

Risk ratios were estimated for each group using Group 1 as a reference and were only significantly elevated for Group 4 (2.6 ± 0.3 ; $p < 0.001$). The findings of this prospective study indicate that high fibrinogen levels are associated with a greater risk of IHD and that risk is associated with high Lp(a) levels.

917-100 8-Epi-Prostaglandin $F_{2\alpha}$ (8-Isoprostane), a Novel Marker of Lipid Peroxidation, is Elevated and Inversely Correlated to Serum Antioxidant Vitamins in Smokers

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Oxidative modification of lipoproteins is thought to be an essential event in atherosclerosis. Current methods of quantifying lipid peroxidation in vivo are technically difficult and/or nonspecific. A simple, clinically reliable test is needed to assess an individual's degree of lipid peroxidation which could be a powerful predictor of cardiovascular disease risk. 8-Isoprostane is a chemically stable prostanoid resulting from free radical catalyzed peroxidation of arachidonic acid. This molecule is produced by oxidation of low density lipoprotein and is present in both plasma and urine. To evaluate this novel marker of in vivo lipid peroxidation, we compared 24 hour urinary levels of 8-isoprostane in healthy smokers ($n = 15$) and nonsmokers ($n = 9$) with a competitive enzyme immunoassay. Serum was also obtained for analysis of lipid and antioxidant vitamin levels. Smokers were found to have higher levels of urinary 8-isoprostane than nonsmokers and these levels were inversely correlated with serum beta carotene ($P = 0.04$, $r = -0.44$) and vitamin C ($P = 0.01$, $r = -0.52$). No significant differences were detected in lipid profiles between smokers and nonsmokers.

8-Isoprostane	Mean \pm SEM	P-Value
Nonsmokers	1.55 \pm 0.22	P = 0.002
Smokers	2.77 \pm 0.21	

Values = $\mu\text{g}/24$ hours

Conclusion: Urinary 8-isoprostane is elevated in smokers and may provide a sensitive, specific and noninvasive method for assessment of in vivo lipid peroxidation. Further studies are indicated to determine whether elevated 8-isoprostane identifies individuals at risk for developing atherosclerosis.

1051 Internet and Cardiology

Monday, March 20, 1995, 1:30 p.m.–5:00 p.m.
Ernest N. Morial Convention Center, Hall B

1051-1 A Telemedicine Arrhythmia Analysis Tool for Rural Physicians

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Introduction: Rural health care practitioners are often faced with the task of interpreting complex heart rhythms. Usually these practitioners do not have specialized training in cardiology or ECG interpretation and available commercial systems for interpreting 12-lead ECG have been well-documented to perform rhythm analysis poorly. A computer-based tool is being developed in our laboratory that will provide rural health care practitioners with an automated system for interpreting complex arrhythmias.

Methods: A prototype system was developed using resources readily available in on the Internet: NCSA Mosaic, a hypermedia document browser; NCSA Collage, an interactive distributed white-board system; and GNU Ghostscript/Ghostview, a PostScript language interpretation system. The prototype was created by modifying and integrating the functionality of the individual systems into a single, easy to use system. The prototype was developed in C on UNIX workstations using the X display protocol and is based on the client-server model. The system may be accessed by any computer on the Internet with X display capability.

On the client side, the system assists the user in scanning an ECG, identifying the waves in the scanned ECG, and transmitting the scanned ECG and annotations to the server. On the server side, the system analyzes the annotations using an knowledge-based rhythm analysis system being developed in our laboratory. The system produces a PostScript file containing the interpretation(s) and accompanying ladder diagrams and a case-specific help file containing detailed descriptions and therapeutic indications. These files are transmitted back to the user's computer and displayed to the user by the client-side of the system. The design of the system provides for an "on-line," interactive consultation with a cardiologist.

Results: Development of the prototype system required 2.5 man-months

of effort to complete. The prototype system is undergoing alpha testing. For the prototype stage, all interpretations of clinical records are overread by a clinical cardiologist prior to transmission to the user.

Conclusions: This system may be beneficial in increasing the level of care of patients in the rural setting by providing the ECG interpretation expertise of an experienced cardiologist to rural practitioners on demand, which may also lead to decreasing the cost of rural health care. In addition, the system may be modified for applications in other health care domains.

1051-2 Use of the Internet and World Wide Web for Dissemination and Collection of Midwest Pediatric Pacemaker Registry Information

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The Midwest Pediatric Pacemaker registry which provides a large data-base of information concerning pacemaker implantation in children relies upon printed articles and meeting presentations for dissemination of collected information and upon member institutions to complete and mail printed forms for data submission. This process increases the time necessary for data submission and slows dissemination of pooled data to the pediatric pacing community. With increasing Internet access by centers involved in pediatric pacing, and the development of the World Wide Web (WWW), use of the WWW was explored to evaluate its potential for information dissemination and acquisition. Hypertext mark-up language (HTML) documents of composite Registry statistics, patient demographics with initial implantation indication, and generator implantation and electrode utilization information were made available on the Internet by publishing it on the WWW. Documents presented data both in textual and graphical form and were organized by topic on different pages to allow selective access directly the data needed. The graphs presented can be downloaded in GIF format. Use of the easily prepared HTML documents allows for frequent updating of information with rapid access by centers involved in pediatric pacing. In addition utilizing the forms capability of WWW browsers, Pacemaker Registry information can be submitted on-line. The form page is displayed and the information directly entered. Information entry is accomplished by filling in character fields, check boxes and free text fields. The form is then automatically sent to the WWW server which forwards it to the Registry Director for database entry. It is never stored on the public access WWW server, ensuring patient confidentiality. For users without a forms capable WWW browser, a file containing the submission forms is also provided that can be downloaded. Use of the WWW and Internet provides more rapid dissemination and collection of Registry information shortening the period between data collection and data review by centers involved in pediatric pacing which should improve the quality of care delivered to children requiring permanent pacing. Use of WWW can provide a rapid means of medical data dissemination and communication.

710 Results of Saphenous Vein Graft Intervention

Monday, March 20, 1995, 2:00 p.m.–3:30 p.m.
Ernest N. Morial Convention Center, Room 58

2:00

710-1 Changing Perspectives in Vein Graft Angioplasty

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In recent years angioplasty has been used increasingly in patients with more severe disease. Technological improvements, including new interventional devices has also changed the practice of interventional cardiology. To determine the impact of these changes on intervention in vein grafts, the results of intervention in 1284 patients undergoing procedures between 1980 and 1993 were reviewed. Results (mean or %):

Year	80-2	83-4	85-6	87-8	89-0	91-2	93	P
n	52	112	99	191	299	359	172	
Age	55	57	60	62	62	64	65	<0.0001
3 VD/LM	46%	29%	42%	62%	53%	67%	69%	<0.0001
EF	63	60	53	54	50	51	49	<0.0001
Prior MI	39%	49%	52%	62%	63%	56%	60%	0.009
New Dev	0	0	0	1%	11%	35%	27%	<0.0001
%DS Pre	80	78	78	77	77	80	81	0.003
%DS Post	33	27	27	29	26	17	17	<0.0001
Ang Succ	81%	89%	84%	85%	88%	96%	94%	<0.0001
Q MI	1.9%	2.7%	3.0%	0.5%	2.3%	0.8%	1.8%	NS
CABG	3.8%	1.8%	4.0%	2.6%	3.3%	0.8%	2.4%	NS
Death	0	0	3.0%	1.0%	1.3%	1.4%	1.2%	NS

Vein graft interventions have become more common. Despite an older and