



Heart & Vascular Update

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A publication from the physicians and staff of the Thoracic and Cardiovascular Institute, P.C.

Relieving Chronic Angina

Noninvasive, outpatient
treatment improves
quality of life

Conquering Peripheral Artery Disease

Early treatment
stops progression,
eases symptoms

A Broken Heart Can Kill You

Don't let emotions
get the best of you



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A publication from



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Heart & Vascular Update is an informative and educational resource for health care professionals, medical affiliates, employer groups, and the general public. This publication will feature physicians and facilities of the Thoracic and Cardiovascular Institute, communicate educational news and treatment trends, and contain various health-oriented articles of interest. The information contained in this publication is not intended to replace a physician's professional consultation and assessment. Please consult your physician on matters related to your personal health.

President's Message



It is our pleasure to provide you with our third issue of Thoracic and Cardiovascular Institute's (TCI) *Heart & Vascular Update*. When we made the decision to publish our magazine, we did so with the intent to provide both education and information for our readers. As the feedback seems to indicate, our goal has been a success. We are dedicated to continuing this effort in our future issues.

In this issue you will find articles that discuss peripheral vascular disease, interventional cardiology, mental wellness and your heart, and a procedure known as enhanced external counterpulsation (EECP). We also delve into sleep disorders and nutrition, as well as their impacts on your heart. We hope that you will find all the articles interesting and useful.

TCI has been serving your cardiology needs for more than 35 years. We strive for excellence in all that we do through education, research, and training. Above all else, at TCI we put the patient first. It is our mission to provide the best patient care for our community.

Thank you for being a part of the success of *Heart & Vascular Update*.

Sincerely,
Michael J. James, DO, FACC, FACO
President



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Enhanced external counterpulsation (EECP) is an FDA-approved treatment for chronic refractory angina. This method rapidly inflates and deflates three cuffs on each leg sequentially, from calf to lower thigh to upper thigh. The pulsing is timed to the heartbeat. The full 35 hours of treatment takes seven weeks. Reduction of angina symptoms may last 12 months.



Relieving Chronic Angina

Noninvasive, outpatient treatment improves quality of life

BY JOEL M. COHN, MD, FACC

REFRACTORY CHRONIC ANGINA

PECTORIS is a challenging and growing problem for physicians to resolve. Frequent attacks of angina, or chest pain, severe enough to limit ordinary physical activity can lead to significant reductions in patient quality of life. Angina-associated chest pain usually occurs because the muscles of the heart are not receiving a sufficient amount of oxygen.

This oxygen-starved condition, called myocardial ischemia, most commonly occurs because of atherosclerotic disease of the coronary arteries that supply blood to the heart. The typical angina symptom is an uncomfortable pressure, fullness, squeezing, or pain in the center of the chest. This also may be felt in the neck, jaw,

shoulder, back, or arm. Radiating pain down the left arm or both arms is not uncommon.

Normally, the chest discomfort is relieved with rest, nitroglycerin, or both. Because angina increases the risk of heart attack, cardiac arrest, and sudden cardiac death, patients experiencing it are encouraged to seek an evaluation by a cardiologist. About 25,000 to 75,000 new cases of angina are diagnosed each year.

A noninvasive option for some

Some patients with angina inadequately respond to pharmacologic therapy and are either unsuitable for stent or balloon angioplasty (revascularization by percutaneous coronary inter-

vention), coronary artery bypass surgery, or have a poor risk/benefit ratio for surgery. For such patients a number of clinical studies have suggested that enhanced external counterpulsation (EECP) can reduce angina symptoms and improve objective measures of myocardial ischemia, while having a favorable risk/cost-to-benefit profile.

The Food and Drug Administration has approved EECP as an outpatient, noninvasive means to treat chronic refractory angina, which uses three pairs of inflatable cuffs to sequentially squeeze the calf, lower thigh, and upper thigh of each leg. The cuffs inflate and deflate rapidly and are timed to the cardio cycle. An electrocardiogram triggers these inflate/deflate events. The inflation phase raises diastolic aortic pressure, coronary perfusion pressure, venous return, and cardiac output. The deflation phase reduces systolic pressure, thus decreasing ventricle workload.

This inflation/deflation cycle occurs about 60 to 80 times per minute during an EECP session, which lasts about one hour. A full course of EECP treatment lasts seven weeks, with 35 hours of treatment time. This procedure is reimbursable by most insurances as well as Medicare. Though there are very few side effects associated with this treatment, some patients have reported headaches, dizziness, leg chafing, fatigue, muscle aches, bruising, and skin irritation.

