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Feb. 19-23, 2014; Orlando, FL USA
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Recruitment Ads on Pages: 7, 13, 14

Kawasaki Disease - Case Report

By Tabitha Moe, MD; Umaima Fatima, MD

Case Report

A 47-year-old male patient with a history of diabetes mellitus, hypertension, dyslipidemia, and Kawasaki Disease as a child was referred by his primary care physician to the outpatient clinic with chest pain and was evaluated using multiple imaging modalities, and treated with beta-blockers, statins, ACE-inhibitors, as well as, aspirin and clopidogrel. Nuclear perfusion imaging yielded inconclusive results and, therefore, the patient underwent Cardiac multi-detector computed tomography (MDCT) with Brilliance CT 64-channel and collimation of 64×0.625 mm which revealed an ectatic and tortuous left main with a large proximal aneurysm of the proximal left anterior descending artery (LAD), as well as multiple smaller aneurysms of both the left circumflex (LCX) system and the right coronary (RCA) system. The LCX aneurysm measured proximally is 11.55 mm by 12.82 mm with visualization of a well-defined thrombus. Cardiac catheterization was performed with the intention of treatment of the ostial stenosis of the first diagonal branch lesion of the LAD for relief of symptoms. He received medical therapy for symptom management including: clopidogrel, aspirin, and long-acting nitrates.

Discussion

Kawasaki Disease (KD), is an autoimmune, medium-sized vessel necrotizing angeitis. It can cause fatal coronary artery aneurysms. It has replaced acute rheumatic fever as the most common cause of acquired heart disease in children of developed nations. Myocardial Infarction (MI) caused by thrombotic occlusion is the principal cause of death from KD. Coronary artery aneurysms occur as sequelae of the vasculitis in 20-25% of untreated children.[1] Without treatment, mortality may approach 1%. With treatment, mortality rate is less than 0.01% in the U.S.[2] The peak frequency of coronary dilatation or aneurysms occurs within 4 weeks.[3] Aneurysms are classified as: small (<5mm), medium (5-8mm), and giant (>8mm). Saccular and fusiform aneurysms develop between 18 and 25 days after the

"Kawasaki Disease (KD), is an autoimmune, medium-sized vessel necrotizing angeitis. It can cause fatal coronary artery aneurysms. It has replaced acute rheumatic fever as the most common cause of acquired heart disease in children of developed nations."

Melody® Transcatheter Pulmonary Valve Ensemble® Transcatheter Valve Delivery System

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- If a stent fracture is detected, continued monitoring of the stent should be performed in conjunction with clinically appropriate hemodynamic assessment. In patients with stent fracture and significant associated RVOT obstruction or regurgitation, reintervention should be considered in accordance with usual clinical practice.

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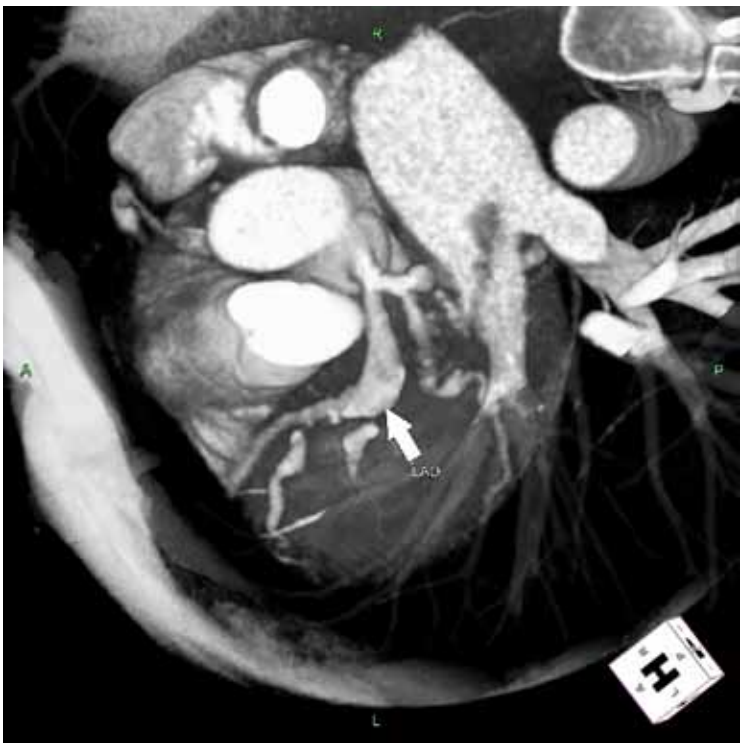
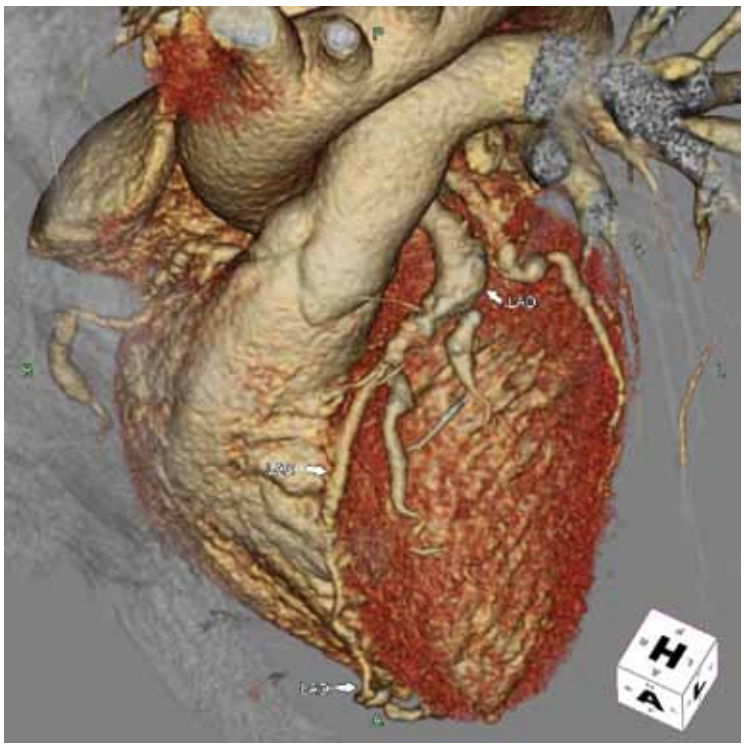
Humanitarian Device. Authorized by Federal law (USA) for use in patients with a regurgitant or stenotic Right Ventricular Outflow Tract (RVOT) conduit (≥16mm in diameter when originally implanted). The effectiveness of this system for this use has not been demonstrated.





