



New England Heart Institute Atrium

WINTER 2007

A New Era of Medicine

Message from the Medical Director

As *Atrium* enters its eighth year of publication, we are interested in receiving feedback from our readers and learning how we might enhance this publication. We would greatly appreciate your taking a moment to complete the enclosed survey and returning it to us.

Utilizing advanced technologies, cardiologists and cardiac researchers continue to discover more about cardiovascular disease. We understand that risk factor modification, especially through healthy

lifestyles, can help deter or slow these processes, and we encourage patients to optimize their risk factor profile. Once disease processes are established, our efforts in the vascular and electrophysiology arenas are to develop and utilize more effective therapies for treating cardiovascular disease.

The cure for coronary disease and vascular disease does not appear to be “just around the corner.” In the interim, we need to scrupulously assist patients in risk factor optimization and hope that evolutionary technologies will allow us to better treat these diseases until we have a complete understanding of and cure for cardiovascular disease.

To learn more about treatment modalities at the New England Heart Institute, I invite you to call me at 603.663.6782. ♥



LOUIS I. FINK
MD, FACC

Louis I. Fink, MD, FACC, Medical Director

Echocardiography Optimizes Biventricular Pacing

For patients with congestive heart failure, drug therapies – including beta blockers, aspirin, and ACE inhibitors – and implantable cardioverter defibrillators (ICDs) have reduced mortality, yet these therapies have not all uniformly alleviated patients’ symptoms. Incorporating biventricular pacing into the use of ICDs has been shown to improve patient symptoms, and the recent introduction of echocardiography to fine-tune each patient’s ICD settings is further optimizing the effectiveness of the device.

Coordination improves symptoms

“Patients who have poor heart muscle function with ventricular dyssynchrony are challenging” says Connor J. Haugh, MD, FACC, director of the New England Heart Institute’s electrophysiology laboratory. “Biventricular pacing is a way to re-coordinate biventricular contraction.”

This technology has been shown to reduce ventricular size, allowing patients to improve metabolism and experience clinical improvement.

About 75% of patients with congestive heart failure who have biventricular pacing see an improvement in their symptoms, notes Dr. Haugh. Patients with left bundle branch block seem to be helped more by the procedure than those with right bundle branch block.

Improvement in symptoms is typically measured by how well

Biventricular Pacing Candidates

- Left ventricular ejection fraction <35%
- EKG QRS width ≥ 120–130 milliseconds
- NYHA Class III heart failure symptoms following minimal activity

patients perform on the 6-minute walk test and how they respond to the Minnesota Living with Heart Failure Questionnaire. Using these measurement guides, three long-range studies have shown a 35% improvement in patient symptoms following biventricular pacing, says Dr. Haugh.

AV optimization of ICD

To further increase the number of heart failure patients who report an improvement in their heart failure symptoms, NEHI electrophysiologists are now using atrial ventricular (AV) optimization during the implantation of biventricular ICDs. This



CONNOR J. HAUGH
MD, FACC



ROBERT C. CAPODILUPO
MD, FACC

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New England Heart Institute



OF CATHOLIC MEDICAL CENTER

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CATHOLIC
Medical
CENTER

Clinical Trials May Impact Patient Care

Cardiovascular clinical research can play a critical role in determining effective new therapies for patients with cardiac disease. The Research Department of the New England Heart Institute has recently completed participation in the EVEREST clinical trial – which enrolled patients with acute decompensated heart failure – and is evaluating a number of other clinical trials for patient enrollment.

Influencing care and guidelines

“The New England Heart Institute is privileged to be a part of these clinical trials that will influence the future care of patients and future guidelines promulgated by governing bodies such as the American College of Cardiology and the American Heart Association,” says Robert C. Capodilupo, MD, FACC, director of the NEHI Research Department. “As cardiologists, we continue to refine our knowledge of effective treatments, and there are specific subsets of patients, such as those with diastolic dysfunction, that especially warrant further study.”