Patient benefits

After EECP treatment, patients report that the frequency and intensity of angina attacks are reduced, and that they can exercise longer without chest pain and have less need for nitroglycerin. Both men and women report improvement in health-related quality of life measures (i.e., performing activities of daily living, ability to work, bodily pain, confidence in health, energy, ability to engage in social activities with family and friends, anxiety, and depression) for up to 12 months after EECP treatment.

Nancy Ernest, wife of Robert Ernest, said her husband remained free of angina symptoms for four years after treatment. "EECP has helped my husband tremendously," she said. "We live 25 miles from here, and if we didn't have a lot of faith in EECP, we wouldn't be spending [all this money on gas] driving in five days a week [to the clinic]."

The International EECP Patient Registry showed an improvement of at least one angina class in 69 percent of the patients with Canadian Cardiovascular Society Class III or IV refractory angina pectoris. Other studies have reported similar changes in angina classification in up to 84 percent of EECP-treated patients.

Clinical studies

The MUST-EECP (multicenter study of enhanced external counterpulsation) study, a placebo-controlled, randomized trial, showed a significant reduction in angina during treadmill testing as well as an increase in angina-free exercise time. The need for subsequent invasive intervention, either catheter-based or surgical, also was low in patients treated with EECP. Five-year morbidity and mortality rates are comparable to those for patients receiving coronary bypass surgery.

The benefits of mechanism are unclear. The most supported theory is that EECP triggers the growth of new blood vessels (angiogenesis) that act like a natural arterial bypass, carrying blood around larger blocked vessels. Chest pain then lessens because the heart again can receive oxygen-rich blood. Another theory is that the increased force of blood flow to the heart that EECP creates causes enhanced endothelial (cells lining the blood vessels) shear stress that stimulates the release of nitric oxide, an important vasodilatory, antiplatelet, antithrombotic, and anti-inflammatory agent, which contributes to improved blood flow.

In spite of the wealth of data documenting the effectiveness of EECP treatment of angina, this procedure has failed to enter into the mainstream of cardiology practice. Some cardiologists are unaware of the treatment. Access to the procedure is limited. Other physicians are hesitant to prescribe it because it requires a motivated patient who is committed to the seven weeks of necessary treatment.

Frequent attacks of angina, or chest pain, severe enough to limit ordinary physical activity can lead to significant reductions in patient quality of life.

Some patients complaining that the treatment sessions are time consuming, awkward, and uncomfortable drop out of treatment before experiencing any benefits. This may happen as early as two weeks. Many potentially treatable patients are ineligible for therapy, including those with severe heart failure, serious heart valve problems, arrhythmias, or recent (within three months) coronary bypass surgery or myocardial infarction. Other disqualifying conditions include having cardiac catheterization in the preceding two weeks, a left ventricular ejection fraction below 30 percent, unstable angina (having unexpected and severe chest pain), a permanent pacemaker, uncontrolled high blood pressure, severe peripheral vascular disease, a tendency to bleed excessively, and pregnancy.

EECP is the only noninvasive, outpatient treatment that is effective and safe for patients with stable refractory angina. Although not suitable for all patients, EECP offers a chance to reduce angina-associated chest pain and improve quality of life noninvasively for motivated patients. ♥



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Apnea and Heart Disease

How to know if your cardiovascular health is at risk

BY GAURESH H. KASHYAP, MD, FACP, FCCP, FAASM

THERE IS AN INCREASING AWARENESS of relationships between sleep apnea and other medical disorders such as metabolic syndrome, resistant hypertension, insulin resistance, and cardiovascular disorders, including myocardial infarction and stroke. Obesity, diabetes, and hypertension also are risk factors for coronary artery disease. Sleep apnea shares these risk factors as well.

An obese individual who snores and is sleepy during the day is likely to have sleep apnea. It commonly is associated with pauses in breathing observed by the bed partner. Repeated sleep fragmentation as a result of apneas causes sleep deprivation and results in daytime sleepiness. Apnea also is associated with increased appetite, depression, and motor vehicle and work-related injuries.

With the onset of sleep, the upper airways have a tendency to relax, resulting in increased upper airway resistance. Continued respiratory efforts result in further closure of the upper airways that eventually causes apneas. When cessation of air flow occurs for 10 seconds or longer, it is called an apnea, while reduced amplitude of flow is termed hypopnea. Both have similar detrimental effects.