Images A (left) and B (right): LAD 3D Volume rendering demonstrating proximal fusiform aneurysm and ostial subtotal D-1 and D2 stenosis.

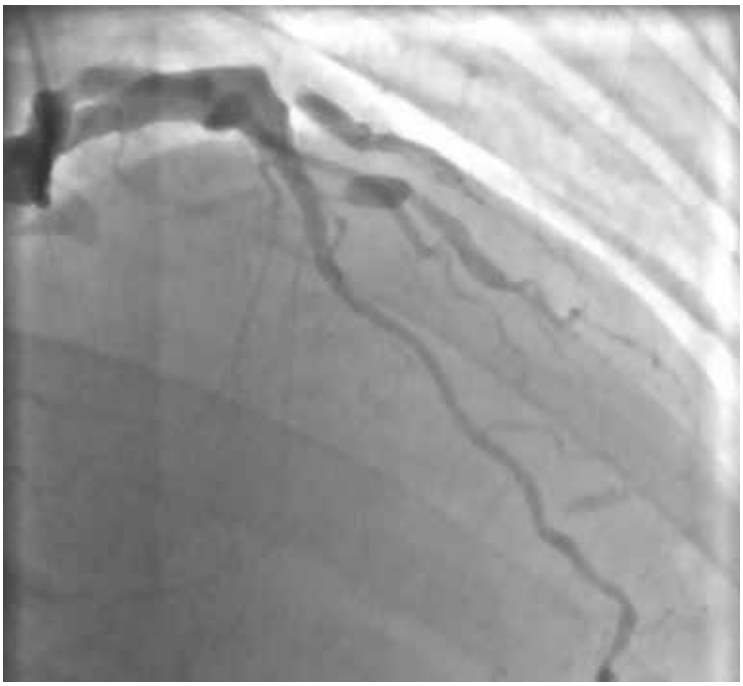


Image C: Cardiac Cath RAO-39.

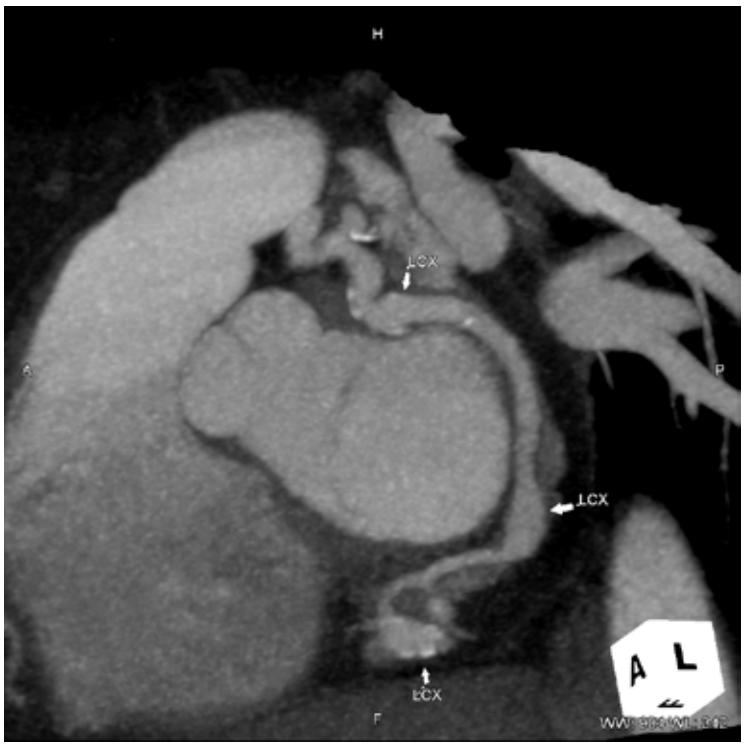


Image D: 3D Volume rendering demonstrating beaded aneurismal appearance of the LCX.

onset of illness.[4] When treated with IVIG, 5% of children still develop coronary artery dilation and 1% develop giant aneurysms.[5,6,7] Death can occur due either to MI secondary to thrombosis or rupture of an aneurysm. Coronary artery lesions resulting from KD change dynamically with time.[8] Resolution one to two years after the onset of the disease has been observed in half of vessels with coronary aneurysm.[9] Stenosis may lead to significant coronary obstruction and myocardial ischemia and can lead to MI.[10] In acute management of KD, aspirin is used at anti-inflammatory doses and then decreased to a low dose six weeks after symptom onset. According to Newburger, et al, for small aneurysms aspirin alone is sufficient. For large aneurysms, thienopyridine in addition to aspirin is appropriate. For giant aneurysms warfarin or low-molecular-weight heparin may be appropriate, but should be tailored to the extent of coronary involvement.[11, 12] To date no controlled trials have been performed regarding medical management of large or giant coronary aneurysms, and no guidelines have been published, nor trials performed regarding the use of novel anticoagulants. There are no published guidelines for very long-term management of anticoagulation in either adults or pediatrics.

