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11:00

SAFETY OF TRANSESOPHAGEAL ECHOCARDIOGRAPHY: EXPERIENCE WITH 2070 CONSECUTIVE PROCEDURES

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Transesophageal echocardiography (TEE) is an accepted invasive procedure being utilized with high frequency in practice of cardiology. We report our experience with TEE performed by echocardiologists, trained in esophageal intubation by gastroenterologists, (excluding intraoperative) in 2070 pt [1160 males, mean age 61 yr; range: 11-92 yr], over 33 months, representing 3.7% of all echocardiograms. In 21 pt (1%) esophageal intubation (EI) was not possible [uncooperative 15, esophageal pathology 4, tracheal intubation 2]. Successful EI was possible in 2049 pt. Sedation (Midazolam, mean dose: 2.4 mg, range: 0.5-10 mg) was used in 80% pt. Mean duration of TEE was 15 mins, range: 1-57 mins. Data about heart rate (HR), blood pressure (BP), and oxygen saturation (O2) before, during and after intubation was available in 60% pt. Results (mean values): *statistically significant

	Sedation			No sedation		
	HR	BP	O2	HR	BP	O2
Before	79	139/80	95	81	137/78	95
During	91*	140/82	95	93*	151/86*	94
After	88*	134/78	95	90*	140/80	95

There were 11 pt (0.5%) with major complications [hypotension 5, laryngospasm 3, cardiac arrest 2, and pulmonary edema 1]. One of 2 pt with cardiac arrest could not be successfully resuscitated [mortality 1/2049 (0.04%)]. Conclusion: TEE is a relatively safe procedure when performed by a trained echocardiologist. Major complications occur in 0.5% pt.

11:15

INTRAMURAL HEMATOMA VISUALIZED BY TRANSESOPHAGEAL ECHOCARDIOGRAPHY - AN EARLY SIGN OF AORTIC DISSECTION.

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Aortic dissection (AD) is detected by transesophageal echo (TEE) with high sensitivity. In a prospective study of 89 pts with acute AD, 17 pts had only localized intramural hematomas (IMH). All pts (14m, 3f, 42-82y) were symptomatic, had involvement of the descending thoracic aorta and could be differentiated into 2 groups. Group 1: (n=8, mean age 64y) had localized IMH without intimal tears (length 7.7±3 cm) and central displacement of intimal calcification in 5/8 pts. All had a smooth luminal surface. Echofree spaces within the IMH without flow were noted in 4/8 pts. Wall thickness ranged from 0.5-3cm. Group 2: (n=9, mean age 70y) had an ectatic aorta with extensive arterio-sclerotic plaques (AP) and flottating parts (n=4), an irregular luminal surface had adjacent wall thickening (0.5-4 cm). The extent of the IMH was 11±5 cm. Echofree spaces within the IMH were noted in 7/9 pts with flow registration in 3/7 cases. Extention of IMH to type III AD has been observed in 3 cases.
Due to the high resolution of TEE special subtypes of AD as IMH can be differentiated and diagnostic clues concerning the pathogenetic processes as cystic medial necrosis or ruptured AP can be provided.

11:30

WHICH PATIENTS WITH EMBOLIC EVENTS SHOULD UNDERGO TRANSESOPHAGEAL ECHOCARDIOGRAPHY?

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It is unclear who should undergo transesophageal (TEE) in addition to transthoracic echocardiography (TTE) to detect a cardiac source of systemic embolization. We therefore tried to identify a subgroup of patients (pts) where TEE studies would have a high yield of detecting left atrial (LA) or LA appendage (LAA) thrombus, or LA spontaneous contrast (smoke), a pre-clot state. We performed TEE studies in 38 potentially high risk pts who were divided into 4 groups: A) Under age 50 with unexplained emboli, B) Paroxysmal or chronic atrial fibrillation (AF), C) Prosthetic valves (PV), D) Rheumatic heart disease (RHD).

All pts underwent conventional TTE and TEE. In 1 patient the TEE probe could not be introduced into the esophagus.

By TTE study no patient had LA smoke, an LA or LAA thrombus. By TEE 16/38 (42%) had LA smoke, 2/38 (5%) had LA thrombus and 5/38 (13%) had LAA thrombus. Subgroup analysis is shown below.

	<50 years	AF	PV	RHD
	n=12	n=23	n=9	n=6
LA Smoke	0	16(70%)	7(78%)	4(67%)
LA/LAA Thrombi	0	5(22%)	1(11%)	2(33%)

From our study it appears that pts under age 50 with unexplained emboli are unlikely to have a cardiac source detected by TEE that cannot be detected by TTE. In contrast, pts with AF with or without underlying cardiac pathology were found to have LA smoke and LA/LAA thrombi by TEE but not TTE study.

We recommend TEE in pts with a suspected cardiac source of embolism in the presence of AF, RHD or PV but not routinely if there is sinus rhythm with a normal TTE.

11:45

EVIDENCE THAT TRANSESOPHAGEAL ECHOCARDIOGRAPHY CAN RELIABLY AND DIRECTLY MEASURE THE AORTIC VALVE AREA IN PATIENTS WITH AORTIC STENOSIS - A NEW APPLICATION THAT IS INDEPENDENT OF LV FUNCTION AND DOES NOT REQUIRE DOPPLER DATA

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Since reliable derivation of aortic valve area (AVA) by combined 2-D echo and Doppler via transthoracic echocardiography (TTE) can be difficult in pts with aortic stenosis (AS) either because of technically difficult acoustic windows or ambiguity associated with low output states, the utility of transesophageal echocardiography (TEE) was assessed in 95 pts with AS (age 33-98 yrs). TEE (5 MHz) was performed with attention to recording the aortic valve (AV) images in short-axis orientation by manipulation of transducer and gain/gray scale. The AVA during systole was measured directly and correlated with AVA derived from TTE Doppler and from catheterization (Cath). Results: Satisfactory AV short-axis images were obtained in 85 (89%) pts: AVA in sq cm (±SD) by TEE was 0.73±0.4; by TTE 0.76±0.4; and by Cath 0.81+0.5. The correlation (r value) between Cath AVA and TEE AVA was 0.76 ($p<0.05$), between TTE AVA and TEE AVA was 0.75 ($p<0.05$), and between TTE AVA and Cath AVA was 0.83 ($p<0.01$). Thus TEE allowed us to directly measure AVA reliably and accurately. Technically, we found that AVA imaging required only moderate transducer manipulation and minimal time. When this experience was applied prospectively to an additional 30 pts, TEE indicated noncritical AS and avoided Cath in 20 pts while, the remaining 10 underwent coronary angiography. Thus, AVA in pts with AS can be measured directly and reliably from TEE. This approach is particularly useful in pts with suboptimal transthoracic windows or those too critically ill for Cath.