Apneas and hypopneas are commonly, but not always, associated with oxygen desaturation. Apneas cause increased carbon dioxide levels along with distortion of airways that

causes arousals and bursts of increased sympathetic tone. These effects can result in tachycardia, paroxysmal hypertension, perhaps cardiac arrhythmias, and peripheral vasoconstriction. Earlier in the course of sleep apnea, these individuals fail to experience decreased blood pressure at night.

Conditions that predispose a person to develop sleep apnea include a large neck, hypothyroidism, enlarged uvula, narrow oropharyngeal space, nasal obstruction, retrognathia, and genetic factors. Cardiovascular associations with sleep apnea include atrial fibrillation, myocardial infarction, congestive heart failure, hypertension, stroke, and sudden cardiac death. Metabolic syndrome — a combination of hypertension, diabetes, and obesity — also is common with sleep apnea.

The most accurate diagnostic tool at present is a nocturnal polysomnography (NPSG) performed in a sleep center. Multiple surface electrodes placed on the body monitor electroencephalogram (EEG) data for sleep staging; electromyogram (EMG) data on muscle tone; and eye movements, cardiac rhythm, oxygen saturation, air flow, respiratory efforts by thoracic and abdominal strain gauges, and limb movements. Video recording is done to observe the body position and abnormal motor movements.

Application of continuous positive airway pressure (CPAP) via well-fitting nasal-oral interface/mask is one treatment for

sleep apnea. Various designs and sizes are available. It is hooked up to a blower and a precise continuous airway pressure is delivered to keep the upper airways open. The exact pressure is estimated in the sleep laboratory during a titration study. CPAP is known to improve hypoxemia, sleep fragmentation, hypertension, congestive heart failure, and overall quality of life. High adherence should be encouraged to achieve the maximum benefit.

Various modifications of CPAP are in vogue — C-Flex, Autoset, and BiLevel, to name a few. The latest treatment of central sleep apnea and Cheyne-Stokes respiration is BiLevel ventilation with a backup rate, with or without oxygen and adaptive support ventilation (ASV). Weight loss, even if it is modest, is beneficial. Treatment of underlying cardiopulmonary disorders and hypothyroidism and relief of upper nasal airway obstruction is essential. If excessive sleepiness persists, Provigil, an alertness enhancing medication, may be prescribed.

Sleep apnea is commonly seen in individuals with cardiovascular disorders, resistant hypertension, and obesity. Untreated sleep apnea leads to increased incidence of hypertension; sudden cardiac death; cardiac arrhythmias, including recurrent and persistent atrial fibrillation; congestive heart failure; daytime sleepiness; increased appetite; and insulin resistance. The diagnosis is relatively easy to make, and treatment is simple and effective. Keep sleep apnea in mind as a risk factor for cardiovascular disorders. ♥



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Conquering Peripheral Artery Disease

Early treatment stops progression, eases symptoms

BY JOEL M. COHN, MD, FACC

PERIPHERAL ARTERIAL DISEASE (PAD) is a common — some even say pandemic — circulatory problem. With PAD, the arteries of the limbs, intestines, kidneys, and other vessels outside the heart become clogged or partially blocked by fatty deposits on the inner arterial walls. Also known as arteriosclerosis obliterans, PAD primarily results from atherosclerosis. The disease is typically segmental, with significant variation from patient to patient. It occurs in the lower extremities more frequently than the upper extremities.

PAD affects more than 10 million Americans, including 5 percent of adults 50 years of age and older. However, only about one in four is diagnosed and receives treatment. Though many people live with daily symptoms, PAD can lead to acute limb ischemia, higher risk of heart attack and stroke, and even limb loss.

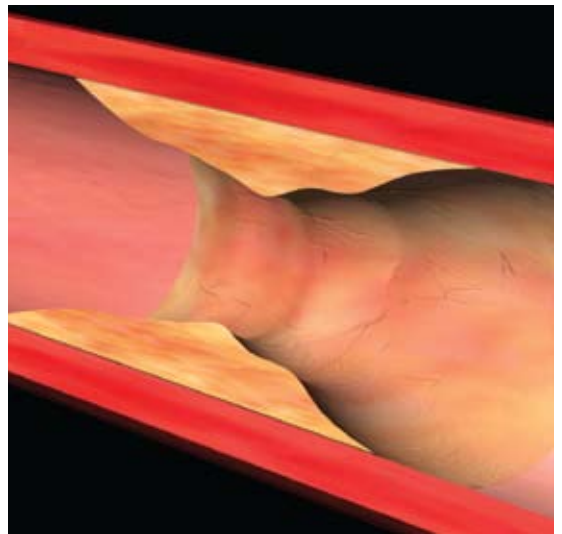
Risk factors

Primary care physicians should be aware of the signs and symptoms of PAD, including the most prominent early-warning indication (e.g., when a patient complains of cramping in the legs and buttocks during periods of high activity, otherwise known as intermittent claudication). Common risk factors include being 50 years of age and older; being overweight; and having high blood pressure, hyperlipidemia, hyperviscosity, or a family history of these conditions.