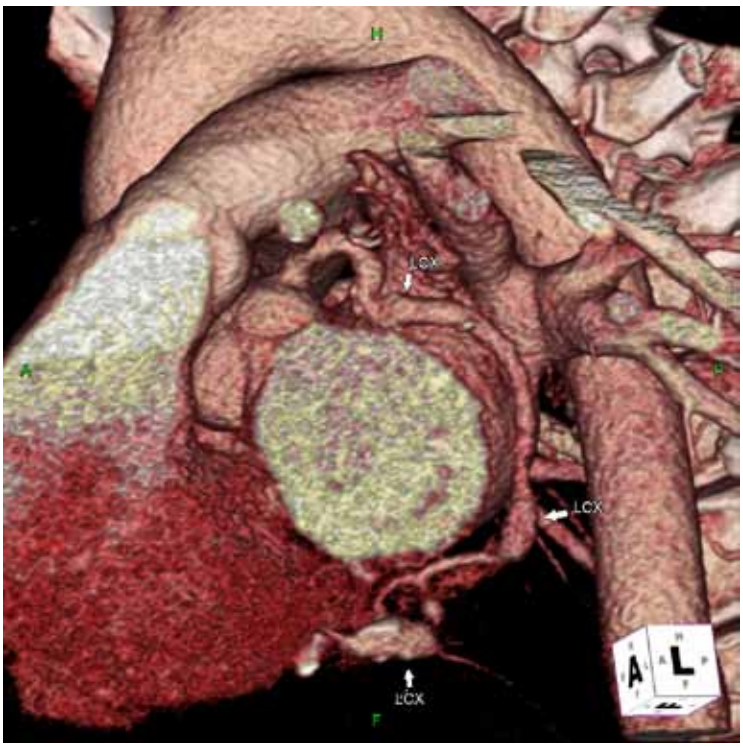


Image E: Curved Maximum Intensity Projection demonstrating beaded aneurismal appearance of the LCX.

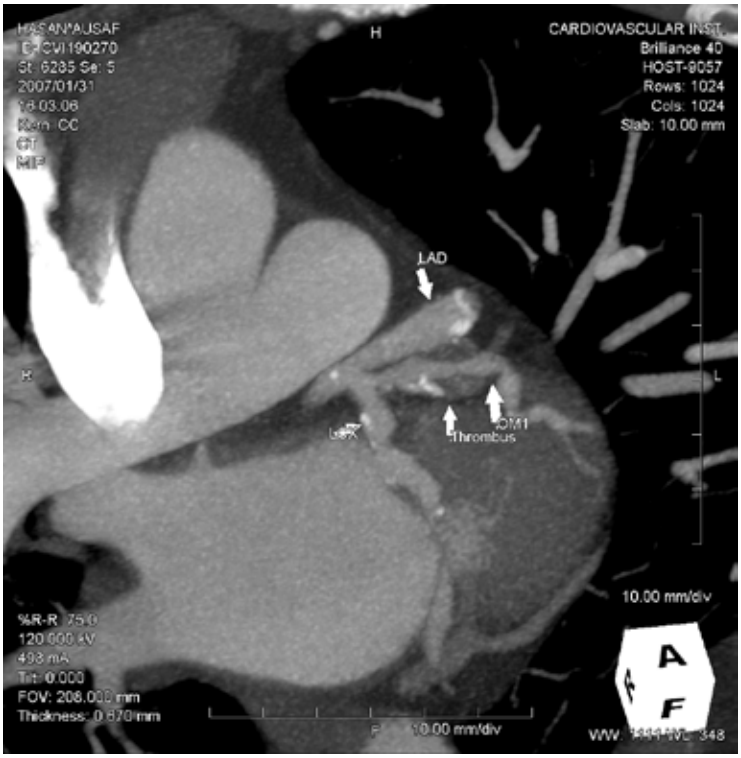


Image G: CT Maximum Intensity Projection demonstrating proximal OM-1 thrombus.

Our case highlights the utility in multimodality imaging to more accurately define coronary aneurysm anatomy and guide medical management based upon the findings. With the availability of anticoagulant therapies rapidly expanding to include anti-Xa agents, thienopyridines, anti-platelet therapies, and vitamin K antagonists all available in safe, effective, oral delivery methods, it is time to proceed with a longitudinal evaluation of

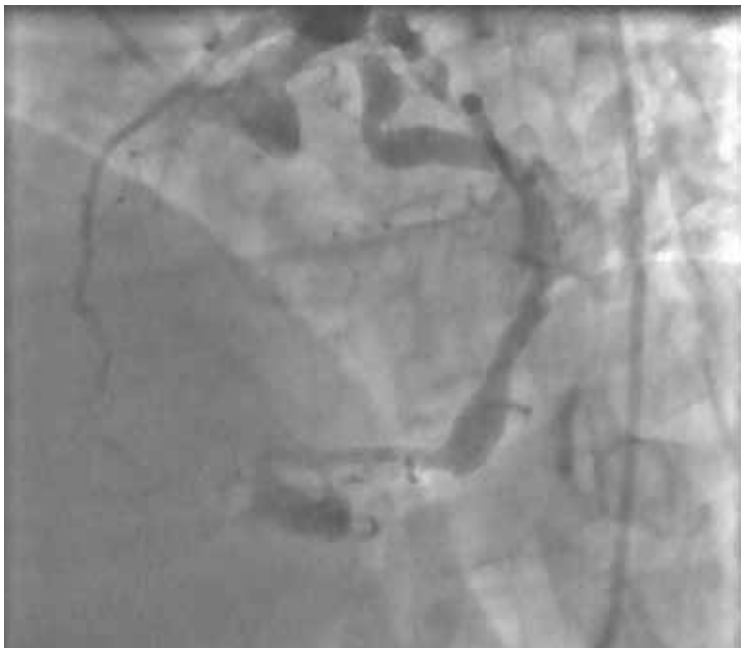


Image F: Cardiac catherization.

