

Case Study

Benefits of the SphygmoCor System for cardiovascular patient management

Case Study One

- Two marginal hypertensive patients present in the clinic with identical 140/80 brachial blood pressures.
- The two patients have a SphygmoCor assessment performed
 - Figure 1: radial pressure wave recordings of both patients
 - Figure 2: derived aortic pressure wave recordings of both patients

Waveform Analysis

Whilst the brachial blood pressures are identical, the aortic waveforms show considerable differences. Patient 1 has a higher aortic systolic and pulse pressure as well as higher left ventricular load.

The differences in the aortic profiles of these patients are due to arterial stiffness. Patient 1 has much stiffer arteries than Patient 2. Studies have shown that increasing arterial stiffness significantly increases the risk of cardiovascular disease.

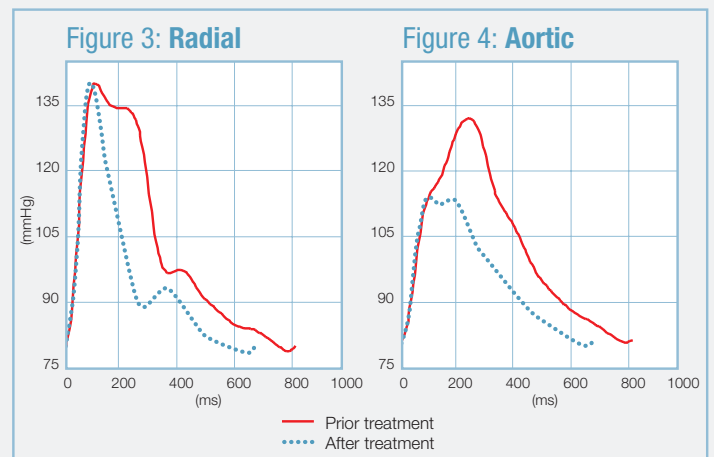
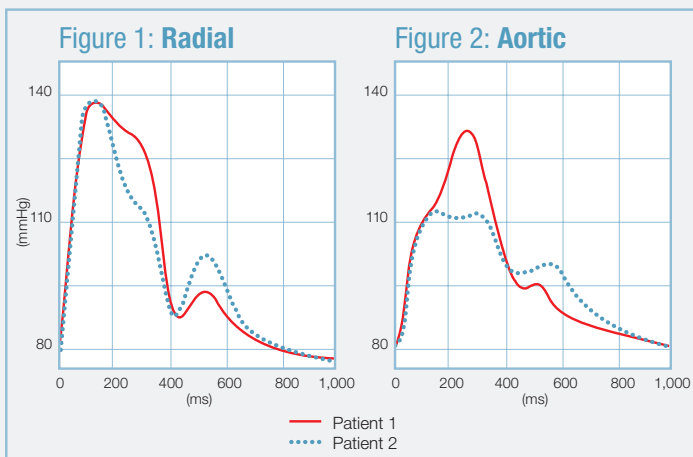
Case Study Two

Patient 1 – Before and After Drug Therapy (sublingual nitroglycerin)

Waveform Analysis

Brachial blood pressures change very little before/after nitroglycerin (Figure 3). However, there has been a major fall in aortic systolic pressure after therapy (Figure 4).

The arterial vasodilation caused by the nitroglycerin has changed the pressure dynamics throughout the arterial system (as evident in Figures 3 & 4) but these important changes are not seen if we only measure the maximum /minimum pressure at the brachial artery with the BP cuff.



Conclusions

- The cuff BP alone misses critical information for effective management of systolic pressure.
- The cuff BP does not reflect the effect of cardiovascular drug therapies on the heart.
- Central pressure and arterial stiffness should be considered for optimal patient management.

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