Trials of patients with diastolic dysfunction or heart failure with preserved ejection fraction are particularly important, notes Dr. Capodilupo, as little data exist to guide therapy in these patients. Although previous data suggest that about 30% of all patients with congestive heart failure have diastolic dysfunction, observational

data suggest that 50% of patients may have this condition. The most effective care for this large cohort is currently not well defined.

Meticulous research procedures

Participation in clinical trials requires extensive and meticulous patient data collection, explains Dr. Capodilupo. “We have two dedicated and enthusiastic nurses, Diane Blais and Jennifer Morency, who work full time to help enroll patients and to track and document all the clinical trial data. They ensure we have all the lab work, test results and follow-up care performed properly.”

The NEHI Research Committee initially reviews proposed clinical trials for scientific merit, followed by review by Catholic Medical Center’s Institutional Review Board, before patients are enrolled in a trial.

“We continue to look for new trials that we feel will positively impact patient care, are ethically based and are of sound medical science,” he adds. “Offering patients the opportunity to participate in clinical trials gives them access to treatments they cannot get elsewhere, and these patients may receive closer follow-up care and possibly medications free of charge.”

For more information about clinical trials at the New England Heart Institute or enrollment in a trial, contact the NEHI Research Department at 603.663.6094. ♥

Potential Clinical Trials at NEHI

Trials under consideration at the New England Heart Institute include:

- Biventricular pacemakers in patients with varying levels of congestive heart failure
- Acute coronary syndrome with ST elevation myocardial infarction and non-ST elevation myocardial infarction
- Congestive heart failure with left ventricular systolic dysfunction
- Heart failure with “preserved” left ventricular systolic function
- Acute decompensated heart failure (ASCEND Trial)
- Devices therapy to reduce mortality in patients with cardiogenic shock

New Physicians Join NEHI

The New England Heart Institute has added three new cardiologists.



JEFFREY F. BLEAKLEY
MD, FACC

Jeffrey F. Bleakley, MD, FACC, is Board certified in Internal Medicine and Cardiovascular Disease. He received subspecialty training in interventional cardiology and is a Fellow of the American College of Cardiology. He earned his medical degree from Vanderbilt University and

joins NEHI from Strong Memorial Hospital, University of Rochester Medical Center in Rochester, N.Y.

James M. Flynn, MD, FACC, is Board certified in Internal Medicine, Nuclear Cardiology and Cardiovascular Disease. He received subspecialty training in interventional cardiology and is a Fellow of the

American College of Cardiology. He earned his medical degree from the University of Massachusetts Medical Center and joins NEHI from St. Vincent Hospital, Worcester, Mass.



JAMES M. FLYNN
MD, FACC

Jamie K. Kim, MD, FACC, is Board certified in Internal Medicine, Cardiovascular Disease, and Electrophysiology. He earned his medical degree from Tufts University and completed a fellowship in cardiology and subspecialty training in cardiac electrophysiology at Brown University’s Rhode Island Hospital. ♥



JAMIE K. KIM, MD, FACC

Case Study: Wide Complex Tachycardia

Patient

Male, age 57

History

Episodic palpitations since age 10. Because of frequent palpitations, his activity was limited, including being unable to run or participate in sports. He was treated empirically with atenolol, but continued to have frequent symptoms.

Evaluation

He was referred for a stress test, during which his EKG documented wide complex tachycardia at a rate of over 200 beats per minute (Fig. 1).

Diagnosis

The differential diagnosis of wide complex tachycardia includes ventricular tachycardia, preexcited tachycardia or supraventricular tachycardia with aberrant conduction. Preexcitation was not apparent in this patient at baseline during sinus rhythm (Fig. 2).

Treatment

An electrophysiology study was performed using multiple recording catheters positioned in the right atrium, coronary sinus, his bundle and the right ventricle. Maximal preexcitation with a QRS morphology matching that of the clinical tachycardia was induced by distal coronary sinus pacing, confirming the diagnosis of Wolff-Parkinson-White syndrome (WPW) and preexcited tachycardia (Fig. 3). Additionally, orthodromic atrioventricular reentrant tachycardia (AVRT) could be initiated reproducibly with single atrial extrastimuli.



