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A Message from Cardiology Associates, P.C.



Dear Colleagues,

Welcome to the July issue of our Cardiology Associates' Referring Physician Newsletter. This issue presents a case of aortic aneurysm, an uncommon but highly lethal cause of chest pain. It is not often considered in the differential diagnosis of chest pain due to its rarity and the variable symptoms and clinical findings shown upon presentation. Below, Dr. Benjamin Lee provides an in-depth exploration of this cardiac ailment through his discussion of a recent patient, who was treated at our facility.

About the Author

Dr. Benjamin I. Lee has been a member of Cardiology Associates, P.C. since 1987. He is a board-certified consultative cardiologist with a special interest in pharmacologic cardiology, interventional cardiology, and the treatment of atherosclerotic cardiovascular disease.

Dr. Lee is Senior Attending at Washington Hospital Center. He is also Associate Clinical Professor of Medicine at Georgetown University School of Medicine and serves on several committees at Washington Hospital Center including the Pharmacy and Therapeutics, Clinical Improvement and Medical Executive Committees. He is a member of the Washington Hospital Center's Board of Directors where he is Vice Chair of the Performance Improvement, Patient Safety Subcommittee. He is involved in clinical research with the Cardiovascular Research Institute at WHC as Director of Interventional Pharmacology Trials and has recently served as Course Director for the Washington Hospital Center's Continuing Medical Education Program: Controversies in Medicine.

Dr. Lee is associated with multiple professional associations, which include fellowships of the American College of Cardiology, the American College of Physicians, the American Society of Cardiovascular Interventionists, and the Society for Cardiac Angiography and Interventions. He is also a member of the Medical Society of the District of Columbia.

Aortic Aneurysm, "The Great Masquerader"



Presentation of Case

- A 59-year-old woman was referred for evaluation of chest pain and dyspnea.
- She first developed chest pain while scuba diving two months previously. It began after she dove in the water and it was described as a severe "band-like" chest pain associated with shortness of breath. She swam back to the boat and by the time she re-boarded, the pain had resolved.
- Over the ensuing weeks, she developed a non-productive cough, intermittent fevers, episodic non-exertional chest discomfort and dyspnea and post prandial "indigestion".

- Several days ago, she had a severe episode of chest burning that occurred without provocation, and she was seen by her primary care doctor. An EKG showed inferolateral T wave inversion, and she was referred for urgent cardiac evaluation.

- Her cardiac history was significant for a heart murmur, but she never had an echocardiogram. She stopped smoking a week ago. She had a history of "borderline" hypertension and "borderline" hypercholesterolemia. She denied diabetes or immediate family history of coronary artery disease, unexplained sudden death or aneurysms. She was not taking any medications.

- Her appearance was one of a healthy young woman who seemed anxious but in no obvious discomfort. She is 5 feet 4 ½ inches tall and weighs 158 lbs. Her BP was 120/60 in the right arm, 132/60 in the left arm with HR of 96 bpm and regular. There was no paradoxical pulse. Her JVP was 6-7 cm at 30 degrees, and carotid pulses were normal. Her lungs were clear. On a cardiac exam there was a regular rhythm with a grade II/VI diastolic murmur, but no rubs clicks or gallops. There was no peripheral edema and her peripheral pulses were full and symmetrical.

- A repeat EKG again showed inferolateral T wave inversion. Because of the aortic insufficiency murmur, an echocardiogram was immediately performed and showed a markedly dilated aortic root (6.8 cm) without clear cut evidence of dissection. There was moderate to severe aortic insufficiency, and a moderate size pericardial effusion but no definitive evidence of pericardial tamponade.

- Arrangements were made for immediate transport to the hospital where CT angiography showed an 8.4 x 7.4 cm. ascending aortic aneurysm. (See Below) Figure A demonstrates the cross sectional dimensions of the ascending aortic aneurysm. Figure B is a sagittal view of the thoracic aorta. The ascending aortic aneurysm is markedly dilated relative to the remaining thoracic aorta.

- Successful surgical repair utilizing deep hypothermic cardiac arrest was performed the next day. Her subsequent recovery was uneventful.