When diagnosed early, PAD is often treated with simple exercises, diet, and drug treatments to reduce cholesterol.

Smoking and diabetes mellitus are additional risk factors that, when combined with the resultant diminished blood flow due to PAD, can lead to tissue death, which can result in possible amputation. The atherosclerotic narrowing of the arterial lumen predisposes the patient to thrombus, or clot formation. When combined with risk factors such as sepsis, hypotension, low cardiac output, aneurysms, aortic dissection, or bypass grafts, patients are susceptible to complete occlusion of the vessel lumen and loss of blood flow to the supplied organ or area of the body.

Though PAD can manifest itself as a functional disorder, such as Raynaud's disease, or rare diseases, such as Buerger's disease and



polyarteritis nodosa, PAD is more commonly associated with structural changes in the blood vessels. These changes include carotid occlusion, abdominal aortic aneurysm (AAA), and peripheral vascular diseases of the lower extremities.

Diagnostic tests

A systematic exam of the patient and their peripheral vasculature is critical for proper evaluation. It should begin with a complete medical history and physical exam. More specific arterial examinations are sometimes needed.

Paralysis and paraesthesia suggest limb-threatening ischemia and require prompt evaluation and consultation. Physicians should investigate all peripheral vessels for pulse quality and bruit (turbulent blood flow past obstruction) as well as check the heart for murmurs and other irregularities. The skin should be observed for an atrophic, shiny appearance or trophic changes, including alopecia, dryness, scales, erythema, chronic pigmentation changes, or brittle nails.

Prevention

At-risk patients can benefit from a number of lifestyle changes. Such patients should not smoke (smokers are two to 25 times more likely to develop PAD) or cease smoking (cessation may decrease signs and symptoms of PAD or stop them from getting worse). Dietary changes also are recommended.

Patients should increase their intakes of low-saturated-fat and low-cholesterol foods and daily fiber. Patients at risk for or with PAD symptoms should also limit their alcohol consumption to no more than two drinks daily, exercise for at least 30 minutes a day (three days a week), and lose weight if needed. Patients also may benefit from control of high blood pressure and stress reduction. Diabetic patients should maintain their blood sugars at steady levels and check their blood sugars often.

Treatments

PAD treatment has two major goals. The first is to manage symptoms, such as leg pain, so the patient can resume normal physical activities. The second is to stop the progression of PAD, thereby reducing the risk of heart attack, stroke, and further complications.

If lifestyle changes are not sufficient, medications such as cilostazol (Pletal) or pentoxifylline (Pentoxil, Trental) have been shown to decrease claudication. Additional options for treatment include drugs that help improve physical stamina, antiplatelet agents, or cholesterol-lowering agents. Minimally invasive procedures such as angioplasty, atherectomy, or stenting are sometimes an option. Bypass grafting using veins or an artificial conduit is sometimes necessary.

When diagnosed early, PAD is often treated with simple exercises, diet, and drug treatments to reduce cholesterol. Such early treatment can stop progression of the disease and reduce heart problems later on.

If left untreated, PAD can lead to worsening claudication, rest pain, or even amputation. With a comprehensive and coordinated approach to treatment and an appropriate and timely referral to a vascular medicine specialist, individuals who have PAD can significantly reduce their health risks and have long, productive lives. ♥



Joel M. Cohn, MD, FACC, is board certified in cardiology and interventional cardiovascular medicine. He received his medical degree from Georgetown University School of Medicine. He completed his residency in internal medicine at Indiana University/Krannert Institute of Cardiology. He completed his training with The William Dorros-Isadore Feuer Interventional Cardiovascular Disease Foundation at St. Luke's Hospital in Milwaukee. Dr. Cohn has extensive experience in all aspects of cardiology with a special interest in interventional cardiology. He has pursued specialized training in vascular medicine and is trained in advanced peripheral vascular interventions. Dr. Cohn is a member of the International Society for Endovascular Surgery and a member and Fellow of the American College of Cardiology.