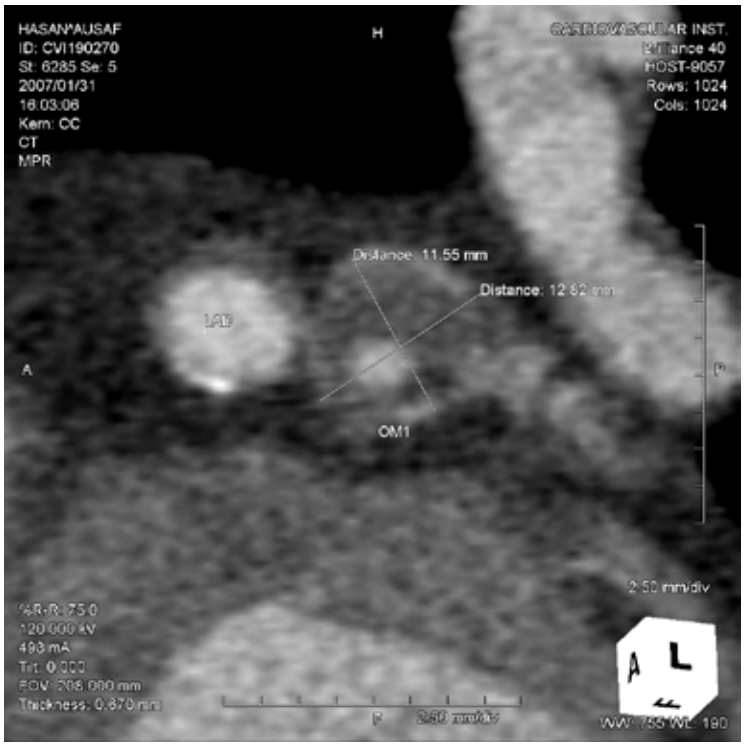


Image H: CT Multi-Planar Reformat with slice thickness 0.67 mm short axis of the OM-1 giant aneurysm with circumferential thrombus.

patients with coronary artery aneurysms for management of thrombus, and to decrease acute thrombus formation and plaque rupture.

References

1. Suzuki A, Kamiya T, Kuwahara N et al. (1986). "Coronary arterial lesions of Kawasaki disease: cardiac catheterization findings of 1100 cases." Pediatric Cardiology 7 (1): 3–9.
2. ^ "Merck Manual, Online edition: Kawasaki Disease." http://www.merck.com/mmpe/sec19/ch286/ch286d.html. Retrieved January 18, 2013.

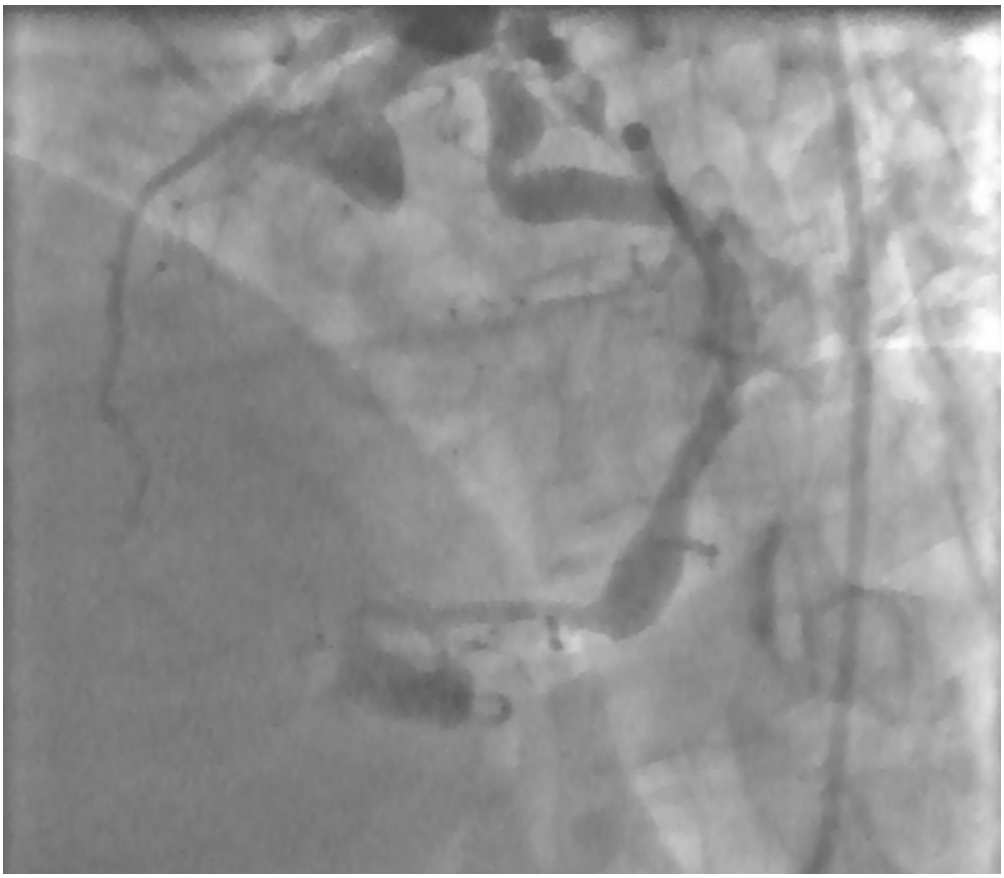


Image I: Cardiac Cath RAO-3.