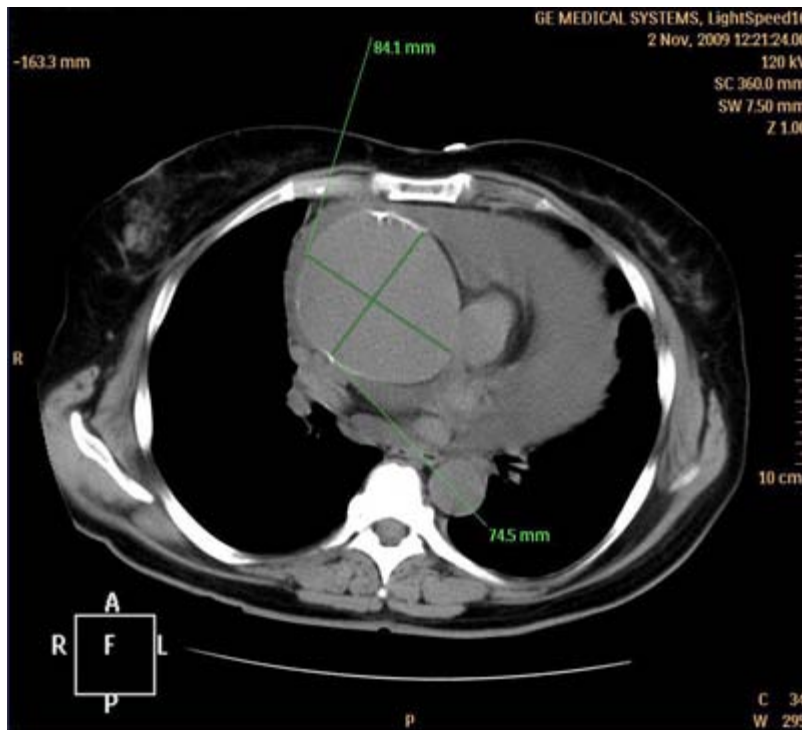


Figure A

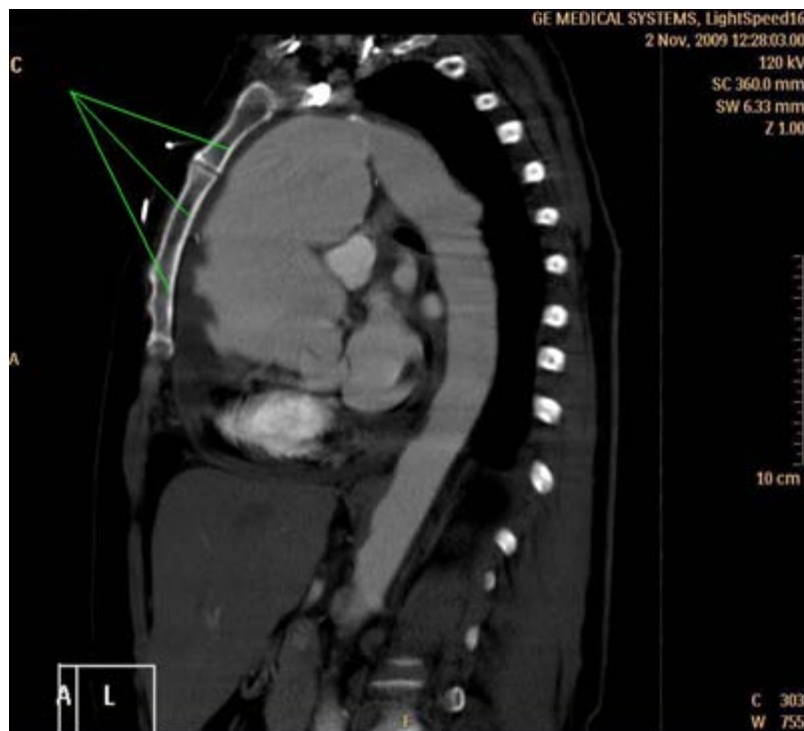


Figure B

DISCUSSION

This patient had an enormous ascending aortic aneurysm and impending rupture. At surgery, the aorta was described as paper thin and oozing serosanguinous fluid, which explains the pericardial effusion. There was no evidence of dissection.

The protective elastic properties of the aortic wall decrease with increasing aortic diameter. As the thoracic aortic diameter expands to 6 cm, it begins to act like a rigid tube that cannot stretch during systole. This loss of elasticity results in extremely high wall stress even with moderate systolic blood pressures and explains the high incidence of dissection and rupture at thoracic aortic diameters of 6 cm and above.

This patient did not have any clinical findings of Marfan syndrome or other connective tissue disease. Although she had no known family history of aneurysms, there is growing evidence that thoracic aortic aneurysms are due to an inherited genetic defect (autosomal dominant with reduced penetrance and variable expression) that is associated with mutations of the genes that regulate tissue growth factor and vascular smooth muscle.

This case serves as a sobering reminder that aortic aneurysm, although uncommon, should always be considered in the differential diagnosis of chest pain, regardless of how atypical the symptoms. The decision for immediate echocardiography was made because of the aortic insufficiency murmur. It is humbling to think of what might have happened had she instead been scheduled to return at a later date to have both nuclear stress testing and echocardiography, or sent directly for cardiac catheterization.

Aortic aneurysm has been coined the "great masquerader" because of the variable clinical symptoms on presentation. According to Osler, "There is no disease more conducive to clinical humility than aneurysm of the aorta." Perhaps more pertinent to the current clinical climate, aortic aneurysm has been associated with a high risk for litigation due to failure or delay in diagnosis, or delay in surgery. Undiagnosed and untreated, thoracic aortic aneurysm is associated with high mortality and morbidity including stroke and paraplegia.

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