, fill-in area for dosage information and special instructions such as what to do if a dose is missed.
- Follow-up Care Form – timeline for follow-up visits, vaccinations, therapies, etc.
- Physical Activity Form – clarifies appropriate activities for the child with CHD.
- Resource Guide – handout for parents with information on support, medical information, helpful products, Early Intervention services, insurance/financial information, and more.

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Debbie Hilton Kamm
President & Co-Founder
California Heart Connection
PO Box 50063
Irvine, CA 92619 USA
Tel: +1.949.653.6421

debhilton@aol.com

PEDIATRIC CARDIAC INTENSIVE CARE SOCIETY (PCICS) 2005 DECEMBER 7-11, 2005 -THE RITZ-CARLTON RESORT, SOUTH BEACH, MIAMI, FLORIDA

By Ron Bronicki, MD; Anthony E. Chang, MD

The Pediatric Cardiac Intensive Care Society's first meeting, with over 80 distinguished speakers, was attended by close to 500 attendees from over 20 countries with representation from 10 subspecialties, many of the attendees representing leadership positions from international pediatric heart centers. The meeting, once again at the "American Riviera', provided a warm and sunny venue for all those who attended.

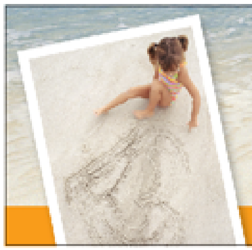
The symposium was preceded by a special one-day pediatric cardiac anesthesia conference, the first gathering for the nascent Congenital Cardiac Anesthesia Society (CCAS). The strong academic program, led by Dr. Dean Andropoulos with support from Dr. Francis McGowen, covered a myriad of special topics such as neonatal myocardial preservation, mechanical support, the Norwood vs Sano modication, and uses of drugs such as aprotinin and phenoxybenzamine. The lively pro-con debates covered practical clinical issues such as ultrasound guidance for vascular access and non-cardiac surgery strategies in single ventricle patients. There was much discussion on MRI findings in hypoplastic left heart syndrome and relevance to intraoperative cerebral oximetric monitoring. The day concluded with a panel discussion on the institutional variations of cardiac anesthesia practices. These sessions provided an essential communication venue for cardiac anesthesiologists with their colleagues in cardiology, intensive care, cardiac surgery, and nursing. The concurrent neonatal cardiac workshop was highlighted by an opening session on cardiac anatomy by the venerable Dr. Richard van Praagh. Other sessions covered echocardiography, pathophysiology, and cardiac surgery.

The opening day of the PCICS 2005 symposium focused on cardiac issues in neonatal intensive care. These sessions, moderated by neonatologist Dr. Ann Stark, marked the first time that neonatologists and a multidisciplinary cast of speakers focused on this area at an academic meeting. The opening session on management of the low birth weight neonate with congenital heart disease focused on recent encouraging survival data. The following session on hypoplastic left heart syndrome generated much audience interest as well. The faculty covered practical issues such as enteral feeding and arrhythmia managements and updates on ELSO registry and shock and pharmacological support as well. To balance the cardiac issues, there were presentations on neurological and pulmonary issues in neonates with heart disease. The open forum clearly indicated the increasing need for continuing communication among all caretakers of neonates with heart disease and a dire need for more academic exchanges and meetings.

Panel members - Gil Wernovsky, MD, Director of Program Development, Cardiac Center, Children's Hospital of Philadelphia; and Jane M. Simsic, MD, Co-Director, Cardiac Intensive Care Unit, Sibley Heart Center

> ***"The next PCICS meetings will take place in Europe in May of 2007, headed by Drs. Duncan Macrae and Alain Fraisse with the European contingency...."***

The second day of the symposium was entirely dedicated to the other end of the age spectrum, cardiac intensive care for the adult with congenital heart disease. There are now an estimated one million adults with congenital heart disease and, yet, there is virtually no literature on the intensive care for adults with congenital heart disease. As in the first day program, this day also marked the first time that such a special emphasis was placed on a special patient population in the cardiac intensive care setting. The fast-paced program was led by Dr. Michael Gatzoulis and supported by Drs. Andrew Redington and Michael Lanzberg. Topics covered included the adult with failing systemic right ventricle, adults with pulmonary hypertension, assist devices in the adult



PCICS Attendees.

cardiac intensive care unit, and an update on myocardial infarction. In addition, the adult cardiac intensive care perspective by Dr. Frank Smart was particularly enlightening. The clinical discussions were balanced by a patient perspective given by the president of the Adult Congenital Heart Association (and patient), Amy Verstappen. The day-long program concluded with a session on the organizational aspects of intensive care for the adult with congenital heart disease.