Fig. 1: Wide complex tachycardia during stress testing.

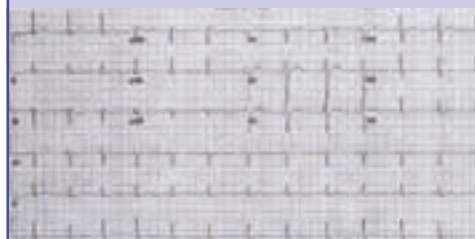


Fig. 2: Sinus rhythm, no evidence of preexcitation.

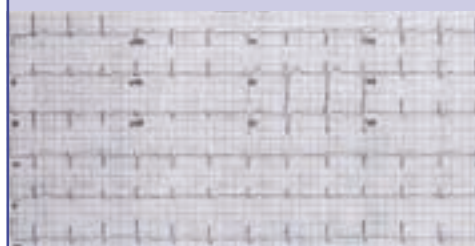


Fig. 3: Distal coronary sinus pacing reveals preexcitation consistent with a left posterolateral accessory pathway.

A mapping and ablation catheter was advanced via a retroaortic approach to the mitral annulus and a left posterolateral pathway was successfully ablated with radio-frequency energy. No further preexcitation or AVRT could be induced.

Follow up

On follow-up, the patient has had no recurrence of palpitations and is no longer taking atenolol.

Physician comments

Some patients with WPW may not have evidence of preexcitation on the baseline EKG. This may be due to competing AV nodal conduction, particularly with left lateral accessory pathways as in this particular case. Other patients may have “concealed” accessory pathways that only conduct in a retrograde fashion.

Many tachycardias, both supraventricular and ventricular, may be amenable to radio-frequency catheter ablation. Certain types of tachycardia, including atrioventricular reentrant tachycardia and AV nodal reentrant tachycardia, have more than a 95% chance of cure by this approach, which may be considered first-line therapy.

The New England Heart Institute has extensive experience with advanced mapping and catheter ablation for multiple types of arrhythmias. Tools available to us include advanced recording systems, biplane fluoroscopic imaging and three-dimensional non-contact mapping systems.

For more information on wide complex tachycardia, contact Dr. Kim at 603.669.0413. ♥



JAMIE K. KIM, MD, FACC

Dartmouth-Hitchcock Nashua Partners with NEHI

Since January 1, 2007, New England Heart Institute cardiologists based at St. Joseph’s Hospital in Nashua have been providing outpatient cardiology services on site to patients of Dartmouth-Hitchcock Nashua. This partnership will provide patients in the greater Nashua area with local access to specialized cardiac care, including diagnostic and interventional techniques, and regional access to cardiac surgery at the New England Heart Institute. These

patients will also have access to cardiovascular research programs at Dartmouth-Hitchcock Medical Center in Lebanon.

“The New England Heart Institute is pleased to be able to provide increased access to cardiac services to patients in the greater Nashua area,” says Louis I. Fink, NEHI medical director. “We look forward to providing these patients with the highest level of cardiovascular diagnosis and treatment.” ♥

process allows the electrophysiologist to customize the ICD device settings to more accurately match the hemodynamic changes in each patient.

“Echocardiography is used to assess blood flow through the patient’s heart,” explains Dr. Haugh. “The biventricular component has programmable atrial and ventricular delays and ventricular to ventricular timing, which allows us to precisely control when the right and left ventricles get stimulated. The timing is gradually varied to make contraction as coordinated as possible and to determine the best cardiac output.”

“Using echocardiography to look at hemodynamic changes in the heart helps us optimize these devices in an effort to not only make patients feel better, but also possibly reduce mortality as well.”

