TENSIOMED

TENSIODAY PLUS

Ambulatory Blood Pressure Monitoring (ABPM+)

TensioDay Plus represents a revolutionary new technology in the field of ABPM devices. With its invasively validated measurement method it can determine the central systolic blood pressure in addition to the parameters of a traditional blood pressure measurement. With the help of this outstanding feature the diurnal changes in both the peripheral and the central aortic blood pressure can be measured simultaneously. The information obtained in this manner has basic importance in the assessment of the action of different antihypertensive drugs. The device's operation is based on the recording of the suprasystolic brachial artery pulse wave signals to determine the central systolic blood pressure.

Traditionally measured parameters:

1. **SYS -** Brachial systolic blood pressure (mmHg)
2. **DIA -** Brachial diastolic blood pressure (mmHg)
3. **HR -** Heart Rate (beat/min)
4. **MAP -** Mean Arterial Pressure (mmHg)
5. **PP -** Pulse pressure (mmHg)

Additional parameters:

1. **SBPao –** the central systolic blood pressure (mmHg) is physiologically lower than the peripheral (brachial) blood pressure. Increased central (aortic) blood pressure causes increased cardiac after load and pressure load on the central vessels (coronary arteries, carotid arteries and the aorta).
2. **PPao -** Aortic pulse pressure

The Main Advantage of Measuring Central Systolic Blood Pressure:

According to scientific evidence, knowledge of the central blood pressure is more significant than that of the conventional brachial blood pressure values regarding the gradually developing cardiovascular events and the damages sustained by the organs.

Reference: https://pubmed.ncbi.nlm.nih.gov/31841279/

Interestingly, the central blood pressure value can be higher than the brachial value if the aortic wall is stiffer than the brachial one. A recent study showed that in this case the atherosclerotic cardiovascular diseases develop more frequently.

Reference: https://www.nature.com/articles/s6-00472-020-41371

Moreover, the central blood pressure is more informative than the brachial blood pressure in the management of hypertension because the applied drugs have a different influence on the peripheral and the central blood pressure

Reference: https://pubmed.ncbi.nlm.nih.gov/16476843/

Example for Better Understanding:

First the normal brachial blood pressure was measured on a patient. However, after supplementing the evaluation with the measurement of central blood pressure, the obtained aortic pressure value was higher than in the first step, referring to increased central pressure load, which can lead to left ventricle hypertension, vascular hypertrophy and can trigger plaque formation.

This is an example to demonstrate why should routine brachial blood pressure measurements be expanded upon by the central systolic blood pressure measurements. In the demonstrated case (see the picture) the brachial systolic blood pressure value was in the normal range (138 mmHg), while the central systolic blood pressure was abnormally high (144,9 mmHg), exceeding the brachial pressure value and indicating increased central pressure load, which can lead to LVH, vascular hypertrophy and calcification.

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