

### 1023-166 Novel use of Dual Isotope Gated SPECT Imaging With Low- and High Dose Dobutamine Stress for Characterization of Stunned, Hibernating, Remodeled and Non-viable Myocardium

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**Background:** In a novel scintigraphic design, rest-redistribution TL-201 imaging was combined with low and high-dose dobutamine (LD or HD-Dob) stress gated (G) SPECT for the assessment of viability.

**Methods:** After rest-redistribution TL, 54 patients of coronary artery disease (LVEF - 45%) received HD-Dob (40  $\mu$ g/kg/min) and Tc-99m sestamibi GSPECT at 1H provided HD-Dob stress perfusion but resting wall motion (WM). LD-Dob (5  $\mu$ g/kg/min) was given again to estimate contractile reserve (CR).

**Results:** Perfusion and WM were assessed in 1080 myocardial segments (segs). Normal, mild-moderate (MM) and severe rest TL abnormality were seen in 52, 25 and 23% segs with redistribution in 15%. Dob-stress unmasked ischemia (Isch) in additional 21% segs.

Of 1080 segs, 584 (54%) demonstrated severe WM abnormality. 239 of 584 (41%) segs had normal rest TL, of which 88 segs (37%) showed worsening of Isch at HD-Dob (stunned segs) while 155 segs (63%) did not show worsened Isch (remodeled myocardium). Of 584 segs, 140 (24%) with reversible rest TL defects were considered hibernating; 91 segs had worse HD-Dob Isch. 131 of 584 segs (22%) had severe-fixed (SF) TL defect and represented non-viable myocardium and remaining 74 segs had MMF defect. CR was observed in 83% of stunned, 59% of hibernating and in a third of remodeled segs and segs with MMF. SF defects ( $p < 0.01$ ).

**Conclusions:** Rest-redistribution TL with LD/HD-Dob stress GSPECT allows precise registration of myocardial perfusion and function and assessment of contractile reserve. CR is more frequently seen in stunned than hibernating myocardium.

### 1024 Aortic and Peripheral Arterial Diseases

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### 1024-71 Practice Variations in Utilization of Diagnostic Techniques to Evaluate Acute Aortic Dissection - Results From the International Registry of Aortic Dissection (IRAD)

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**Background:** Multiple imaging modalities are currently available to confirm diagnosis of acute aortic dissection. Each modality has certain advantages and disadvantages with respect to accuracy, speed, convenience, risk and cost. Recently, studies have argued that TEE and MRI should emerge as the most expeditious (TEE) and accurate (MRI) tools for this purpose.

**Methods and Results:** One hundred and seventy five patients (pts) with a diagnosis of acute aortic dissection in 1996, defined as onset less than 14 days, were enrolled in an international registry involving 10 centers. 107 (61.1%) pts were type A and 68 (38.9%) pts were type B. 13 (7.4%) pts had no imaging study. 59 (33.7%) pts had a single study while the remaining 103 (58.9%) pts had more than one study. CT was the first technique utilized in 96 (54.9%) pts and was not utilized in 60 (34.3%) pts of study group. TEE was the first technique in 53 (30.3%) pts, second technique in 53 (30.3%) pts, and was not utilized in 60 (36%) pts. MRI was used in only 23 (13.1%) pts, mainly as second and third choice investigation. Aortography was used in only 49 (28%) pts, primarily as second and third choice study and was not used in 126 (72%) pts. CT was used as the first choice of study in European centers as compared to US centers. 57.6% vs 43.3%, whereas TEE was used more readily as the first choice in US vs Europe, 36.6% vs 28.2%. The overall number of imaging studies were similar in both groups. A major Japanese center had a high preference for CT as the first choice (83.3%), whereas TEE was rarely used (30.8%).

**Conclusions:** 1. CT is currently the preferred initial choice of imaging modality for acute aortic dissection, perhaps because of its wide availability. 2. Aortography use has declined substantially; it can no longer be considered the gold standard test. 3. Interesting regional variations exist in utilization of imaging techniques for acute aortic dissection. Their implications on cost and outcomes will be the subject of future evaluations.