Special topics in pediatric cardiac intensive care on the third day of PCICS 2005 ushered in the upcoming academic generation of pediatric cardiac intensivists. The presentations were 10 minute in duration and followed by a brief question and answer period. The topics ranged from minimizing lung injury in ventilated patients with heart disease to others such as evidence for the role of steroids in the cardiac intensive care unit, anticoagulation strategies in the Fontan patients, and database benchmarking and outcomes analysis. There were also 25 selected abstracts that were presented both in oral and poster format. On the same day, the pediatric cardiac intensive care nursing conference also took place with discussion topics such as pulmonary hypertension and postoperative care of the Sano vs classic Norwood operations. The round table discussion on whether parents should be present during procedures and resuscitations generated a lively debate.

The five-day symposium concluded on the last day with a special two-hour consensus session on various aspects of diagnosis and management of myocarditis led by Dr. Desmond Bohn. Special points of discussion included need for myocardial biopsy, importance of left atrial decompression, and use of immunosuppression. The presentations and discussions will be published as a special supplement of Pediatric Critical Care Medicine.

The next PCICS meetings will take place in Europe in May of 2007, headed by Drs. Duncan Macrae and Alain Fraisse with the European contingency, and back in Miami in December of 2008. The authors would like to express their gratitude to Ms. Maureen Smith and her outstanding meeting planning team at CBCBiomed and the officers of the society, Drs. Paul Checchia, Therese Giglia, and Tim Feltes, for their extraordinary efforts.

~CCT~

Corresponding Author:
Anthony C. Chang, MD, MBA
Director, Cardiac Intensive Care Service
Director, Heart Institute
Children's Hospital of Orange County
455 S. Main St.
Orange, CA 92868 USA

achang@CHOC.org

Ronald A. Bronicki, MD
Associate Director, Cardiac Intensive Care Service
Children's Hospital of Orange County
455 S. Main St.
Orange, CA 92868 USA

"SPECIALTY REVIEW IN PEDIATRIC CARDIOLOGY" COURSE WILL CELEBRATE ITS 30TH ANNIVERSARY THIS JUNE

By Maria Serratto, MD, Course Founder and Director

With the 2006 offering of "Specialty Review in Pediatric Cardiology" on the horizon, I find myself thinking back to its beginnings. Although pediatric cardiology in the 1970's was a rapidly expanding field, with new techniques and widening surgical indications, candidates for the board examination had to rely on repeated and prolonged visits to the medical library to update their knowledge of the subject matter, and refresh their experience gained during their training. What was clearly needed was a preparatory curriculum covering all aspects of the specialty, taught by a distinguished faculty.

The first "Specialty Review in Pediatric Cardiology" was offered in 1976, under the auspices of the Cook County School of Graduate Medicine of Chicago. That year, and for several courses to follow, the program was two days in length and attended by about 30 attendees from throughout the US The course eventually expanded to its current length of four days and is now sponsored by the University of Illinois at Chicago College of Medicine, Department of Pediatrics.

Our course audience has expanded over the years as well, with approximately 100 attendees from the US and abroad participating in the last offering. Continuing advances in our specialty have no doubt contributed to this growth, especially in recent years, as practicing specialists who are already board-certified prepare to meet recertification requirements and practitioners in general strive to remain current in our ever-changing field.

The past thirty years have been an incredible journey, both for me and our dedicated faculty, as we have had the opportunity to come to know hundreds of fine young future specialists and watch them advance in their careers. We are especially proud to count a number of current pediatric cardiology departments heads among our alumni.

Our 30th anniversary course promises to be another great educational experience, with twenty faculty joining me to provide a content-filled four days. Whether you are a past course participant, or considering participating for the first time, we would be honored to have you with us in Chicago this June 26th-29th. Details about the 2006 course are available at: www.conferences.uiuc.edu/pcard06.