Arterial Examinations

When diagnosing PAD, arterial examinations using vascular ultrasound, diagnostic angiography, magnetic resonance imaging angiography (MRA), and computed tomography angiography (CTA) are needed if the physical exam reveals any of the following:

- ▶ Abnormal blood pressure ratio between the ankle and arm,
- ▶ Weak or absent pulse below the suspected narrowed area of the artery,
- ▶ Stethoscopically detected whooshing sounds (bruits) over the arteries,
- ▶ Evidence of poor wound healing in the area with reduced blood flow, and
- ▶ Decreased blood pressure in the affected limb.



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Interventional Cardiology

New treatment options available for chest pain

BY NAM S. CHO, DO

Treatments for angina include medical therapy, such as drugs, and interventional therapy, including catheter-borne stents to open and stabilize occluded arteries (next page-top). Drug therapy may involve aspirin, statins, lipid-lowering drugs, beta blockers, and nitrates (below).



FOR THE PAST 30 YEARS, interventional cardiology, which includes cardiac catheterizations, angioplasty, and stenting, has been a useful tool for treating angina (heart-related chest pain). During recent years, technological developments have begun providing more benefits to patients.

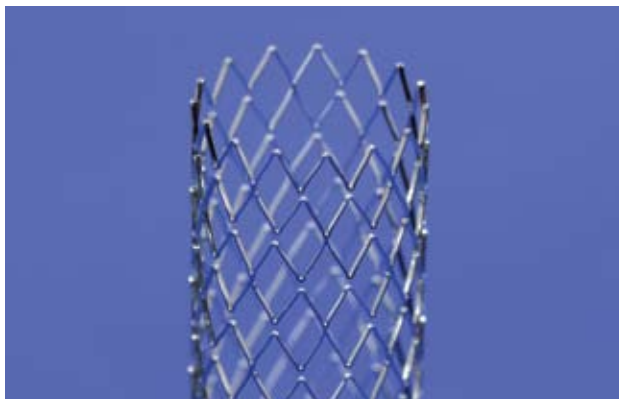
Angina pectoris is chest pain caused by ischemia, or lack of blood flow, and, therefore, oxygen supply to the heart muscle. Ischemia results from a narrowing of one or more of the coronary arteries, usually by a buildup of plaque in the arteries, a condition called atherosclerosis. Angina almost always is caused by coronary artery disease (CAD), one of the leading causes of death in the United States.

Symptoms of angina are usually triggered by activity or exertion and include chest pressure and tightness that may or may not radiate to the neck and arms. But it's important to note that women, diabetics, and the elderly tend to develop more atypical symptoms. Thus, physicians cannot rely only on classical symptoms when looking for a CAD or angina diagnosis. If they do, they might miss a significant portion of the population.

Medical therapy remains the cornerstone for treatment of angina. Many cardiologists treat angina first using medical therapy — drugs like aspirin, statins, lipid-lowering drugs, beta blockers, and long-acting nitrates, such as nitroglycerin. But rather than medical therapy, it often is in the best interest of the patient to provide interventional treatment — involving angioplasty with stenting. These procedures generally show better symptom relief and clinical long-term outcomes for angina patients (particularly for patients with unstable angina) than medical therapy alone. Patients with acute coronary syndromes, such as unstable angina and myocardial infarction, derive the most benefit.

Interventional cardiology is a subspecialty of cardiology that deals with the catheter-based treatment of heart disease. It includes procedures such as cardiac catheterizations (also known as heart cath), angiograms, balloon angioplasty, and stenting to unblock clogged arteries that supply blood to the heart, stop heart attacks, and relieve angina. Most interventional procedures involve threading a small flexible tube called a catheter with a balloon on its tip to the blockage. The balloon is then inflated to clear the blockage and restore blood flow.

Other interventional cardiology procedures include emergency angioplasty and stenting of occluded coronary vessels during a heart attack as well as coronary thrombectomy to remove blood clots from coronary vessels. A stent is a small mesh tube usually placed in an artery blocked or narrowed by atherosclerotic plaque during angioplasty. The angioplasty restores



blood flow through the artery by inflating coronary balloons and stents against the walls of the vessel, compressing the plaque and widening the passageway. The stent helps prevent the artery from renarrowing or getting blocked again later. Stents are usually made of metal mesh.

A new generation of drug-eluting stents provides continuous medication to keep blood vessels from narrowing. The stents are coated with medicines that are slowly and continuously released (eluted) into the artery. These medicines help prevent the artery from becoming blocked again (restenosis). Another advance is the use of multiple metals (i.e., cobalt and chromium), rather than the traditional stainless steel mesh in stents, which allows manufacturers to design smaller stents that can help physicians access and place the stent in the blocked vessel.