### 1024-72 The "pathology" of Renal Artery Stenosis: An Intravascular Ultrasound Study

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To better understand the pathology of renal artery stenosis, we used pre-intervention intravascular ultrasound (IVUS) to study 58 atherosclerotic renal artery lesions (49 ostial, 9 nonostial) in 36 pts undergoing stent implantation for renovascular hypertension. Measurements included reference and lesion arterial, lumen, and plaque (artery - lumen) area ( $\text{mm}^2$ ), arc of calcium (Ca, in degrees), and plaque burden (plaque/arterial area). The lesion arterial area was compared to the reference; negative remodeling was defined as lesion - reference arterial area.

	Ostial	Nonostial	p
Reference arterial area	30.8 ± 10.2	35.4 ± 15.0	0.2900
Reference lumen area	22.8 ± 7.3	25.9 ± 12.7	0.3518
Reference plaque area	7.0 ± 3.0	9.5 ± 3.2	0.3043
Reference plaque burden	26 ± 7	29 ± 9	0.2971
Lesion arterial area	21.8 ± 10.8	24.4 ± 6.9	0.5453
Lesion lumen area	4.9 ± 5.5	7.4 ± 4.5	0.1324
Lesion plaque area	16.3 ± 9.3	16.9 ± 6.9	0.9605
Lesion Ca	111 ± 106°	21 ± 58°	0.0254
Negative remodeling	94%	71%	0.0779

**We Conclude:** Renal artery stenosis is distinctly different from coronary artery disease. In renal artery stenosis, pre-intervention IVUS shows that (1) reference plaque burden is modest (26 ± 7% overall), (2) negative remodeling contributes importantly to lumen compromise in both ostial and nonostial lesions (90% overall), and (3) calcium is significant in ostial lesions. These findings may explain the suboptimal results (recoil and/or dissection) when ostial renal artery stenosis is treated with PTA alone.

### 1024-73 3-Dimensional Ultrasound of Carotid Artery Before and After Endarterectomy: Quantitative Analysis in Comparison With Angiography and Clinical Implications

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Three-dimensional ultrasound (3DU) yields a volumetric data set of the carotid artery (CA).

**Purpose:** To explore the qualitative and quantitative potential of 3DU in examination of CA lesions and in evaluation of surgical intervention.

**Methods:** 3DU was performed for both left and right CA in 12 pts (41-77 yrs) before and after endarterectomy (EAT) using a prototype 3DU fast acquisition system in a fan-like scanning format. 3DU of CA was analyzed to obtain: 1) site of stenosis (S), 2) length, volume, and morphology of plaques (P), 3) % of S by both diameter and cross-sectional area methods and 4) Cross-sectional area change after EAT. Selective angiography (A) of the CA was performed before surgery to obtain the site and % of S.

**Results:** In 12 pts, significant S (70-100%) (89 ± 11.3%) were found in 15 vessels by CAA located in internal (12), external (1) and at the bifurcation extending from common to internal (2) CA. All the stenosis were located by 3DU and the measurements ranged from 57-100% (82 ± 15.6%) using diameter method and 72-100 (91 ± 8.5%) using cross-sectional area method. (M ± SD difference = 2.9 ± 7%). P measured by 3DU ranged from 2.5-29 (17 ± 9) mm in length and 0.02-2.1 (0.8 ± 0.6) ml in volume. Most of the P were eccentric, 2/4/7 were calcified/non-calcified/mixed. Cross-sectional area of 12 operated CA changed from 6.4 ± 6.3  $\text{mm}^2$  to 50.6 ± 18.8  $\text{mm}^2$  by EAT. Intra- and inter-observer variabilities for all the measurements were less than 10%.

**Conclusions:** 1. 3DU provides incremental information about CA and stenotic lesions both qualitatively and quantitatively. 2. The ability of 3DU in volume quantification could be useful in clinical study of CA P progression or regression and in evaluation of therapeutic interventions.

### 1024-74 Renal Artery Stenosis Stent Revascularization of 587 Patients: 4 Year Effect Upon Blood Pressure Control, Serum Creatinine, and Survival

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**Aim:** Data on 587 successful patients (pts) (50% male, age 70 ± 9 yrs) within the Renal Artery Stenosis (RAS) Palmaz™ Stent Revascularization (SR) Multicenter Registry were analyzed to assess SR's effect upon blood pressure (BP) control, and survival; pts were stratified so as to assess whether baseline creatinine (Cr) influenced survival.