

Session/Poster#

Presenter

A06

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### **Comparison of Korotkoff Sounds in Patients With and Without Cardiovascular Risk Factors and Cardiomyopathy**

Purpose: Brachial artery Korotkoff sounds (KS) may be expected to vary depending on arterial properties and the transmitted impulse from cardiac contraction. We previously demonstrated that the timing of KS were related to arterial stiffness. KS characteristics may provide incremental information regarding arterial function and/or systolic cardiac function beyond blood pressure (BP) measurement.

The objectives of this study were to determine whether different levels of BP cuff inflation influence the sound characteristics of Korotkoff sounds and to compare sound characteristics in healthy and hypertensive subjects.

Methods: We prospectively studied 10 healthy males, age 48-13years, and recorded Korotkoff sounds with a commercially available electronic stethoscope. Analog signals were converted to digital signals and were decomposed using Fast Fourier Transformation frequency analysis. KS were recorded at 3 different BP cuff inflation levels in random sequence (diastolic +10, +20, +30mmHg). Repeated measures design was performed to determine potential differences. This was also performed in patients with diabetes/hypertension.

Results: Among the 10 normal subjects, there were no significant differences in the amplitude of the peak signal among the three increasing levels of inflation pressures (54.5-7.6 vs 57.8-6.4 vs 57.2-6.7dB,  $p=0.38$ ), or in the peak frequency (75-24 vs 70-23 vs 70-29 MHz,  $p=.93$ ).

The frequency spectra of normal subjects consistently showed a bimodal pattern, whereas a unimodal pattern was consistently observed in the hypertension/diabetes group.

Conclusion: These preliminary results suggest that KS characteristics are relatively independent of the level of inflation pressure and are unrelated to age. Patients with hypertension/diabetes may exhibit a different frequency pattern than normal subjects.