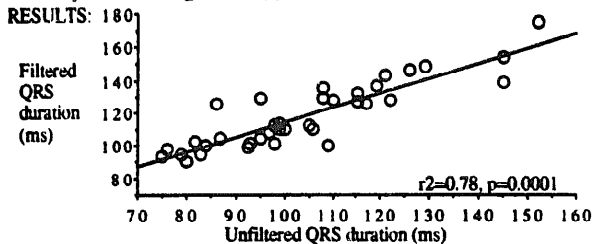


UNFILTERED QRS DURATION PREDICTS THE PRESENCE OF LATE POTENTIALS ON THE SIGNAL AVERAGED ECG

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The signal averaged ECG (SAECG) is considered abnormal when the filtered QRS duration (f QRS) is >110ms and/or late potentials (LP) are present. Prolongation of the time averaged, unfiltered (0.5-300Hz) QRS duration (unf QRS) may be an alternative marker for late potentials. The unf QRS duration was measured manually from 3 Frank leads displayed at 600mm/s after temporal averaging to baseline noise of <0.3µV. Filtered and unfiltered SAECG were recorded in 43 patients (65±1.5 years, ejection fraction 29±5%) with coronary artery disease, non-sustained ventricular tachycardia, no bundle branch block and before any antiarrhythmic drug therapy.



Late potentials were present in 24 pts (21/24 with unf QRS >100ms) and absent in 19 pts (17/19 with unf QRS <100ms). The f QRS was a mean of 13±5 ms longer than unfQRS.

CONCLUSIONS: An unfiltered time averaged QRS width >100ms identified 21/24 pts with LP (sensitivity 88%) and is highly correlated with the filtered QRS duration.

RELATION BETWEEN COUPLING INTERVALS OF VENTRICULAR PREMATURE CONTRACTIONS AND THE PRECEDING RR INTERVALS OF NORMAL SINUS BEATS

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To investigate the clinical implication of the variability in the coupling intervals of ventricular premature contractions (VPCs), we analyzed ambulatory electrocardiograms in 30 patients who had 2000 or more VPCs per day. In each subject, 24 hour ambulatory ECG were recorded without drugs and under various antiarrhythmic drugs. The recorded ambulatory ECGs were analyzed by Marquette 8000T, then, the data of RR intervals were transmitted to a personal computer. For each recording, the relation between the coupling intervals of VPC and the preceding RR intervals of normal sinus beats was plotted on a chart.

There found two types in the recordings under no antiarrhythmic drug; 1) Fixed type, the coupling intervals remain constant at various preceding RR intervals, 13 patients, and 2) Variable type, the coupling intervals had much variation, 17 patients. The prevalence of organic heart disease was higher in the Variable type group than in the Fixed type group (41% vs. 15%). The efficacy of antiarrhythmic drugs were compared in relation to the two types. Reduction of ≥80% in the total VPC counts were considered effective. Class Ia drugs had high efficacy in the Variable type group. Beta blockers were effective in the Fixed type group. Class Ic drugs were effective in the both groups. We concluded that the RR interval analysis of ambulatory ECG was useful in the assessment of VPC.

LATE POTENTIALS IN VENTRICULAR FIBRILLATION: IMPROVED DETECTION BY VISUAL REANALYSIS

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Previous workers have shown that <20-25% of survivors of ventricular fibrillation (VF) exhibit low amplitude ventricular late potentials (LP) on the signal averaged ECG. Conventional analysis for LP utilizes the vector magnitude (VM) for determination of LP indices. However, VM has been shown to underestimate the contribution of high frequency micropotentials resulting from the finely distributed non-homogeneity of the scarred ventricular tissue. To test the hypothesis that detailed visual examination of individual filtered orthogonal leads could provide better discrimination, we obtained 3 indices of LP [total QRS duration, RMS voltage (40ms), low amplitude signal duration] using the Marquette MAC-15 HI-Res system in 11 VF survivors without bundle branch block and in 11 age and sex matched normal controls. One of 11 VF patients and 2 of 11 normals (p=ns) had LP. Individual leads were visually examined for high frequency, low amplitude signals by 3 investigators blinded to other clinical data. QRS duration was adjusted to the farthest point at which these signals were found and LP indices recomputed, with results as follows:

	Conventional Analysis			Visual Reanalysis	
	LP Present	LP Absent		LP Present	LP Absent
VF	1	10	-p<0.02-	7	4
Normals	2	9	-p=ns-	3	8

Visual reanalysis significantly improved detection of LP in VF patients but not in normals. Reanalysis resulted in a mean offset of 12.5 msec for VF patients and 5.5 msec for normal controls.

Thus, conventional analysis based on VM may fail to detect abnormal LP in a large fraction of VF survivors. Significantly improved detection can be obtained with visual examination of the filtered QRS in individual leads.

Thursday, March 7, 1991

Poster Displayed: 9:00AM-12:00NOON

Author Present: 11:00AM-12:00NOON

Hall F, West Concourse

Risk Factors: Identification and Modification

THE QUALITY OF BLOOD PRESSURE MEASUREMENT, RECORDING, AND INTERPRETATION IN HOSPITALIZED CHILDREN

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For blood pressure measurements to be useful in pediatric practice, the measurements must be made using proper technique, recorded with complete detail in the chart and interpreted correctly. In order to determine the quality of blood pressure measurement and recording, as well as the adequacy of recognition of abnormal blood pressures, admissions over 1 month to 2 nursing units in a children's hospital were studied. The first nursing unit was the adolescent ward, the second was the children/toddler/school age ward. Patient records were reviewed retrospectively. Blood pressures were recorded on admission in 93 (98%) of the patients on the adolescent ward and 142 (93%) of patients on the children's ward. There were significantly more blood pressures per patient taken on the adolescent ward compared to the children's unit (10.2 vs. 7.5, p < .01). The patient position was recorded in only 48% of the blood pressure measurements. Patient position was documented significantly less often on the children's ward (41% vs. 55%, p < .01). The limb used to measure blood pressure was also recorded less frequently on the children's ward (52% vs. 60%, p < .01). The cuff size was documented for only 50% of the blood pressure measurements. There was no difference in the frequency of recording cuff size between the wards. Only 5% of the blood pressure measurements had documentation of the first, fourth, and fifth Korotkoff phases. Documentation of all three phases was less common on the adolescent unit (2% vs. 7%, p < .01). There were 562 blood pressures recorded on 126 patients that were greater than the 90th percentile for age and sex. Only 84 (15%) of the elevated blood pressures were noted to be abnormal by a nurse or physician. Appropriate action regarding an abnormal blood pressure was taken for only 14 (17%) of the blood pressures that were recognized as abnormal in 3 (6%) patients. Elevated blood pressure was more likely to be recognized on the adolescent ward; however, appropriate action when hypertension was recognized was more likely on the children's unit. These results clearly indicate that further education in blood pressure measurement recording and interpretation is needed for nurses and physicians who take care of hospitalized children and adolescents.