3. Hirose O, Misawa H, Kijima Y et al. (March 1981). "Two-dimensional echocardiography of coronary artery in Kawasaki disease (MCLS): detection, changes in acute phase, and follow-up observation of the aneurysm." Journal of Cardiography 11 (1): 89–104.
4. Rowley AH, Shulman ST (July 1998). "Kawasaki Syndrome." Clinical Microbiology Reviews 11 (3): 405–14.
5. Durongpisitkul K, Gururaj VJ, Park JM, Martin CF (December 1995). "The prevention of coronary artery aneurysm in Kawasaki disease: a meta-analysis on the efficacy of aspirin and immunoglobulin treatment." Pediatrics 96 (6): 1057–61.
6. Terai M, Shulman ST (December 1997). "Prevalence of coronary artery abnormalities in Kawasaki disease is highly dependent on gamma globulin dose but independent of salicylate dose." The Journal of Pediatrics 131 (6): 888–93.
7. Dajani AS, Taubert KA, Takahashi M et al. (February 1994). "Guidelines for long-term management of patients with Kawasaki disease. Report from the Committee on Rheumatic Fever, Endocarditis, and Kawasaki Disease, Council on Cardiovascular Disease in the Young, American Heart Association."
8. Kim DS (December 2006). "Kawasaki Disease". Yonsei Medical Journal 47 (6): 759–72.
9. Takahashi M, Mason W, Lewis AB (February 1987). "Regression of coronary aneurysms in patients with Kawasaki syndrom." Circulation 75 (2): 387–94.
10. Kato H, Sugimura T, Akagi T et al. (September 1996). "Long-term consequences of Kawasaki disease. A 10- to 21-year follow-up study of 594 patients". Circulation 94 (6): 1379–85.
11. Newburger JW, Fulton DR. "Current Treatment Options in Cardiovascular Medicine." 9(2):148-58, 2007 Apr.

"Our case highlights the utility in multimodality imaging to more accurately define coronary aneurysm anatomy and guide medical management based upon the findings."

12. Suda K, Kudo Y, Higaki T, Nomura Y, Miura M, Matsumura M, et al. "Multicenter and Retrospective Case Study of Warfarin and Aspirin Combination Therapy in Patients With Giant Coronary Aneurysms Caused by Kawasaki Disease." Circ J 2009; 73:1319 – 1323.

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International Classification of Diseases and Related Health Problems, 10th Revision, Chapter 17, Congenital Malformations, Deformations and Chromosomal Abnormalities (ICD-10-CM)

By Julie-Leah J. Harding, CPC, RMC, PCA, CCP, SCP-ED, CDIS

In less than one year, on October 1, 2014, the transition to ICD-10 code set goes in effect. There are 21 chapters of the ICD-10-CM code set that should be reviewed with clinicians to have them familiar with the code set but more importantly identify gaps in documentation that may exist. There are numerous clinical documentation improvement opportunities to implement into a clinician's documentation to better prepare for ICD-10. A good starting point is to become familiar with the guidelines and highlights of CM chapters that will be used primarily for those treating and managing congenital disease processes.

Chapter 17 of ICD-10-CM, diagnosis codes, focuses on Congenital Malformations, Deformations and Chromosomal Abnormalities.

Snapshot of Chapter 17 Official CMS Guidelines

The code range is from Q00 to Q99; the first character will start with Q. Q20 – Q28 these codes specifically represent congenital malformations of the circulatory system. Chapter 17 ICD-10-CM codes may be reported primary (first reported) or secondary depending on the documentation within the patient's medical record.

When a malformation/deformation/or chromosomal abnormality does not have a unique code assignment, ***assign additional code(s) for any manifestations that may be present.***

When the code assignment specifically identifies the malformation/deformation/or chromosomal abnormality, manifestations that are an inherent component of the anomaly should not be coded separately. ***Additional codes should be assigned for manifestations that are not an inherent component.***

Within congenital heart disease – CHF or a murmur is often inherent in some septal defects; a bluish tint to the skin (cyanosis); shortness of breath; tiring quickly upon exertion; dizziness or fainting; swelling of body tissue or organs (edema) – these symptoms should likely not be captured in addition to the malformation, deformation, or chromosomal abnormality. Another example: Tetralogy of Fallot often has pulmonary atresia and stenosis which are inclusive to the disease process.

> ***"When a malformation/deformation/or chromosomal abnormality does not have a unique code assignment, assign additional code(s) for any manifestations that may be present."***

Q21.3 Tetralogy of Fallot
Ventricular Septal Defect with pulmonary stenosis or artresia, dextroposition of aorta and hypertrophy of right ventricle

Likewise a Complete AV Canal (CAVC) often is associated with patient with T21 or Downs; feeding issues are also seen in these cases; these would be an additional code(s) to add when documented within the patient's medical record.

Q21 Congenital malformation of cardiac seta
Excludes 1: acquired cardiac septal defect (I51.0)
Q21.0 Ventricular Septal Defect
Roger's disease
Q21.1 Atrial Septal Defect
Coronary sinus defect
Patent or Persistent Foramen Ovale
Patent or persistent ostium secundum defect (type II)
Patent or Persistent sinus venosus defect
Q21.2 Atrioventricular Septal Defect
Common atrioventricular canal
Endocardial cushion defect
Ostium primum atrial septal defect (type I)

Chromosomal abnormalities, not elsewhere classified (Q90-Q99)
Excludes 2: mitochondrial metabolic disorders (E88.4-)
Q90 Down Syndrome
Use additional code(s) to identify any associate physical conditions and degree of intellectual disabilities (F70-F79)
Q90.0 Trisomy 21, nonmasaicism (mieotic nondisjunction)
Q90.1 Trisomy 21, masaicism (mieotic nondisjunction)
Q90.2 Trisomy 21, translocation
Q90.9 Down Syndrome, unspecified
Trisomy 21 NOS

Diagnosis codes from Chapter 17 may be reported throughout the patient's life time. Although present at birth, malformation/deformation/or chromosomal abnormality may not be identified until later in life. Whenever the condition is diagnosed by the physician, ***it is appropriate to assign a code from codes Q00-Q99.***

Finally, if a congenital malformation has been corrected, a personal history diagnosis code should be reported to identify the history of the malformation or deformity. For example, if a VSD is repaired on a

Z87.7 Personal history of (corrected) congenital malformations
Conditions classifiable to Q00-Q89 that have been repaired or corrected
Excludes 1: congenital malformations that have been partially corrected or repaired, but which still require medical treatment - code to condition
Excludes 2: Other post-procedural states (Z98-)
Personal history of medical treatment (Z92-)
Presence of cardiac and vascular implants and graphs (Z95-)
Presence of other devices (Z97-)
Presence of other functional implants (Z96-)
Transplanted organs and tissue of other devices (Z94-)