~CCT~

Maria Serratto, MD, FACC, FAAP
Professor of Pediatrics-Cardiology
University of Illinois College of Medicine at Chicago
Chief Pediatric Exercise Laboratory
J.H.S. Hospital of Cook County
University of Illinois College of Medicine
Division of Pediatric Cardiology (MC 856)
840 South Wood St.
Chicago, IL 60612-7324 USA
Tel: +1.312.864.356

mserratt@uic.edu

MEDICAL NEWS, PRODUCTS AND INFORMATION

Parents Unite to Fight Childhood Episodes of Sudden Cardiac Arrest - National Parent Heart Watch Network Launched

In January, The Medtronic Foundation announced its founding sponsorship of Parent Heart Watch, a first-of-its-kind national network of families who have lost children to sudden cardiac arrest (SCA) – the sudden, abrupt loss of heart function that takes the lives of approximately 335,000 Americans each year. The Foundation will assist the new group in raising awareness about SCA prevalence in adolescent populations, advocating for cardiac screening, prevention and treatment, and increasing access to automated external defibrillators, or AEDs, which provide brief but powerful electrical stimulation to restore the heart's natural rhythm.

More than 40 families from 30 states attended the inaugural Leadership Symposium this January in Las Vegas in a first step to build a national network of parent champions that can advocate for policy changes across the nation.

"The families of Parent Heart Watch are moving from their tragic losses to action that can protect other children," said Joan Mellor, program manager for the Foundation's HeartRescue program. "Individually they have changed laws, placed hundreds of AEDs in local communities, and conducted screening events for thousands of youth. Bringing together the energy and focus of these passionate families to become one strong voice will protect even more young lives from sudden cardiac arrest." The Medtronic Foundation has long supported the initiation of defibrillation awareness and training programs in communities worldwide.

Parent Heart Watch grew from the friendship of Linette Derminer, Geneva, OH; Sharon Bates, Phoenix, Az; Rachel Moyer, Shawnee on Delaware, PA; and Laura Friend, Dallas, TX, all of whom lost their children, to sudden cardiac arrest resulting from undiagnosed heart problems. Undiagnosed hypertrophic cardiomyopathy, a genetic disease in which the heart muscle thickens abnormally, is a leading cause of SCA among children, many whom are active and seemingly healthy. "Early detection, education, awareness and proper placement of AEDs can reduce that toll" said Derminer. "It is this group's mission to affect change so that we can offer young people a choice of life."

When SCA strikes, the American Heart Association recommends that defibrillation be delivered within five minutes, when chances of survival are best. Placing AEDs in public places, such as stadiums, schools and businesses, and training laypersons to use the devices is a major focus of community efforts across the nation to save more lives. Studies show that survival rates as high as 74% are possible when defibrillation is given within three minutes of collapse.

Parent Heart Watch (www.parentheartwatch.org) is a non-profit state-by-state network of parents dedicated to reduce the often disastrous effect of Sudden Cardiac Arrest in children. It facilitates information-sharing, support networks, and the formulation of nationwide programs that (1) raise awareness of the potential for Sudden Cardiac Arrest in young people, (2) build champions leading the effort in each state, (3) provide tools to empower groups to act locally, and (4) effect public policy changes that save lives.

Medtronic, Inc. (www.medtronic.com), headquartered in Minneapolis, MN USA is a global leader in medical technology. The Medtronic Foundation is committed to helping people live healthy and productive lives. Its grant making is focused in three specific areas: health, education and community.

Philips Ultrasound Will Sponsor Five Pediatric Cardiology Fellows to Attend the 17th ASE Scientific Sessions in Baltimore, June 4-7, 2006

The ASE Pediatric Council Board offers these travel grants as part of an effort to encourage fellows to enter the pediatric cardiovascular imaging field. New fellows entering this field are at an all time low and the hope of the established professionals is to create a mentoring opportunity through ASE Scientific Sessions Pediatric track. To apply for one of the $1500 travel grants please submit your CV, along with a brief personal statement about why you want to attend the ASE Scientific Sessions in Baltimore, plus a letter from both your program director and echo lab director in support of your application. Deadline for submission will be February 24th. Submissions should be sent to: ASE Travel Grant, 1500 Sunday Drive, Suite 102, Raleigh, NC 27607. For more information, please contact Ashley Prather at: aprather@asecho.org.

CPT and HCPCS Medical Codes—Free Searchable Version

A free, searchable on-line database containing medical billing codes has been published by askSam. The medical code database contains CPT codes (Current Procedural Terminology codes) and HCPCS codes (Healthcare Common Procedure Coding System). These codes, maintained by the American Medical Association, provide unique billing IDs for services rendered by physicians and hospitals.

