appear to increase proportionnally to the increase in LV mass, which may allow to maintain coronary flow velocity and shear stress constant.

966-45 QT Dispersion in Essential Hypertension

Peter B.M. Clarkson, Abdul Naas, Catherine MacLeod, Allan D. Struthers, Thomas M. MacDonald. *Department of Clinical Pharmacology, Ninewells Hospital & Medical School, Dundee DD1 9SY, Scotland, UK*

Increased QT dispersion (QTd) reflects regional variation in ventricular repolarisation, and has been shown in heart failure and hypertrophic cardiomyopathy to relate to an increased incidence of sudden death. As essential hypertensives (EH) are also at increased risk of sudden death we aimed to determine whether increased QTd is found in those EH who are known to be at the highest risk of sudden death. In 50 EH we measured QTd (maximum corrected QT interval minus minimum corrected QT interval), echocardiographic left ventricular mass index (LVMI) (n = 46 as 4 patients non-echogenic), office systolic and diastolic blood pressure (SBP, DBP), and 24 hour ambulatory systolic and diastolic blood pressure (24 SBP, 24 DBP) (n = 40). Univariate analysis demonstrated no relationship between QTd and age, sex, height, weight, 24 SBP or 24 DBP. Significant relationships existed between QTd and LVMI ($R^2 = 0.25$, $p < 0.001$), SBP ($R^2 = 0.16$, $p < 0.01$), DBP ($R^2 = 0.08$, $p < 0.05$). Multiple linear regression analysis revealed the only relationships to QTd were LVMI ($p < 0.01$) and SBP ($p < 0.05$). Excluding 4 patients with electro-cardiographic left ventricular hypertrophy (ECG-LVH) from the analysis a significant relationship between QTd and LVMI ($R^2 = 0.13$, $p < 0.05$) and SBP ($R^2 = 0.10$, $p < 0.05$) persists. These demonstrate that increased QTd is found in EH with the highest risk of sudden death (greatest SBP and LVMI). This relationship persists in the absence of ECG-LVH. Further study of QTd, as a predictor of sudden death in EH is warranted.

1053 Imaging Workstations in Cardiology

Tuesday, March 21, 1995, 1:30 p.m.–5:00 p.m.
Ernest N. Morial Convention Center, Hall B

1053-1 A Multimedia Workstation for Real-time Review of Full Size Angiographic and Echocardiographic Image Sequences

Laurence A. Spero, Bennett R. Groshong, Brian P. Harrawood, Donald F. Fortin, Thomas M. Bashore, Jack T. Cusma. *Duke University Medical Center, Durham, North Carolina*

To fully implement a readily accessible imaging network for cardiovascular studies in a busy clinical environment, we have developed a review station for clinical use which can decompress, zoom, and display full resolution (640 x 480) JPEG-encoded cardiac angiograms and echocardiograms (colorflow Doppler and 2-D) in real-time (30 frames/sec). These review stations are networked to a digital image archival system and can be installed in multiple locations within a medical center. The review stations consist of a DEC 3000/600 AXP workstation with a DEC J300 Sight and Sound multimedia board. An entire exam can be compressed to less than 10 Mbytes. A graphical user interface (GUI) developed using OSF/Motif 1.2 enables a clinical user to simultaneously display and control several image sequences. A sequence can be retrieved in under three seconds and displayed dynamically in forward or reverse directions with instantaneous speed control. Utilizing a commercial relational database (Sybase), the GUI organizes image sequences for a patient by image modality, location, time, and view. A schematic representation of cardiac anatomy derived from the clinical reporting system allows a user to view specific angiographic image sequences by selecting appropriate objects in the graphic display.

In situations where moderate reduction in image quality is acceptable, these review stations, using compressed image sequences, provide rapid access to a larger number of cases than would be otherwise possible. This approach allows image sequences to be more readily distributed over a network so they can be viewed by several workstations simultaneously. Real-time image decompression provides a practical and clinically acceptable way of maintaining ready access to large amounts of clinical cardiac images using existing technology.

1053-2 Cath-Lab Assistant: Integrated Image Analysis and Relational Database Program

Nenad Amodaj, Aleksandra Mojsilovic, Rade Babic [1], Miodrag Ostojic [1], Miodrag Popovic. *Electrical Engineering Faculty, Belgrade, Yugoslavia;* [1] *Institute for Cardiovascular Diseases, Belgrade, Yugoslavia*

Cardiac catheterization techniques deal with large amount of image data from which quantitative parameters are extracted. Our program provides relational database organization and management functions for both images and measurement data. In addition, it integrates database with our previously developed image analysis programs for intravascular ultrasound (IVUS) and coronary angiography.