Z87.71: Personal history of (corrected) congenital malformations of genitourinary system
Z87.710: Personal history of (corrected) hyposadias
Z87.718: Personal history of other specified (corrected) congenital malformations of genitourinary system

Z87.72: Personal history of (corrected) congenital malformations of nervous system and sense organs
Z87.720: Personal history of (corrected) congenital malformations of eye
Z87.721: Personal history of (corrected) congenital malformations of ear
Z87.728: Personal history of (corrected) congenital malformations of nervous system and sense organs

Z87.73: Personal history of (corrected) congenital malformations of digestive system
Z87.730: Personal history of (corrected) cleft lip and palate
Z87.738: Personal history of (corrected) congenital malformations of digestive system
Z87.74: Personal history of (corrected) congenital malformations of heart and circulatory system

patient at 3 months old and the patient comes in for a well child visit when they are five years old; the pediatrician documents as such in the patient's medical record, for ICD-10-CM, code Z87.74 may be reported.

Be sure to identify documentation improvement opportunities over the coming months. Implement these practices now to be better prepared for ICD-10 come October 1, 2014.

Resource: www.cdc.gov/nchs/data/icd10/10cmcguidelines_2013_final.pdf

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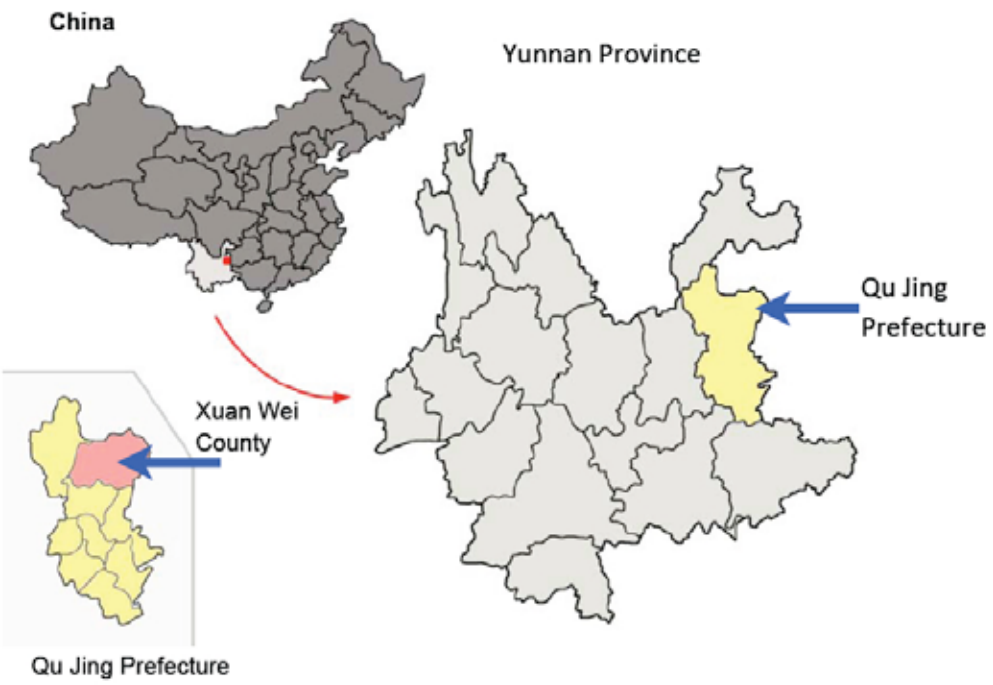
Continued Work: Screening School Children for Congenital Heart Disease in Developing Countries

By Jane Ma; Robert Detrano, MD, PhD; Da Yi Hu, MD



Introduction

In developed nations, physicians are adequately trained and facilities are adequately equipped to screen all children for congenital heart disease at birth and during the first years of life. This is not true in countries that are developing. Since 2009, China California Heart Watch has been using a two-leveled method in rural Yunnan Province, China to identify, diagnose and provide treatment for children with congenital heart diseases. This method, first introduced and detailed in this journal[1] engages university student volunteers and local and foreign doctors to screen and diagnose children in Yunnan elementary schools. The method, since its initial introduction, has yielded promising and positive results. We present here results of our 2012 screening program in Xuan Wei County, Yunnan Province, China. See map for location of Xuan Wei County.

Background

Primary caregivers in rural Yunnan Province, China, are not sufficiently educated and consequently unaware of the methods of screening and diagnosing congenital heart diseases. As a result, children often do not receive proper and timely care and are diagnosed only after they have developed significant and irreversible pulmonary vascular damage from chronic pulmonary hypertension. These children suffer their entire lives into adulthood; many die early deaths. In 2005, Jiang et al reported the results of surveying classroom children in rural Yunnan. Her team of cardiologists first trained local village doctors to recognize heart murmurs using stethoscopes without specificity—simply to be able to distinguish between an absence of a murmur and the presence of one. Once a child had been identified as having a murmur, he or she would undergo a full examination by one of the cardiologists on site, including a cardiac ultrasound to determine the details of the defect(s). Using this two-leveled method, Dr. Jiang found a prevalence of congenital heart disease ranging from 2.75 to 17 per thousand children in various counties, which is similar to that of developed nations. That is to say, using a team of cardiologists paired with village doctors that had been trained for a day, Dr. Jiang was able to detect the same prevalence of pediatric heart disease as that reported in developed nations. Additionally, the majority of the children diagnosed were unaware of their condition prior to these screenings and the majority of the village doctors were unaware of the proper use of a

China Cal intern Elaine Hao screens child.

June 2013 China Cal interns.

