9:45

QUANTITATIVE REGIONAL CURVATURE ANALYSIS: VALIDATION IN ANIMALS OF A METHOD FOR ASSESSING REGIONAL VENTRICULAR REMODELLING IN ISCHEMIC HEART DISEASE

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Recent studies show the importance of left ventricular shape (LVS) and remodelling on patient prognosis. This mandates the development of quantitative methods for measuring shape. Quantitative regional curvature analysis (QRCA) was developed to quantitate LVS on a regional basis so that measurements would not be constrained to assessment only of global LVS and would therefore be applicable to ischemic heart disease. To validate QRCA, 11 animals were instrumented with coronary occluders and radiopaque markers on the epicardium and endocardium to provide fiducial points for calculation of S, motion (centerline method) and thickening (modified centerline method). These parameters were measured in the anterior (ANT) and inferior (INF) walls, at rest, during left anterior descending occlusion (Oc) and finally during circumflex occlusion. QRCA showed increased curvature (increased globularity) in either wall when thickening and motion deteriorated during occlusion. (Table shows mean values, all rest vs Oc data were significant, p ≤.02)

	QRCA (curvature)		Thickening (%)		Motion (%)	
	Rest	Oc	Rest	Oc	Rest	Oc
ANT	203	230	22.4	-3.72	2.58	0.65
INF	94	137	30.4	7.1	2.3	0.3

Thus, QRCA detects regional LVS disorders coincident with regional dysfunction induced by ischemia. QRCA is suitable for monitoring acute changes of LVS and the remodelling process in ischemic heart disease.

Tuesday, March 5, 1991
8:30AM–10:00AM, Room 205, East Concourse
Peripheral Vascular Disease

8:30

IS BALLOON ANGIOPLASTY USING A TERUMO WIRE SUPERIOR TO LASER ANGIOPLASTY OF CHRONIC TOTAL OCCLUSION IN PERIPHERAL ARTERIES?

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We compared the primary success rate and the outcome of balloon angioplasty using a Terumo wire (PBA-T) with peripheral laser balloon angioplasty (PLA) in long chronic total occlusions. Pts were alternately assigned to PLA or PBA-T irrespective of clinical or angiographic variables. Group I: 30 pts (20 males and 10 females; age 72.5±8 yrs) in whom PLA (argon laser, bared-tip catheter; LASTAC, GV Medical Inc.) was the only approach. Group II: 38 pts (30 males and 8 females; 69.4±10.1 yrs) in whom PEA-T was the only approach. All pts had life style limiting claudication (<2 blocks); other clinical parameters ie. smoking, diabetes mellitus, calcification of arteries were similar in both groups.

		Group I (N=30)	Group II (N=38)	P Value
I	Lesion Length (cm)	14.6±6.3	15.3±7.9	NS
II	Primary Success	60%	90%	<.005
III	Procedure Time (min)	130±30	70±10	<.0001
IV	Ankle Brachial Index-Pre	0.5±17	0.47±13]	
	Post	0.85±10	0.84±12]	<.001

Complications: dissection, hematoma and distal embolization occurred infrequently (1%) and was not different in both groups. We conclude that: 1) Primary success rate of PBA-T in chronic total occlusions of peripheral arteries is much higher than PLA. 2) the procedure time with PBA-T was significantly shorter. Therefore, we feel PBA-T is superior to PLA in chronic total occlusions of peripheral arteries.

8:45

ASSESSEMENT OF RESTENOSIS VS PRIMARY LESIONS IN PATIENTS WITH PERIPHERAL VASCULAR DISEASE USING IN SITU HYBRIDIZATION AND GENE EXPRESSION OF TWO NONMUSCLE MYOSIN ISOFORMS.

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These studies were designed to examine gene expression by in situ hybridization (ISH) to identify genes that are activated in restenosis vs primary lesions in pts with peripheral vascular disease (PVD). The nonmuscle myosin heavy chain gene (NMMHC) is a good candidate since it has been shown that smooth muscle cells express preferentially NMMHC, as opposed to smooth muscle myosin, during proliferation. We analyzed at the level of gene transcription the expression of two recently cloned isoforms of human NMMHC (NMMHC-A and NMMHC-B), the differential function of which is under study, in specimens obtained percutaneously by directed atherectomy in 5 pts with symptomatic PVD. A total of 165 7μm frozen sections of fresh stenotic lesions , 2 restenosis (64 sections) and 3 primary lesions (101 sections) were studied by ISH using RNA antisense probes specific for messenger RNA (mRNA) of each NMMHC isoform. The specificity of ISH was controlled on serial sections by using a noncomplementary sense probe. The restenosis lesions consistently showed strong hybridization with each NMMHC isoforms antisense probe with a clustering of ≥20 grains/cell nucleus in more than 80% of total cells on 100x mag fields selected at random and analyzed using a semi-quantitative scoring system; NMMHC-A and NMMHC-B mRNA were much less intensely expressed in primary lesions as evidenced by rare clustering of grains over cell nucleus. Conclusions: these preliminary findings suggest that both NMMHC-A and NMMHC-B are activated in restenosis lesions and could prove to be markers for restenosis in pts with PVD.

9:00

THE ASSOCIATION OF CORONARY HEART DISEASE AND OUTCOME FOLLOWING CAROTID ENDARTERECTOMY: A POPULATION-BASED STUDY IN OLMSTED COUNTY, MINNESOTA, 1970-1988

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To evaluate the prognostic importance of coronary artery disease (CAD) following carotid endarterectomy (CE), we conducted a population-based cohort study of all Olmsted County, Minnesota residents (N=180) undergoing CE from 1970-1988. Patients were stratified as to the presence (N=66) or absence (N=94) of overt CAD (prior angina, MI, or positive functional test) at the time of CE. Twenty patients with myocardial revascularization prior to CE were considered separately and were excluded from intergroup analysis due to small group size. Follow-up was 100% through 7/1/89.

There were no significant differences at 30 days post-CE by presence or absence of CAD in % of the following events: MI (3.0% vs. 2.1%, p=0.72) and death (1.5% vs. 3.2%, p=0.50).

Kaplan-Meier estimated 8 year survival was 61% in those without CAD, but only 53% in those with overt CAD (p=0.09). Of the 61 total deaths, 28 (46%) were due to cardiac causes and 7 (11%) were due to stroke (p=0.001). The cumulative incidence of a cardiac event (cardiac death, MI, revascularization, pulmonary edema, or ventricular tachycardia) at 8 years following CE was greater in those with overt CAD contrasted to those without CAD (67% vs. 25%, p<0.0001). Uncorrected CAD [adjusted Cox model hazard ratio (HR)=3.5, 95% CI=2.0-5.9] and diabetes (HR=2.0, 95% CI=1.1-3.6) were the only independent predictors of cardiac events.

These data indicate that CE can be undertaken safely in patients with stable CAD. However, since the major causes of long-term morbidity and mortality are complications of CAD, these patients should undergo functional cardiac testing to define their long-term risk. These data support the concept of aggressive life-long management of CAD in patients undergoing CE.