Robert C. Capodilupo, MD, FACC,
Director of the NEHI noninvasive laboratory

Evaluating benefits of pacing

“Using echocardiography to look at hemodynamic changes in the heart helps us optimize these devices in an effort to not only make patients feel better, but also possibly reduce mortality as well,” adds Robert C. Capodilupo, MD, FACC, director of the NEHI noninvasive laboratory.

Evaluating these hemodynamic changes with echocardiographic optimization requires coordination between echocardiography and electrophysiology resources. The Congestive Heart Failure Clinic at NEHI is also an integral component of this process, identifying potential patients for the procedure, as well as post optimization follow-up.

Assessing the benefits of biventricular pacing in patients with less severe NYHA Class II heart failure symptoms will be the focus of the RAFT trial (Resynchronization/Defibrillation for Ambulatory Heart Failure Trial). Enrollment at medical centers across the U.S. is expected in the near future.

For more information about the echocardiographic optimization of biventricular pacing, contact Dr. Haugh or Dr. Capodilupo at 603.669.0413. ❏

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6. How often do you access the Internet for information regarding your medical specialty: *(check only one answer)*

- Once a day
- Once a week
- Once a month
- Never
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- Male Female
- I consider myself a referring physician

Medical specialty: *(please specify)*

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Thank you for taking time to complete this survey.

Catholic Medical Center
Marketing and Corporate Communications Department
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Reader Survey: What do you think?

New Treatment for Atrial Septal Defect

Dear Atrium Reader,

The New England Heart Institute has been publishing *Atrium* for eight years. As we've grown, we want to determine whether *Atrium* is meeting your expectations. We ask that you consider completing this survey. **Willing participants who wish to provide us with their completed survey and contact information will be entered to win a \$200 Visa® Gift Card.** Completed surveys received by April 13, 2007 will be eligible.

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- Pass *Atrium* to my colleague(s) with marked articles they may find of interest
- I do not read *Atrium* at all

2. Which areas of cardiovascular health are of most interest to you? (please print)

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- Search for more information on the Internet
- Change the course of treatment for a patient

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I would like to see more case studies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would be willing to go to the New England Heart Institute website for a case study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Atrium</i> is my only source of information about the New England Heart Institute	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Some congenital heart defects often go unrecognized for many years, as patients are typically asymptomatic. Atrial septal defect (ASD) may become evident only as a person grows older and develops arrhythmias, edema, exertional dyspnea or congestive heart failure. The condition can lead to stroke in some instances.

"Atrial septal defects that are hemodynamically significant are often picked up incidentally when patients are evaluated for other cardiac symptoms," notes David J. Goldberg, MD, FACC, director of interventional cardiology at the New England Heart Institute. "If a patient's primary care physician detects a heart murmur and wants to determine its precise nature, an echocardiogram can be ordered. If a significant ASD is discovered, the ASD can be repaired. With early intervention, the patient is less apt to experience more serious consequences later."



DAVID J. GOLDBERG
MD, FACC

Atrial septal defects have traditionally been repaired during open heart surgery. Recently, however, the FDA has approved the percutaneous insertion of a device to close the hole in the atrial septum.

In a procedure similar to a heart catheterization, and utilizing fluoroscopy and ultrasound to ensure accurate deployment, the device is advanced through the femoral vein, placed over the hole in the atrial septum and secured by a wire that crosses the opening. The closure device halts the abnormal flow of blood from the left atrium across the atrial septum to the right atrium. Following the procedure, patients typically spend one night in the hospital and return home the next day.

"If a significant ASD is discovered, the ASD can be repaired. With early intervention, the patient is less apt to experience more serious consequences later."

David J. Goldberg, MD, FACC
Director of interventional cardiology

"Adults with atrial septal defect who have been treated with this closure device have done remarkably well," says Dr. Goldberg. He and two other NEHI interventional cardiologists, Jeffrey F. Bleakley, MD, FACC, and James M. Flynn, MD, FACC, have received specialized training in percutaneous atrial defect closures and will soon be performing the procedure at the New England Heart Institute. Drs. Blakely and Flynn have used the device during numerous atrial septal defect closure procedures during their fellowship training.