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Surgical Mortality Percentage Categorized by Complexity of Procedure				
RACHS-1* Category	CM** 1 Year Average	STS*** 1 Year Average	CM 4 Year Average	STS 4 Year Average
1 (least complex)	0.0	0.5	0.0	0.7
2	0.0	1.1	1.1	1.1
3	2.9	3.3	3.7	3.7
4	5.1	7.1	8.2	7.1
5 & 6 (most complex)	15.4	14.3	20.8	16.4

*Risk Adjustment for Congenital Heart Surgery classification

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Students lining up to be screened.

stethoscope before the training. China California Heart Watch applied this model to their congenital heart disease detection program in Yunnan Province.

Methods

Dr. Jiang inspired us to begin a similar screening program in Yunnan province using both Chinese and foreign undergraduate and medical students as screeners. Our training and screening procedure is as follows:

1. A group of between three and 27 undergraduate and medical student volunteers undergo one half-day of training, divided into two parts: proper use of a simple diaphragm stethoscope and recognition of heart murmurs using electronically recorded murmurs from children and adults. Emphasis is placed on sensitivity (detecting any murmur or abnormally split second sound), rather than on specificity (distinguishing physiologic from pathologic murmurs). Students are tested at the end of the training with ten recordings, three of which are normal. If a student incorrectly reports an abnormality as normal, he/she must repeat the training.
2. After training, students are brought to a local hospital, where they must auscultate the hearts of three or four pediatric or adult patients with heart disease and abnormal auscultatory findings.
3. Students travel with one to three cardiologists to impoverished rural towns where they live and work for 10 to 25 days.
4. Each day, a team of students under the supervision of a cardiologist (one cardiologist to four students) screens classroom children for several hours. Two screeners work in the front of each classroom as the children march up, lift their upper garments and undergo auscultation at four auscultation points.
5. Any child with a heart murmur is referred to a supervising cardiologist. If the cardiologist deems the murmur to be pathologic, he/she with the help of students and nurses perform full exams, including history, physical exam, pulse oximetry, and cardiac ultrasound.
6. Families are notified and referrals are made if appropriate. China California Heart Watch provided grants to indigent families when surgeries were inadequately covered by local insurance.

Results

During 2012, China California Heart Watch volunteers screened all elementary school children in nine towns in Xuanwei county, Yunnan Province. In June 2012, there were a total of 14,731 schoolchildren screened, and our team identified 78 cases of CHD. In September 2012, 54 children out of 13,341 were identified. In December 2012, 52 children out of 27,206 were identified. In total, 184 cases of CHD were identified out of 55,278 schoolchildren in Xuan Wei County. The overall prevalence was 0.33%.

Conclusion

These results reflect favorably upon the continued use of this model in China and in other developing countries to identify and give aid to children in rural, impoverished areas who have congenital heart disease. Since 2011, when we introduced this model, we have consistently noted results that are similar to published prevalences in other parts of China and in developed nations, where children are screened at birth and in early childhood. This model has proven effective and accurate, and most importantly, efficient in that it requires minimal costs (volunteer students, local physicians and inexpensive stethoscopes). With these simple resources, it is possible to make a real and measurable difference in the lives of children who would have been otherwise overlooked.

Table

Month	Children Screened	Cases Diagnosed	Crude Prevalence
June	14,731	78	0.52%
September	13.341	54	0.40%
December	27,206	52	0.19%

References

1. Detrano R, Hu, DY. Congenital Cardiology Today. Volume 9 / Issue 9 September 2011, pp12-13.
2. Jiang LH, Duan CQ, Ma ZQ, et al. [Epidemiological investigation on congenital heart disease in several regions of Yunnan province]. Zhonghua Liu Xing Bing Xue Za Zhi. Mar 2005;26(3): 182-186.

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Rady Children's welcomes two new physicians to its Cardiac Transplant Team: **Dr. Daniel DiBardino** and **Dr. Rakesh Singh**.

Dr. Daniel DiBardino

Dr. Rakesh Singh

Under the direction of Dr. Eric Devaney, Rady Children's Cardiac Transplantation Program team is now in place to provide heart transplants to children this year.

Dr. DiBardino comes to Rady Children's from Mississippi Children's Heart Care at the University of Mississippi Medical Center, where he was Assistant Professor of Surgery, Surgical Director of Pediatric Cardiac Operating Room, and Surgical Outcomes Research Director. Dr. Singh served as Assistant Professor of Pediatrics in the Division of Pediatric Cardiology at Columbia University College of Physicians & Surgeons, and Assistant Attending Pediatrician at Morgan Stanley Children's Hospital.

Rady Children's Hospital San Diego

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BEST CHILDREN'S HOSPITALS
U.S.News & WORLD REPORT
CARDIOLOGY & HEART SURGERY
2013-14

Rady Children's Cardiovascular/Cardiothoracic Division performs about 500 surgeries a year, exclusively for the treatment of congenital heart defects. Providing transplants through Rady Children's Heart Institute will relieve a tremendous burden on families who until now have had to travel long distances for care.

People Born with Certain Gene More Likely to Suffer Long-Term Cognitive Decline After Heart Surgery

Newswise – Long-term memory loss, difficulty understanding verbal or written communication or impaired ability to pay attention may still occur five years after heart surgery if a patient has a certain gene variation, according to a study presented at the October *Anesthesiology™ 2013 Annual Meeting*. This gene was found to be related to a decline in cognitive capabilities compared to those who do not have the variation.

Thirty to 50% of patients experience a decrease in cognitive function after heart surgery and neurologic injury is one of the most common adverse side effects. Examples of neurologic injuries include stroke, memory loss, difficulties with problem-solving and impaired attention.

"Whether cognitive decline seen after surgery is a side effect of the surgery and anesthesia or a progression of other neurologic disease remains a matter of debate," said Karsten Bartels, MD, who helped conduct this study while a fellow in Cardiothoracic Anesthesiology and Critical Care Medicine under the direction of Joseph Mathew, MD, Professor of Anesthesiology at Duke University Medical Center, Durham, NC. "Our study found that if a patient has this gene variation (APOE4), that person is more likely to have cognitive decline five years after surgery."