The program runs in Microsoft Windows environment and does not require specialized imaging hardware. Program consists of three functional modules: image database system, IVUS contour extraction/analysis module and coronary angiography contour extraction/analysis module. Image database system provides image retrieval, storage and display together with extracted quantitative data. Each database record includes data on patient administration, medical history and noninvasive test results. User is provided with browse and search controls for database navigation, as well as with query by example and lists and reports generation. Analysis programs are incorporated into the database through OLE (Object Linking and Embedding) technique, which enables user to launch appropriate image analysis program simply by clicking the mouse over the chosen image. Extracted analysis data are automatically stored in the appropriate database record. Furthermore, any other image processing/analysis Windows program that supports OLE and can act as OLE server may be linked with the database by simple Clipboard cut and paste operations. All images and data can be exported to other Windows applications (text processors, spreadsheets, statistical and data presentation software).

In practical testing the program proved to be user friendly, interactive and flexible. It was particularly useful for integration of both images and quantitative data obtained by coronary angiography and by IVUS, being helpful in the validation of the latter technique, and providing better insight into the extent and severity of coronary arteriosclerotic disease.

751 Restenosis: Clinical Trials and Observations

Tuesday, March 21, 1995, 2:00 p.m.–3:30 p.m.
Ernest N. Morial Convention Center, Room 103

2:00

751-1 Efficacy of Tranilast on Restenosis After Coronary Angioplasty: is There Any Rebound Phenomenon After Ceasing Tranilast at 3 Months?

Kinzo Ueda, Hideo Tamai, Yung-Sheng Hsu, Shinji Ono, Shozo Tanaka, Kunihiko Kosuga, Masaharu Okada, Myou-u Wang, Seiichiro Motohara, Hiromu Uehata. *Shiga Medical Center for Adult Diseases, Moriyama, Japan*

Tranilast, an anti-allergic drug, is also effective for the prevention of keloid. We have already reported that 3 months (mos) administration of tranilast limited restenosis at 3 mos. To elucidate the efficacy of 3 mos administration of tranilast for the prevention of restenosis at 6 mos after angioplasty, patients with stable effort angina were studied with following 3 conditions. (1) ACC/AHA type A lesion, (2) reference vessel diameter ≥2.5 mm, (3) more than 20% improvement of % stenosis after angioplasty with smooth dilatation. One hundred lesions (group T) were treated with tranilast 600 mg/day for 3 mos and administrations were ceased at the end of 3 mos. Control group (group C) consists of 105 lesions matched with group T. Both group T and C received antiplatelet agents, nitrates and Ca antagonists. Angiographic follow-up was done at 3 and 6 mos after angioplasty. More than 50% loss of % stenosis gained by angioplasty was defined as restenosis. *Results:* (1) Changes in % stenosis: group T (vs group C); before angioplasty 73.4% ± 12.3% (71.1% ± 11.5%, ns), immediately after angioplasty 12.8% ± 11.6% (18.5% ± 11.0%, ns), at 3 mos 25.8% ± 18.2% (33.2 ± 26.8%, $p < 0.01$), at 6 mos 22.0% ± 14.1% (32.3% ± 21.4%, ns). (2) Restenosis rate: group T (vs C); at 3 mos *15.0% (38.1%, $p < 0.01$),* at 6 mos *22.0% (45.7%, $p < 0.01$).*

Conclusion: Group T showed lower restenosis rate at 3 mos and at 6 mos, and ceasing tranilast at 3 mos did not increase the late restenosis rate. There is no rebound phenomenon after ceasing tranilast treatment. Thus, 3 mos administration of tranilast is sufficient to limit restenosis at 6 mos following angioplasty.

2:15

751-2 Combined Treatment with 3 Antiplatelet Agents Reduces Neointimal Proliferation in Canine Coronary Arteries After Angioplasty

H. Vernon Anderson, Janice McNatt, Kexin Cui, Lowell Mower, Cory Martin, Jean Pierre Maffrand, Fred DeClerck, Fred Clubb, L. Maximilian Buja, James T. Willerson. *University of Texas Medical School and Texas Heart Institute, Houston, TX*

Platelet-derived growth factors are implicated in the neointimal proliferation (NP) that is partly responsible for restenosis after coronary angioplasty