The database is fully searchable by code, description, type or category. It allows administrative staff at hospitals and doctors' offices to quickly locate proper billing codes. There is no charge for access to the information, and no registration is required. The database is available on the web at: www.asksam.com/ebooks/cpt/

Drug-Eluting Stents Can Cause Allergic Reactions That Can Have Serious Consequences

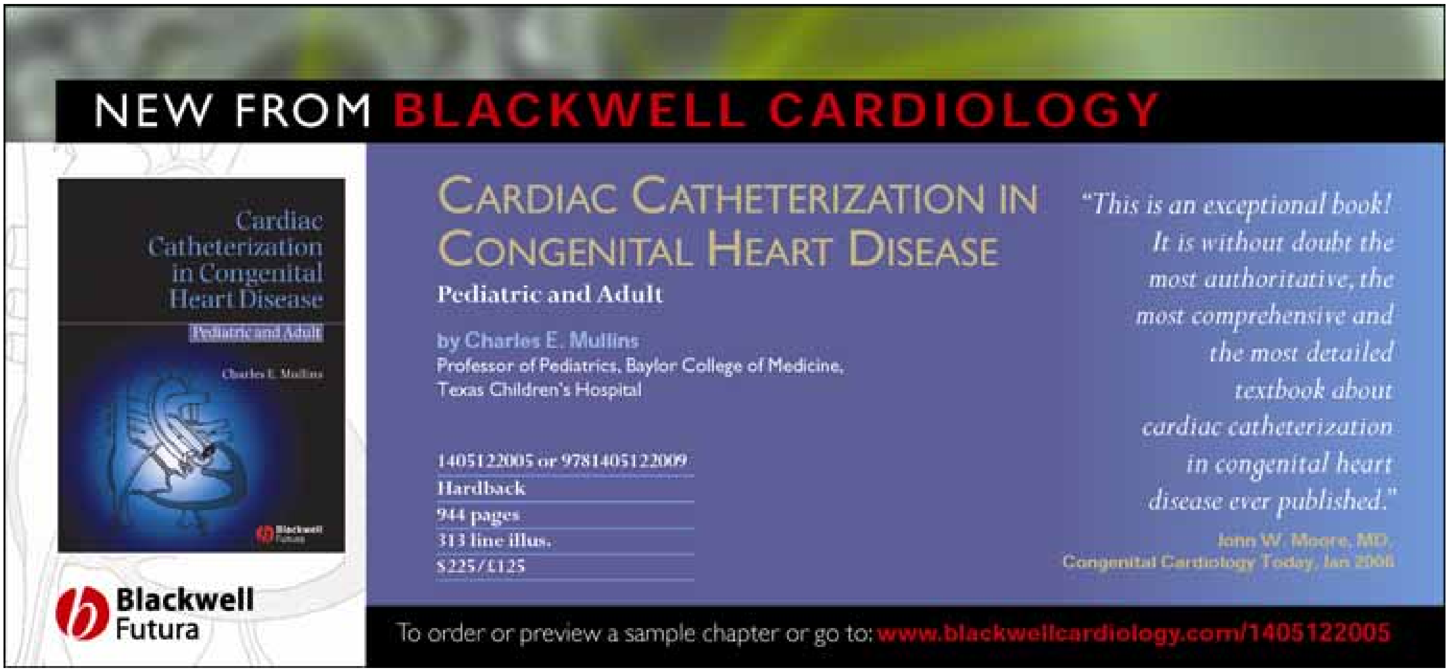
Drug-eluting stents have greatly reduced the risk of repeat blockage of heart arteries, but researchers from Northwestern Memorial Hospital have found that in some patients, the stents can cause allergic reactions that can have serious consequences. They stress that physicians and their patients should be aware of this potential and know the symptoms. The findings were published in the January 3rd issue of the Journal of the American College of Cardiology.

"This paper provides evidence for the first time that instances of allergic reactions, presumably to the polymer in the stent, can occur. In some instances, these events have serious consequences- including stent closure and subsequent death," says one of the study's authors, Charles Bennett, MD, an epidemiologist and oncologist at Northwestern Memorial Hospital and professor of medicine at Northwestern University's Feinberg School of Medicine. Dr. Bennett developed and directs the Research on Adverse Drug/Device Events And Reports (RADAR) Project, which compiles information from reports submitted to the US Food and Drug Administration's (FDA) database as well as reports by drug companies and independent researchers throughout the world. RADAR has previously successfully identified a large number of serious drug reactions associated with 15 commonly used drugs.