People are born with the gene variation Apolipoprotein E4 (APOE4), which can be identified through a genetic blood test. Apolipoproteins are important gatekeepers of cholesterol metabolism and inflammation, according to Dr. Bartels. The protein structure of these apolipoproteins is determined by a person's DNA; however, minor variations are not uncommon. Such minor variations in the genetic code can have serious consequences. APOE4 has been identified as both a driver and marker of accelerated neurologic dysfunction, including in Alzheimer's disease.

In the study, the authors reviewed data from 233 elderly, Caucasian cardiac patients who had heart surgery. The patients were administered a battery of neuropsychological assessments just before surgery and five years after. Cognitive function was assessed with a composite cognitive index score. The change in cognitive function five years after surgery was adjusted for age, years of education and cognitive score prior to surgery.

The study found that the mean change in cognitive index score over five years for patients without the gene variation was 0.16, while the score for patients who have the APOE4 gene variation was 0.08. These results indicate a less favorable outcome for carriers of the APOE4 gene.

"Our findings suggest that the long-term cognitive decline previously seen after surgery is related more to the patient's genetic makeup than to the surgery itself," continued Dr. Bartels. "Knowing which patients have the APOE4 genotype can help doctors assess the risk for cognitive problems following surgery, ultimately allowing patients to make better-informed decisions and permitting doctors to direct strategies to protect the brain after surgery."

Big Data Reaps Big Rewards in Drug Safety Systems

Newswise - Using the Food and Drug Administration's Adverse Event Reporting System (FAERS), a hospital electronic health records database, and an animal model, a team of researchers at the Icahn School of Medicine at Mount Sinai report in the online Oct. 9th journal *Science Translational Medicine*, that by adding a second drug to the diabetes drug, Rosiglitazone, adverse events dropped enormously. That suggests that drugs could be repurposed to improve drug safety, including lowering the risk of heart attacks.

The approach is part of an emerging strategy known as systems pharmacology that integrates computer science, mathematical models, and animal models to examine how drugs work in cells.Systems pharmacology shows that most drugs act by binding to targets that are part of complex networks within cells.

"Big data systems have a wealth of data, and when studied appropriately, can point to potentially safer combinations," said the study's lead author, Ravi Iyengar PhD, Dorothy H. and Lewis Rosenstiel, Professor, Department of Pharmacology and Systems Therapeutics, and Director, Systems Biology Center, at the Icahn School of Medicine at Mount Sinai.

"As an end in themselves, big data analyses must be considered preliminary, but findings can point to potentially safer combinations that can subsequently be tested in clinical trial," said Dr. Iyengar. "We may be able to use FDA-approved drugs to prevent adverse events."

In this study, investigators studied how drug combinations act through networks within cells, focusing on the diabetes drug, Rosiglitazone, an effective drug in controlling blood glucose. However, Rosiglitazone has a serious side effect, increased heart attacks, which has restricted its use markedly.

Since most patients with diabetes take more than one drug and the FDA Adverse Event Reporting System (FDAERS) is freely available, investigators analyzed data from the FDAERS to see if second drugs could lower the rate of heart attacks. In addition, investigators compared their results with Mount Sinai's electronic health records system.

Compared with many other commonly used second drugs, "we found that the drug Exanatide, often given along with Rosiglitazone to get better control of blood glucose, also very substantially reduced the heart attack rate in Rosiglitazone users," said Dr. Iyengar. Using these findings, the investigators made some predictions of how these beneficial drug interactions might work in diabetic mice, finding that the heart attack rate declined.

"The beneficial effects of Rosiglitazone and Exenatide are not unique," explained Dr. Iyengar. "We found nearly 19,000 other drug combinations in the FDA database, where the second drug appears to reduce a wide range of side effects of the first drug. Other beneficial effects were

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demonstrated when Lisinopril was added to a statin, where the rate of statin-associated rhabdomyolysis, a kind of muscle tissue wasting, declined; when an H2 antagonist was added to Selective Serotonin Re-uptake Inhibitors (SSRIs), it reduced completed suicide."

The research team stressed that the results are a valid starting point for developing clinical trials of safer drug combinations. To further drug safety, they urge researchers and clinicians to contribute to big databases, such as FAERS.

The research was supported by the National Institute of General Medical Sciences: NIGMS (grants GM071558, and GM 007280) of the National Institutes of Health. Co-authors include: Evren U. Azeloglu, PhD; Juan J. Badimon, PhD; Ludovic Benard, PhD; Yibang Chen, PhD; Chiara Giannarelli, MD, PhD; Joseph Goldfarb, PhD, Omri Gottesman, PhD; Roger J. Hajjar, MD, PhD; Mohammad U. Zafar, MD; and Shan Zhao, PhD from the Icahn School of Medicine at Mount Sinai; and Tomohiro Nishimura, PhD, from Keio University, Tokyo, Japan.

Early Statin Therapy Helps Kids with Inherited High Cholesterol

Children with inherited high levels of cholesterol who receive cholesterol-lowering statins in their early years have a lower risk of coronary heart disease than their affected parents, according to research presented at the American Heart Association's Scientific Sessions 2013.

Researchers evaluated the effectiveness and safety of statin treatment in 214 children with familial hypercholesterolemia (FH). The children, 8- to 18-years-old, continued to receive statins and were evaluated after 10 years.

Researchers reported that at age 30, coronary heart disease survival was 100% in the group of young adults who received statins from childhood and 93% in the affected parents.

"Our results suggest statin therapy initiated in childhood reduces disease and death from heart disease in patients with FH," said Marjet Braamskamp, MD, study co-author and a PhD student at the Academic Medical Center in Amsterdam, the Netherlands. "After 10 years of treatment, young adult FH patients had not suffered from cardiovascular complaints."

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