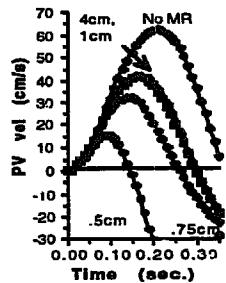


before it has a local effect on PV flow. **Methods:** Using an elastance model of the atrium and PV tree, (previously demonstrated to reliably reproduce PV flow), mitral regurgitation was simulated (regurgitant volume = 16 cc). Using equations from fluid mechanics that describe the spatial distribution of pressure recovery created as a jet impinges on a wall, the distance between the jet impact site and a given PV was varied from 4 to 0.5 cm and systolic PV flow was plotted. **Results:** Without regurgitation, the model generated systolic PV flow consistent with clinical measurements. With regurgitation, systolic PV velocity was reduced. At 4 and 1 cm impingement distances, the effect was minimal, but at 0.75–0.5 cm, PV flow rapidly became diminished and reversed.



**Conclusions:** Pressure is recovered in a small disk around the site of jet impingement. If the jet impinges > 1 cm from a PV, it has no local effect. For impingement at < 1 cm, the local pressure is significantly higher than the global pressure and systolic PV flow in that vein is markedly reduced. Therefore, local perivenous jet interactions may explain, in part, the wide clinical variations in PV flow that are observed for comparable grades of MR.

### 901-51 Should All Patients With Unexplained Cerebral Ischemia Undergo Transesophageal Echocardiography?

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Transesophageal echo (TEE) has shown higher sensitivity for detecting potential cardiac sources of embolism than transthoracic echo (TTE) and is therefore routinely performed in patients (pts) with cerebral ischemia if a cardiac source of embolism is suspected. However, compared to TTE it has not been clearly defined in which patients with suspected cardiogenic embolism TEE findings alter patient management and if there are subgroups of pts which benefit more from TEE than others. We prospectively studied 210 pts with suspected cardiogenic cerebral ischemia with transthoracic and biplane transesophageal contrast echo. Additional pathologic findings by cTEE regarding spontaneous echo contrast (SEC), LA/LV-Thrombi (TH), patent foramen ovale (PFO), atrial septal aneurysm and defect (ASA, ASD) and complex aortic atheroma (CAA) were compared with pts in sinus rhythm (SR) showing completely normal cTTE (NORM) and with pts with atrial fibrillation or pathologic finding by cTTE (PATH). **Results:** cTEE, findings in NORM/PATH:

	n	SEC	PFO/ASD	ASA	TH	CAA
NORM	90	1 (1%)	6 (7%)	1 (1%)	0 (0%)	3 (3%)
PATH	115	18 (15%)	6 (5%)	12 (10%)	8 (7%)	3 (3%)
p value		< 0.01	n.s.	< 0.01	< 0.01	n.s.

All PFO detected in NORM showed only small shunts and pt management was not influenced by cTEE in this group.

**Conclusion:** Additional value and influence on further pt management of cTEE is small if cTTE shows completely normal results in pts with SR (NORM) compared to PATH.

### 901-52 Positive and Negative Effects of Transesophageal Echocardiography on the Duke Criteria for Infective Endocarditis

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To test the added effect of transesophageal echo (TEE) or the diagnosis (DX) of infective endocarditis (IE) by the Duke Criteria (DC), records of 68 patients (original cohort) with transthoracic (TTE) and TEE performed within 7 days of initial evaluation for IE were reviewed. The new DC for diagnosing IE were developed incorporating TTE findings as a major criterion. Results were positive (oscillating endocardial or valvular (V) mass lesions, intracardiac

abscess or new partial dehiscence of a prosthetic V), suggestive (non-oscillating masses, nodular V thickening or new V fenestrations) or negative (none of the above). Definite, possible or rejected DX (Table) of IE were made on echo as well as multiple microbiologic and clinical findings (MBCF). As a result of TEE added to TTE (and MBCF), 13% (9/68) moved up a category, increasing sensitivity. Of these, 8 moved from possible to definite and 1 moved from rejected to possible. On the other hand, if TEE were used without TTE (and MBCF), 4% (3/68) would have dropped from definite to possible, a negative effect on sensitivity. These data indicate that TEE increases the sensitivity for positive DX of IE by the DC. The use of TEE data alone, however, does not appear indicated as it may have a negative effect on sensitivity.

	TEE	Definite (n = 45)	Possible (n = 19)	Rejected (n = 4)
Pos TTE	Positive	18	2	0
	Suggestive	1	2	0
	Negative	0	2	0
Sugg TTE	Positive	6	1	1
	Suggestive	3	1	0
	Negative	0	0	0
Neg TTE	Positive	12	3	0
	Suggestive	3	1	0
	Negative	3	8	2

## ECHOCARDIOGRAPHY – TRANSTHORACIC IMAGING/DOPPLER

### 901-53 Acute Hemodynamic Benefit of Enhanced External Counterpulsation.

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While the demonstrable clinical benefits of enhanced external counterpulsation (EECP) are thought to be hemodynamically mediated and analogous to the intra-aortic balloon pump (IABP), this has not been previously demonstrated. Using Doppler echocardiography of the descending aorta the acute effects of EECP on heart rate, systolic time velocity integral (STVI), and diastolic time velocity integral (DTVI) were studied in 10 outpatients at rest and during EECP. Results are expressed as mean ± standard deviation and compared using a paired two tailed t-test:

	Baseline	During EECP	p
HR (beats/min)	64.3 ± 6.8	69.2 ± 7.5	NS
STVI (cm)	14.2 ± 6.5	21.5 ± 8.7	< 0.05
DTVI (cm)	1.7 ± 1.5	8.3 ± 3.8	< 0.001
D/S TMI	0.17 ± 0.16	0.40 ± 0.11	< 0.001

Cardiac output increased on an average by 63%, due primarily to an increased stroke volume. In addition, retrograde aortic diastolic flow increased by 135%, reflecting effective diastolic augmentation. EECP thus has acute hemodynamic effects qualitatively similar to the IABP. Due to its additional action of increasing venous return, the effect of EECP on the cardiac output may be superior to the IABP.

### 901-54 Myocardial Contrast Versus Dobutamine Echocardiography as Predictors of Late Functional Recovery in Acute Myocardial Infarction Treated With Primary PTCA

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The aim of the study was to compare the ability of myocardial contrast echocardiography (MCE) and dobutamine echocardiography (DE) to predict late functional recovery in patients with acute myocardial infarction (AMI) treated with primary PTCA. Fourteen patients with AMI treated with successful PTCA (TIMI flow grade 3) underwent: a) MCE before and shortly after PTCA, b) DE for viability (3–5 days after the admission) and c) 2-D echo for the evaluation of regional wall motion after 1 month. MCE effect was scored as 0 (absent), 0.5 (intermediate) or 1 (homogeneous contrast effect). Regional wall motion was scored from 1 (normal) to 4 (dyskinesia) according to a 16 segments model. A segment was considered to be viable by DE when resting asynergy showed an improvement ≥ 1 grade. Before PTCA, all patients showed myocardial perfusion deficits which involved 30