For this study, RADAR investigators from 10 centers around the country reviewed 5,783 reports available from April 2003 through December 2004 for hypersensitivity-like reactions associated with drug-eluting stents. From these reports, researchers identified 17 cases of hypersensitivity reactions that were classified as probably or certainly caused the stent, four of which resulted in death. Symptoms included rash, difficulty breathing, hives, itching and fevers. They also concluded that the polymer coating on the stent itself is the most probable cause of hypersensitivity in the majority of cases rather than the medications with which the stent is coated.

"It is important to keep the findings in perspective," said Charles J. Davidson, MD, an author on the paper and medical director of the Cardiac Catheterization Lab at the Bluhm Cardiovascular Institute of Northwestern Memorial Hospital, and professor of Medicine at Northwestern University's Feinberg School of Medicine. "Drug-eluting stents are a life-saving advance used by hundreds of thousands of people that have greatly reduced the risk of restenosis. We are in no way recommending they be used less, but we do think that health professionals should be vigilant in watching for this problem."

This study was supported by grants from National Institutes of Health.



Children's Heart Center
Columbus, Ohio

Adult Congenital Heart Disease Cardiologist

The Heart Center at Columbus Children's Hospital and the Ohio State University, is seeking a doubly board certified or eligible internal medicine/pediatric (IM/Peds) cardiologist to join our faculty at the assistant professor level. This cardiologist would join our Adult Congenital Heart Disease (ACHD) team which consists of one IM/Peds cardiology boarded physician and two dedicated nurse practitioners. Our adult CHD program serves the needs of a large patient referral base at both our pediatric and adult care campuses and is distinguished as one of the largest outpatient ACHD practices in the country with three dedicated clinics per week. We perform over 200 cardiac MRIs and CTs per year for ACHD. The cardiac imaging center is managed by cardiologists thus providing unique opportunities for patient care and training. We have one of the most successful ACHD fellowship training programs offering a five year combined IM/Peds cardiology fellowship. We also have one of the world's most advanced cardiac catheterization laboratories and team providing interventional support for the ACHD program. The candidate would be expected to focus his or her clinical care to the adult CHD patients but would also participate in some cardiology ward attending and night call. There are numerous opportunities to engage in translational research, quality assurance initiatives or cutting edge informational services. The candidate would participate in programmatic growth encompassing all aspects of the Heart Center's mission including clinical service, education and research. Candidates are encouraged to submit their curriculum vitae to:

Timothy F. Feltes, MD, Chief of Pediatric Cardiology, ED616, 700 Children's Drive, Columbus, OH 43205, PH 614:722-32565 or email: tfeltes@chi.osu.edu

The Ohio State University is an Equal Opportunity, Affirmative Action Employer. Women, minorities, veterans, and individuals with disabilities are encouraged to apply.

Children's Heart Center
Columbus, Ohio

Clinical Pediatric Cardiologist

The Heart Center at Columbus Children's Hospital, the pediatric teaching facility for the Ohio State University, is seeking a board certified or eligible pediatric cardiologist to join our faculty. This exciting full-time position calls for an individual with general pediatric cardiology skills. The physician's role will include considerable outpatient clinical responsibilities as well as inpatient cardiology ward attending duties, night call (~ 1 in 8), and participation in the functions of the echocardiography laboratory. Currently, the Heart Center has nearly 9000 clinic encounters per year both on-campus as well as at our local and regional satellite clinics. Our echocardiography laboratory performs 8000 studies annually using state-of-the-art transthoracic, transesophogeal, fetal, intracardiac, intravascular, and 3D techniques. 450 surgical procedures are performed each year in our Heart Center. There are numerous opportunities to engage in translational research, quality assurance initiatives or cutting edge informational services. The candidate would participate in programmatic growth encompassing all aspects of the Heart Center's mission including clinical service, education and research. Candidates are encouraged to submit their curriculum vitae to:

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Publishing Management
Tony Carlson, Founder & VP/Sales
TonyC@CCT.bz
Richard Koulbanis, Publisher & Editor-in-Chief
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Neonatology Today, which will begin publishing in Spring of 2006, will provide news and information for support of critically ill and preterm infants. Available in print for North America and in PDF worldwide.
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>
> ***~Gerald R. Marx, MD***
> ***Boston Children's Hospital***

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