In 2003, the Food and Drug Administration approved the first drug-eluting stents. Until then, only bare-metal stents were available for use in coronary arteries, and these carried a 25 percent risk of in-stent stenosis within six to eight months. That is, an overgrowth of vascular tissue inside the stent would narrow the flow of blood through the artery. Drug-eluting stents cut the risk of restenosis to 10 percent by releasing drugs (i.e., paclitaxel, sirolimus) that quickly move from the surface of the stent to the arterial cells to inhibit the proliferation of vascular tissue.

As technology progresses, newer drug-eluting and stents made from several types of metals continue to come onto the market. However, they now offer few advantages to currently used stents of a similar type. For example, the newer drug-eluting stents may use different medications (i.e., everolimus), but with no increase in long-term effectiveness. On the other hand, smaller stent designs, made possible with the use of several types of metals, could alleviate what has long been the main complicating factor in stenting — facilitating delivery of the stent to the stenotic area.

Another technological advance that could significantly improve outcomes for angina/CAD patients is the rapidly advancing field of percutaneous valvular repair. Researchers are studying the safety and effectiveness of the devices and techniques used to affect such repairs. They also are trying to determine the profile of patients most likely to benefit from such treatment.

Clinical trials involving the implantation of transarterial percutaneous valves (PAVs) and transcatheter PAVs have shown clinical improvement for high-risk patients whose symptoms have persisted after one year. Similarly, a device known as a

Mitra Clip used to perform percutaneous mitral valve repairs has demonstrated significant clinical improvements in patients with mitral regurgitation. Note that no device for performing percutaneous valvular procedures is yet approved for use in the United States. ♥



Nam S. Cho, DO, is a board-eligible interventional cardiologist. He earned his medical degree from Nova Southeastern University College of Medicine in Fort Lauderdale, Florida, and completed his internship, residency, and fellowship in cardiology at Ingham Regional Medical Center. He is a clinical professor at the College of Osteopathic Medicine at Michigan State University, an active staff member at Ingham Regional Medical Center and Sparrow Hospital, and consulting staff member at Central Michigan Community, Clinton Memorial, and Hayes Green Beach Memorial hospitals and Memorial Healthcare Center. Dr. Cho is a member of the American Osteopathic Association and the American College of Osteopathic Internal Medicine, and he is board certified in cardiology. He has been involved in clinical research in sudden cardiac death. He is accepting new patients.

Pushing Technology Frontiers

TCI-affiliated foundation drives clinical studies

The Thoracic and Cardiovascular Institute (TCI) has been at the forefront of cutting-edge interventional cardiology techniques since the subspecialty was introduced in the late 1970s. TCI cardiologists were the first in the Lansing/mid-Michigan area to perform angioplasty. They also were the first in the region to implant a stent. The practice currently has three interventional cardiologists, with a fourth expected to join the group on July 1.

Given all the new technology in stenting and interventional cardiology, it's not surprising that all of TCI's interventional cardiologists keep up to date by participating in clinical trials involving stents. TCI's research arm, the Thoracic and Cardiovascular Healthcare Foundation (TCHF), carries out these trials.

The foundation is affiliated with TCI but has a nonprofit status. Since 1992, the foundation has carried out many national studies and clinical trials in cardiology, electrophysiology (the cardiology subspecialty that treats electrical cardiac problems such as arrhythmias), and cardiovascular surgery. It has conducted several studies involving stents for the coronary and peripheral arteries, as well as bare-metal and drug-eluting stents from several manufacturers. The foundation is now a multicenter (i.e., one of many centers in the United States and internationally) conducting two clinical trials underway on newer, drug-eluting stents.

Visit www.tchf.org for more information.

Getting to Know TCI

Practice sets the bar for cardiovascular care in the region

THORACIC AND CARDIOVASCULAR INSTITUTE (TCI) has fielded various questions about its organization and staff during the past year, many of them similar. A reader suggested that TCI address some of these common questions in the next issue of the magazine — a great idea. What follows are questions and answers to help you better acquaint yourself with TCI, its services, and the people who make TCI the premier heart and vascular specialist provider in the region.

Q How long has TCI been around, and what type of services does TCI provide?

A Since its founding in 1969, TCI has focused on providing the highest quality health care services, offering prevention, diagnosis, treatment, rehabilitation, and education to patients with cardiovascular, thoracic, and vascular disease. TCI's outstanding medical team — specialists in cardiology, electrophysiology, and nuclear medicine — has a variety of sophisticated diagnostic tools designed to pinpoint disease and its risk factors painlessly and precisely. By staying on the leading edge of new technology, TCI has a number of state-of-the-art therapeutic alternatives available when treatment is indicated.

