B001

HOW HYPERTENSION BEGETS HYPERTENSION. OS Randall*, GC Mouton, FM Hällgren. M Stubgaard and O. Heedemald, Department of Clinical Physiology, Halskær Hospital, Denmark.

The arterial system can be described as a combination of large and small arteries. The large arteries have a pressure equal to the mean arterial pressure (MAP) and a small arteries. The large arteries have a pressure equal to the MAP, and the small arteries have a pressure equal to the MAP minus the pulse pressure. The large arteries have a pressure equal to the MAP, and the small arteries have a pressure equal to the MAP minus the pulse pressure.

According to the text-books the volume of the arterioles in a similar volume of the arterias was 2100 (+800) μl and the arterial pressure and volume parameters, respectively. The coefficients of variation for the large arteries are 2% for the pressure and 9-13% for the volume parameters.

Non-invasive measurement of arterial pressure by oscilometry using a "two-artery model". M Winkler, M Stubgaard and C Næsderland, Department of Clinical Physiology, Halskær Hospital, Denmark.

The arterial system can be described as a combination of large and small arteries. The large arteries have a pressure equal to the systolic pressure (SP) and the diastolic pressure (DP). The large arteries have a pressure equal to the MAP, and the small arteries have a pressure equal to the MAP minus the pulse pressure. The large arteries have a pressure equal to the MAP, and the small arteries have a pressure equal to the MAP minus the pulse pressure.

The pressure in the arterioles was 39 (±3) mmHg with a MAP of 88 (±9) mmHg. The volume of the arterioles was 620 (±320) μl. The volume of the arterioles was 2100 (±900) μl and the arterial compliance was 2.1 (±1) μl/mmHg.

All volume and compliance measurements were made on a 12 cm long segment of the arteries at a frequency of 100 mmHg. According to the text-books the volume of the arterioles is a function of the arterioles but the wall of the upper arm is approximately 500 μl. By oscilometry it is possible to measure the average volume and compliance of the arterioles in the limbs with a very good reproducibility. Key Words: Arterial compliance, arterial volume, arteriolar pressure.

B004

IS THE ASSOCIATION BETWEEN INTRAUTERINE GROWTH RETARDATION AND ESSENTIAL HYPERTENSION CAUSED BY IMPAIRED ELASTIN SYNTHESIS? S. E. Greenwald, S. All, C. N. Bartholemew and the Royal London School of Medicine and Dentistry, London, UK. and Department of Epidemiology, University of Southampton, Southampton, UK.

There is strong epidemiological evidence of an association between growth retardation in utero and higher than average blood pressure in middle age. This association has been ascribed to fetal programming. As a possible mechanism we have proposed that, in fetuses whose growth is retarded, there is impairment in the synthesis of elastin during a critical period of blood vessel development, which may be associated with intrauterine growth retardation. As a result of the elastin deficiency, the compliance of the conduct arteries is reduced, leading to higher pulse and mean blood pressures. Over time, the gradual loss of elastin that accompanies ageing will tend to amplify the increase in blood pressure, and this may explain why - in spite of treatment - wall stress remains elevated. A grant from Rhone-Poulenc Rorer, Paris is acknowledged.

Key Words: hypertension, age, remodelling, aorta, rat, captopril, hydrochlorothiazide.

B002


The impact of antihypertensive treatment on the development of large artery remodelling in young animals has been widely studied as an index of the reversal of established changes (especially structural dilatation) in older hypertensive animals has been largely ignored, although the latter represents a better paradigm for the human condition. We studied the effect of treatment with captopril plus hydrochlorothiazide (CAP) from 3 months onwards, on geometry and wall stress of the thoracic aorta of adult (9 months, matured) SHR. Most rats spontaneously hyperactively hypertensive rats (SHR), nontransfert Wistar-Kyoto rats (WKY) were used as controls. At 3 months of age blood pressure, medial cross-sectional area and internal diameter were higher in SHR than in WKY. In both strains medial cross-sectional area and lumen diameter increased during maturation; there was little change with age.

Key Words: hypertension, age, remodelling, aorta, rat, captopril, hydrochlorothiazide.