1018 Transesophageal Echo and Three-Dimensional Echo Reconstruction: Novel Approaches and New Observations

Sunday, March 30, 2003, 9:00 a.m.-11:00 a.m.
McCormick Place, Hall A
Presentation Hour: 10:00 a.m.-11:00 a.m.

1018-27 Transesophageal Echocardiography Improves Risk Assessment of Thrombolysis of Prosthetic Valve Thrombosis: Results of the International PRO-TEE Registry

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Background: Prosthetic valve thrombosis (PVT) is a serious complication of mechanical valves. Thrombolytic therapy has been reserved for patients with advanced symptoms who are poor surgical candidates, because of an unpredictable significant risk of embolization and complications. Whether quantification of thrombus burden with transesophageal echocardiography (TEE) helps in risk stratification and identification of a low risk group for thrombolysis is presently not known.

Methods: An international registry of patients with PVT undergoing 2D/Doppler and TEE prior to thrombolysis was established. All TEE studies were reviewed and quantitated by a single observer, blinded to all data and outcomes. Shunt-term (≤1 week) complications were defined as: death, cerebral and peripheral embolism, intracardiac bleed, myocardial infarction, bleeding requiring transfusions.

Results: From 1994-2001, 1177 patients (71% female; age 24-86 yrs) from 14 centers (6 in USA), who presented with PVT and underwent TEE followed by thrombolysis, were identified. The majority of cases involved the mitral valve (79 mitral, 13 aortic, and 15 tricuspid). Hemodynamic success rate was achieved in 85% and was similar across valves. Overall complications were observed in 17.8%, and death in 5.6%.

Predictors of complications were: NYHA functional class, presence of shock, sinus tachycardia, hypotension, previous history of stroke, thrombus extension beyond the valve ring, and thrombus size. Multivariate analysis demonstrated that two variables were independent predictors of complications: thrombus area (>50% of the left atrium), and prior history of stroke (OR 4.54, 95% CI 1.2-5.19). A thrombus area >0.9cm² identified patients at lower risk of complications from thrombolysis, irrespectively of NYHA functional class. Specifically, patients with NYHA FC II and small thrombus area had the best outcome, with no complications or death.

Conclusion: In all prosthetic valves, the size of thrombus imaged with TEE is a significant independent predictor of outcome. TEE can identify low risk groups for thrombolysis irrespective of severity of symptoms, and is therefore recommended in the management of PVT.

1018-28 Frequency, Severity, and Technique-Dependence of Interaltrial Contrast Shunting: A Prospective Population-Based Transesophageal Echocardiographic Study

Yogirn Ason, Bijoy K. Khandhena, Irene Meissner, Tanya M. Potterson, Teresa J. Christennon, David O. Weitbers, James B. Steward, A. JarrinTaik, Mayo Clinic and Mayo Foundation, Rochester, MN

Background: The frequency and severity of interatrial shunting (IASH) through a patent foramen ovale (PFO) is poorly defined in the general population. Methods: 186 adult subjects (age 69±11 yr; 53% men), a sample of the Olmsted County (Minnesota) population participating in a population-based study (SPARC: Stroke Prevention - Assessment of Risk in a Community) underwent transesophageal echocardiography (TEE) after light sedation. Intravenous contrast (agitated saline) was injected at rest and provocative maneuvers (Valsalva and cough). In 59 subjects - maneuvers were repeated after awakening with flumazenil. Right-to-left IASH was graded as trivial (<10 contrast bubbles crossing the atria septum), mild (≤2/4 bubble but < half of left atrium involved with contrast) or moderate (≥ half of left atrium filled with contrast). Results: The frequency and degree of IASH with various maneuvers are shown in the Table (% = percentage of number of subjects in each column). P-values for shunt and shunt degree arc for comparisons with rest injections; total sedated = all injections under light sedation; total = all injections under sedation + flumazenil). Conclusions: Using a comprehensive protocol, right-to-left IASH through a PFO can be demonstrated in a large proportion (> quarter) of the general population. Many of the shunts are greater than trivial, potentially allowing clinically significant paradoxical embolism. Detection of IASH is highly dependent on the examination technique.

1018-29 Is Transesophageal Echocardiography Necessary for Cardiac Source of Embolus in Patients With Sinus Rhythm and Without Structural Heart Disease?

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Background: Transesophageal Echocardiography (TEE) is routinely performed for cardiac source of embolus. The role of TEE in patients with normal sinus rhythm and a normal transthoracic echocardiogram following an embolic event is unclear, since the yield for positive findings on TEE is thought to be low.

Methods: To determine if TEE is warranted in these patients, we retrospectively reviewed 149 consecutive patients that presented for cardiac source of emboli who had sinus rhythm and a negative transthoracic echocardiogram following an embolic event.

Results: From 1994-2001, 107 patients (71 females; age 24-86 yrs) from 14 centers (6 in USA), who presented with PVT and underwent TEE followed by thrombolysis, were identified. The majority of cases involved the mitral valve (79 mitral, 13 aortic, and 15 tricuspid). Hemodynamic success rate was achieved in 85% and was similar across valves. Overall complications were observed in 17.8%, and death in 5.6%.

Predictors of complications were: NYHA functional class, presence of shock, sinus tachycardia, hypotension, previous history of stroke, thrombus extension beyond the valve ring, and thrombus size. Multivariate analysis demonstrated that two variables were independent predictors of complications: thrombus area (>50% of the left atrium), and prior history of stroke (OR 4.54, 95% CI 1.2-5.19). A thrombus area >0.9cm² identified patients at lower risk of complications from thrombolysis, irrespectively of NYHA functional class. Specifically, patients with NYHA FC II and small thrombus area had the best outcome, with no complications or death.

Conclusion: In all prosthetic valves, the size of thrombus imaged with TEE is a significant independent predictor of outcome. TEE can identify low risk groups for thrombolysis irrespective of severity of symptoms, and is therefore recommended in the management of PVT.

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1018-30 Feasibility of Transesophageal Echocardiography Using a Miniaturized Single Plane Probe

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Background: Standard TEE uses an 8-10 mm diameter probe, and conscious sedation is customary to minimize patient discomfort. The purpose of this study was to evaluate the clinical utility of a miniaturized single plane intracardiac probe (MSPP) for performing adult transesophageal imaging. The MSPP (AcuNav, Acuson/Siemens Corporation) is a 3.2 mm diameter probe, has turi imaging capacity, and potentially allows for an easier tolerated and safer examination.

Methods: Twenty patients underwent a comprehensive TEE using a multiplane adult probe. Immediately afterwards the MSPP was inserted into the esophagus and a target exam completed. MSPP studies were blindly reviewed by three observers for the study indication and for 16 diagnostic elements. These were graded against an expert's review of the standard TEE.

Results: The MSPP was well tolerated in all patients. Observers A, B, and C answered the clinical question in 80%, 85%, and 100% of exams with the MSPP. The percentage of clinical elements deemed evaluable was 71%, 78%, and 80%. The table shows concordance between standards and MSPP imaging for select cardiac elements.

Conclusions: The MSPP is safe, well tolerated, and can be used to evaluate a majority of clinical questions. It may be particularly useful for targeted indications such as exclusion of LA appendage thrombus, cardiac source of embolus, or assessment of the thoracic aorta.