Q What is the TCI Healthcare Foundation, and what can it do for me?

A Thoracic and Cardiovascular Healthcare Foundation was founded in June 1991. It is a nonprofit medical research foundation that involves the physicians and the patient population of TCI. The Foundation has conducted more than 180 clinical trials, and it is actively recruiting for more studies. These studies keep TCI's physicians on the cutting edge of research. It also means that physicians are trained on the newest technologies before they are available.

Q Where can I go to get information on cardiology or procedures in cardiology?

A Many resources are available to cardiology patients. One easily accessible resource is the Internet. Recognizing that patients needed somewhere "safe" to gather information, TCI developed its Web site, www.tciheart.com, as a resource for its patients, as well as anyone who might be looking for information on cardiology. This site has information on many cardiovascular diseases and procedures. Other helpful sites are available online, such as the one provided by the American Heart Association (www.americanheart.org). Be sure to discuss this information with your physician. The information found on the Internet is useful, but it should not take the place of advice and personal evaluation from a trained professional.

Q Where is TCI located?

A TCI is located in Lansing, Michigan, with clinics in Charlotte, Mt. Pleasant, Owosso, St. Johns, Eaton Rapids, and Carson City. ♥



Christopher M. D'Haem, DO, FACC, (far right) and the Lab staff explain a procedure to a patient.

A Broken Heart Can Kill You

Women may be at the greatest risk

BY KIRK LAMAN, DO, FACC

LIFE CAN BE CHALLENGING, EVEN OVERWHELMING. Tornadoes strike. A debilitating illness weighs us down. Unexpectedly, we lose someone we hold dear. Life has a way of stressing us to the limit of our ability to cope.

The National Institutes of Health recently reported that each year more than 60 million Americans seek treatment for anxiety and depression as a result of the mental strain they experience. What is clear is that the tension of daily living can do more than unnerve our hearts.

Sometimes, hearts get broken. And not just broken in the figurative sense, as in from a relationship that has gone sour. Hearts can actually become cracked like a piece of delicate china. After being battered by emotional or psychological upheavals, our hearts can become broken on the inside. Overwhelming grief or sadness can fracture our hearts.

Know what I'm talking about? Most people do. Most people have had their hearts deeply hurt in one way or another. The

pain, anguish, or heartache can be so shocking that we may feel like giving up on life. But did you know that a broken heart can literally kill you? It's true. A broken heart can be lethal. And unfortunately, women may be at the greatest risk.

Medical researchers have recently identified a new illness called "The Broken Heart Syndrome."

First described in 1991 by Japanese physicians, The Broken Heart Syndrome is a medical condition that predominantly afflicts middle-aged women. The condition leads to symptoms similar to a heart attack. Women report chest pain, shortness of breath, and feelings of severe fatigue.

The symptoms are often so frightening that these women seek medical help. When they present to the emergency room, they frequently have an abnormal echocardiogram (ECG) and may even suffer severe breathlessness and a buildup of fluid in the lungs, which are otherwise symptoms of congestive heart failure. A cardiac catheterization (a special X-ray test to examine the heart's arteries) demonstrates that their symptoms are not a heart attack

because no cholesterol deposits are present. Yet, their heart muscle is often severely weakened.

Research from Duke University published in *The New England Journal of Medicine* (2005) has demonstrated that excessive levels of stress hormones, particularly adrenaline-like substances, are circulating in the blood. Often, the adrenaline levels will be three to four times the level commonly seen in a routine heart attack. Overwhelming stress is believed to be the culprit in this condition that can markedly reduce the heart's ability to pump blood. ►

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Fortunately, most patients make a full recovery from the illness, but it should not be taken lightly. Interestingly, The Broken Heart Syndrome is changing the way physicians view emotional health. We used to think that feelings do not affect us physically.

Research has shown that counseling, meditation, yoga, and other self-help practices can have a positive impact on your heart health.

We thought that the notion of being "scared to death" was an old wives' tale or folklore.

Yet, scientific research in the last few years has shown this to be untrue. Our feelings, particularly negative feelings such as fear, anger, grief, loneliness, anxiety, and depression, can have a harmful effect on our physical health. They can actually create illness. A broken heart can indeed kill you!

So how does a person know if they are at risk of dying from a broken heart, and what can they do to prevent it? First, recognize that your emotional health is important. Do not discount strong feelings of discontent or inner pain. Second, seek medical help. Your physician can help decide if your emotional state is severe enough to require the care of a psychologist or psychiatrist.

