

A surgical decision was made to excise the mass due to its compressive nature and the symptoms produced. This was achieved via median sternotomy without arrest of the heart. The mass was excised intact and the pericardium left intact. The mass was an enlarged pericardial cyst (12.6 cm diameter) extending into the left costophrenic angle, grossly described as a cystic mass 10 x 8 x 1.5 cm. The cyst was multilobulated with septations and thin-walled with a smooth lining containing clear fluid and fatty tissue. At the point of surgery the tentative diagnosis was that of a pericardial cyst but definitive histology revealed a cyst lined with a single layer of cuboidal cells, containing tiny bone spicule and hair fragments, suggestive of a benign cystic pericardial teratoma. The patient had an uneventful postoperative course and was asymptomatic at follow-up.

This case describes a pericardial teratoma presenting as a noncoronary cause of chest pain and effort intolerance and masquerading as a benign pericardial cyst. It illustrates the fact that multimodal imaging of cardiac neoplasms—though useful in delineating anatomy and the relation of masses to surrounding structures—may only provide limited information. A true and accurate diagnosis often cannot be established until definitive pathologic assessment following surgical biopsy underscoring its importance, as in this case.

The work of Drs. Randolph Rawlins, Ronald Henry, Taarik Dookie, Eamon Foster, and Sasha Lalla and the Advanced Cardiac Institute Surgical Therapies, Trinidad and Tobago, are acknowledged for their collaboration on this case.

Office Versus Ambulatory Blood Pressure: Can We Afford New Shoes?

Written by Toni Rizzo

Brachial blood pressure (BP) measured using oscillometric devices correlates with disease endpoints such as myocardial infarction (MI) and stroke. Arterial stiffness may represent an easy surrogate marker for atherosclerotic burden using validated measurements such as pulse wave velocity (PWV) and pulse wave analysis (PWA). The National Institute for Clinical Excellence (NICE) determined that patients with office BP >140/90 mm Hg should be evaluated with ambulatory BP monitoring (ABPM) [<http://www.nice.org.uk/nicemedia/live/13561/56008/56008.pdf>] for diagnosis and monitoring.

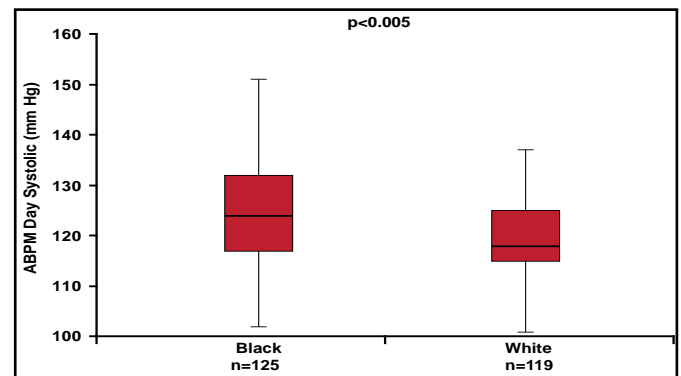
Kenneth Connell, MBBS, DM, University of the West Indies, Cave Hill, Barbados, and colleagues at King's College, London, United Kingdom, studied the relationship between office BP and ABPM and the correlation of both

BP measures with surrogate markers of disease. The study included 144 healthy volunteers from Barbados assessed with 3 office BP measurements, PWV using a portable physiologic vascular testing unit, and ABPM for 24 hours.

The mean (standard deviation) readings for office systolic/diastolic BP (mm Hg), respectively, were 121 (12)/76 (9) overall, 121 (12)/76 (9) in blacks, 120 (14)/76 (9) in whites (p=NS). The readings for ABPM systolic and office diastolic BP, respectively, were 122 (12)/73 (12) overall, 125 (13)/73 (14) in blacks, and 119 (9)/73 (7) in whites (p=0.004 for ABPM systolic; p=NS for ABPM diastolic). PWV (ms⁻¹) was 10.0 (1.6) overall, 10.1 (1.8) in blacks, and 9.9 (1.3) in whites (p=NS).

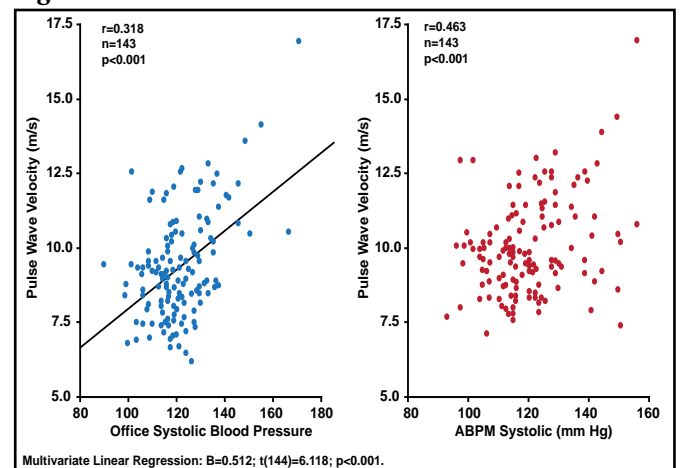
The correlation coefficient for ABPM versus office systolic pressure was r=0.633 (p<0.0001). An ethnic difference in ABPM day systolic BP was observed between black (125 mm Hg) and white subjects (119 mm Hg; p<0.005; Figure 1). The correlation coefficient for PWV versus office systolic BP was r=0.318 (n=143; p<0.001; Figure 2). The correlation coefficient for PWV versus ABPM systolic BP was r=0.463 (n=143; p<0.001).

Figure 1. Ethnic Difference in ABPM.



ABPM=ambulatory blood pressure monitoring. Reproduced with permission from K. Connell, MD.