The device is currently being studied for the closure of other types of congenital lesions, including patent foramen ovale, a common cause of stroke in young adults.

Primary care physicians and cardiologists who have patients with an atrial septal defect may refer them to the New England Heart Institute for evaluation for potential therapy.

For more information on atrial septal defect closure, contact Dr. Goldberg at 603.669.0413.

Continued on page 4

Indications for Endovascular Treatments

In recent years, treatment of patients with stenotic atherosclerotic arteries and aneurysms has shifted from surgical intervention to more minimally invasive endovascular approaches, which may lower procedural morbidity and decrease patient trauma and pain.

While the long-term patency of some catheter-based interventions is still unknown, Yvon R. Baribeau, MD, FACS, a cardiothoracic and vascular surgeon at Catholic Medical Center, believes that selecting the best procedure for a particular patient depends on the patient's age, particular anatomy and comorbidities.

Recently, Dr. Baribeau completed an endovascular fellowship at New York-Presbyterian Hospital, the University Hospital of Columbia and Cornell.

Peripheral and coronary vascular disease

Percutaneous intervention can be utilized to open chronically occluded arteries in patients with severe lower extremity peripheral vascular disease who have no available conduits for surgical intervention. Utilizing a minimally invasive procedure, an interventionalist can increase lower extremity blood flow, alleviate a patient's pain and heal ulcers.

For years, vascular surgeons have known that limb survival is often longer than graft survival. The ultimate goal is to ease patient suffering, understanding that the long-term survival of patients with chronic limb ischemia can sometimes be quite limited.

"While endovascular techniques cannot be utilized for all aneurysms, this technology will revolutionize the treatment of aneurismal disease at the thoracic level, as it has at the abdominal level."

Yvon R. Baribeau, MD, FACS

In a younger population, endovascular treatment of short lesions of the lower extremities is also favored. A more difficult decision concerns patients in which there are proven results with minimally invasive surgery, such as in-situ vein bypass with spinal anesthesia.

"To date, and despite performing both treatments, I favor this approach in many patients, irrespective of their age and comorbidities,

assuming they have good distal target vessels," says Dr. Baribeau.

Similar benefits are seen in patients with significant coronary artery disease. Performing angioplasty and stenting has the advantage of postponing further interventions until a later date and reducing the risks associated with a second surgical intervention.

While there is literature to support better survival of patients having surgical myocardial revascularization in certain subsets of patients, risk of stroke and renal failure exists. CT surgeons and cardiologists at CMC carefully weigh these and many other factors before choosing the optimal therapeutic approach.



YVON R. BARIBEAU
MD, FACS


Abdominal and thoracic aneurysms

For patients with abdominal aneurysms, endovascular treatment has an excellent long-term success rate. Although delayed rupture of the aneurysm may still occur despite being treated through endovascular means, the technique tends to have a significantly lower rate of morbidity.

"While endovascular techniques cannot be utilized for all aneurysms, this technology will revolutionize the treatment of aneurismal disease at the thoracic level, as it has at the abdominal level," explains Dr. Baribeau. "With thoracic aneurysms, this technique may be better than some surgical techniques because surgery in the chest can have high morbidity, especially in elderly patients with respiratory failure. Also, combined or hybrid procedures, where endovascular treatment of a lesion is added distally to a proximal surgical correction, appears promising."

Potential alternatives to endovascular treatment include a minimally invasive videoscopic surgical procedure that utilizes a camera in the abdomen during a surgical correction, or a robotic procedure in the chest for a surgical result with lower morbidity and fewer complications.

"Endovascular treatment makes sense when you look at the expected longevity of some of these patients," says Dr. Baribeau. "Our goal is to not have a patent procedure at 20 years, but to have patients who are not going to die from this particular pathology or not suffer from complications for their remaining years. We at CMC have always excelled at fitting the procedure to the patient, and not the other way around."

For more information about endovascular treatments, contact Dr. Baribeau at 603.663.6340. 

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