Third, take the time to get more in touch with your own feelings. Simple things like spending 15 minutes each day for personal reflection has helped many people overcome troubling emotional states.

Finally, recognize that you can improve the way you feel. Research has shown that counseling, meditation, yoga, and other self-help practices can have a positive impact on your heart health.

A broken heart can kill you, but you don't have to become a medical statistic. You can change your life. ♥



Kirk Laman, DO, FACC, is board certified in cardiology and internal medicine by the American Osteopathic Board of Internal Medicine. He also is board certified in nuclear cardiology. Dr. Laman earned his medical degree at the University of Kansas City, College of Osteopathic Medicine in Missouri. He interned at Garden City Hospital and completed his residency in internal medicine at Pontiac Osteopathic Hospital, both in Michigan.

His two fellowships at Sinai Hospital in Detroit were in cardiovascular disease and peripheral vascular disease and in cardiology and nuclear cardiology. Dr. Laman specializes in preventive cardiology. He is a Fellow and member of the American College of Cardiology and a member of the American Osteopathic Association, American Society of Nuclear Cardiology, and Michigan Association of Osteopathic Physicians and Surgeons.

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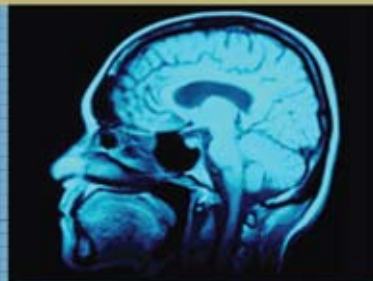
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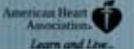


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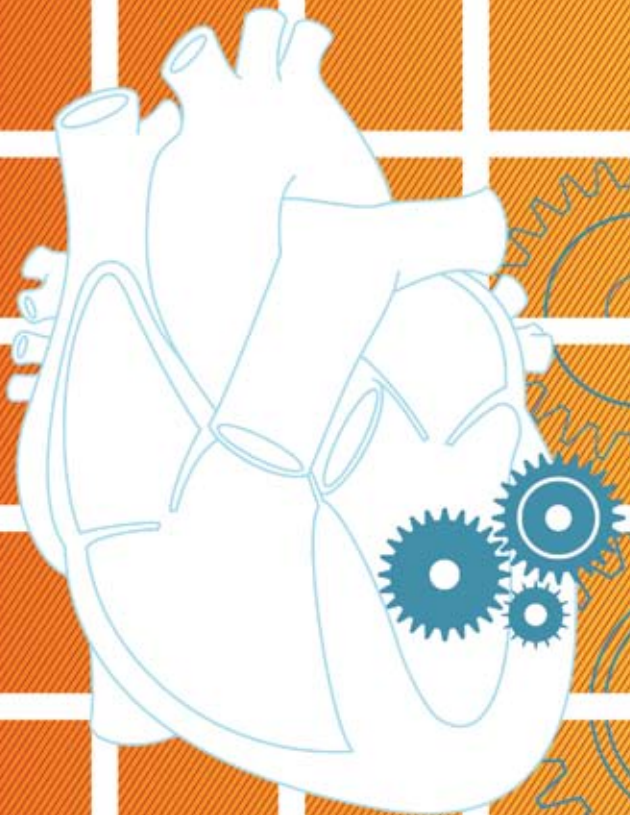
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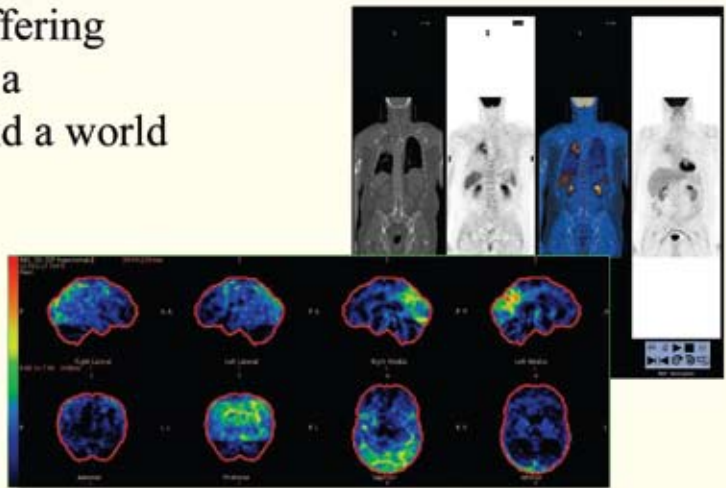
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