Figure 2. PWV Correlation with Office BP and ABPM.



ABPM=ambulatory blood pressure monitoring; PWV=pulse wave velocity. Reproduced with permission from K. Connell, MD.

Dr. Connell concluded that there is a significant correlation between office BP and ABPM readings among healthy volunteers in an outpatient practice setting in country. Ethnic differences have been observed in systolic BP on ABPM, with no difference observed with office BP for the same population. Office BP was the strongest predictor of PWV, a marker of arterial stiffness. The NICE guidelines suggest a paradigm shift for the diagnosis of hypertension using ABPM. However, ABPM costs between US \$100 and \$150, and Dr. Connell wondered whether this is affordable. He suggested that office BP measurements might be just as good or a better predictor than ABPM of surrogate vascular markers.

Tricuspid Valve Disease: Unrecognized? Undertreated?

Written by Toni Rizzo

Edward B. Savage, MD, Cleveland Clinic Florida, Weston, Florida, USA, discussed the impact and management of tricuspid valve (TV) disease. Although much attention in clinical practice and research on patients with valvular heart disease has focused on disorders of the mitral and aortic valves, tricuspid regurgitation (TR) can also be associated with significant morbidity and mortality.

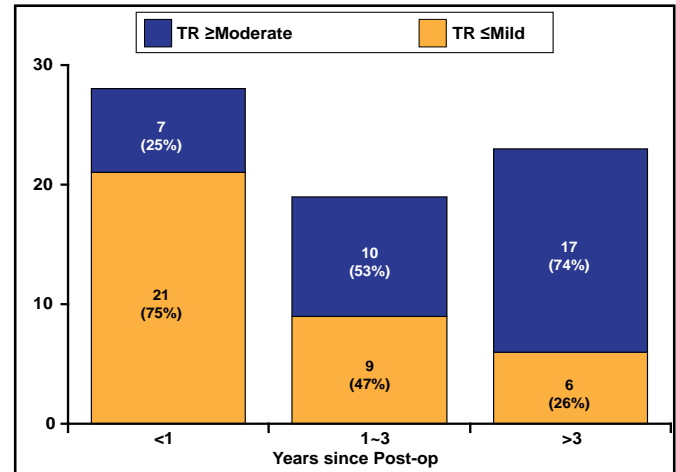
Nath et al. [*J Am Coll Cardiol* 2004] reported that 1-year survival in patients with no, mild, moderate, and severe TR (n=5223) was 91.7%, 90.3%, 78.9%, and 63.9%, respectively. TR severity was associated with worse survival regardless of left ventricular ejection fraction or pulmonary artery pressure.

Matsunaga et al. [*Circulation* 2005] evaluated 70 patients with mitral regurgitation (MR) $\leq 1+$ after repaired functional ischemic MR. Among 21 patients with preoperative TR, 4 of 9 (44%) who had TR repair and 8 of 12 (67%) without TR repair had residual postoperative TR. At < 1 year, only 25% had moderate or higher TR but at > 3 years, 74% had moderate or higher TR (Figure 1). Among patients with recurrent ischemic MR, 64% with moderate or higher MR and 42% with no or mild MR had moderate or higher late TR.

Among 167 patients without organic TV disease treated with mitral valve (MV) surgery who had moderate or less functional TR preoperatively, 41.9% were treated for TR and 58.1% were not treated [Shi KH et al. *Heart Surg Forum* 2012]. Five-year Kaplan-Meier survival was 85.3% in the treated group versus 64.7% in the no-treatment group (p=0.001).

These studies demonstrate that functional TR is progressive, moderately severe and severe TR reduces survival, and repair of left-sided valvular lesions alone may not be sufficient.

Figure 1. Progression of TR after Repaired Functional Ischemic MR.



MR=mitral regurgitation; TR=tricuspid regurgitation
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A review of 17 studies concluded that preoperative pulmonary hypertension does not predict late TR and tricuspid annular dilation probably is the most important factor for late TR [Bianchi G et al. *Interact Cardiovasc Thorac Surg* 2009]. The analysis suggested that patients undergoing MV surgery should have TR repair when TR is severe or, regardless of TR severity, when annular dimension is > 21 mm/m² or ≥ 3.5 cm by echocardiography, intraoperative tricuspid annulus diameter is > 70 mm, preoperative atrial fibrillation (AF) is present, or a trans-tricuspid pacemaker lead is present.

According to McCarthy and Sales et al. [*Curr Treat Options Cardiovasc Med* 2010], risks for TR progression after MV surgery include dilated annulus, ischemic cardiomyopathy, and pulmonary hypertension. Risks for recurrent TR after TV annuloplasty include permanent pacing wires, AF, and right ventricular dysfunction with dilation and leaflet tethering. Benedetto et al. [*J Thorac Cardiovasc Surg* 2012] reported that prophylactic TV annuloplasty for dilated tricuspid annulus reduced TR progression, improved right ventricular remodeling, and improved functional outcomes (Figure 2).

Dreyfus et al. [*Ann Thorac Surg* 2005] performed tricuspid annuloplasty in patients undergoing MV repair if tricuspid annular diameter was greater than twice the normal size (≥ 70 mm). TR increased more than 2 grades in 2% of patients with tricuspid repair versus 48% of patients without tricuspid repair, demonstrating that TV annuloplasty based on tricuspid dilation improves functional status irrespective of TR grade. Chan et al. [*Ann Thorac Surg* 2009] found that actuarial freedom from heart failure (HF) was improved in patients who had tricuspid repair with MV replacement (5-year, 95.3%; 10-year, 92.8%) versus patients without tricuspid repair (5-year, 89.2%; 10-year, 71.2%).