199 NEONATAL HYPERTENSION FOLLOWING CLOSURE OF ABDOMINAL WALL DEFECTS. Adelman, R.D., and Sherman, M.P. University of California, Davis, Medical Center and Kaiser Foundation Hospital, Sacramento, California, U.S.A.

Four infants, two with omphaloceles and two with gastroschisis, developed sustained systemic hypertension following closure of their abdominal wall defects. Mean systolic blood pressure rose from a preoperative level of 70 mmHg to a peak postoperative level of 131 mmHg. Lower extremity blood pressures were not reduced. However, three infants had edema of the lower extremities. In all infants, blood urea nitrogen, serum creatinine, intravenous pyelograms, and urinalyses were normal. Catecholamine levels in two infants were normal. Three infants had normal peripheral plasma renin activity (PRA) and iodohippurate renal scans. One infant had an elevated PRA associated with evidence of utero pelvic junction obstruction by renal scan. The duration of hypertension ranged from 12 days to 180 days (mean 89.5 days). Two infants were treated with hydrochlorothiazide and hydralazine, while in two, hypertension resolved spontaneously. The etiology of the hypertension remains unclear. Possible mechanisms include: 1) compression of the renal parenchyma and/or vasculature; and 2) pressure or traction on the splanchnic and/or pelvic nerve supply. Since the incidence of abdominal wall defects is roughly 1 per 2300 live births, hypertension secondary to surgical correction of this condition may not be uncommon.

200 INCREASED SYMPATHETIC NERVOUS SYSTEM ACTIVITY IN JUVENILE ESSENTIAL HYPERTENSION. McCRORY, W. W.: KLEIN, A. A.: ROSENTHAL, R. The New York Hospital-Cornell Medical Center, New York, N.Y., U.S.A.

Sympathetic nervous system activity (SNSA) at rest and with stress maneuvers was measured by determining plasma norepinephrine (NE) and epinephrine (E) concentrations (pg/ml) in 15 significant hypertensives (SH), 11 borderline hypertensives (BH), 16 normotensive controls (NC) and 11 normotensive siblings of hypertensives (NS), all aged 12-18. Mean resting systolic BP was 151±7 mmHg in SH, 136±13 in BH, 117±12 in NC and 128±8 in NS. Mean diastolic BP was 98±10 in SH, 75±14 in BH, 58±10 in NC and 69±6 in NS. Pulse did not differ at rest. Mean resting NE was significantly higher in SH, 406±15(p 0.001),and BH 425±71(p<0.001) than NC 274±57 or NS 308±52. E levels did not differ significantly. Values for NE and E rose with stress maneuvers in all subjects The SH had a blunted response of BP to standing, mean arterial pressure (MAP) fell -4.2 mmHg in contrast to BH (MAP+10.8) and NC (MAP 17.8). Pulse also differed, increasing more (+23.6) in SH than NC (+15.2) or BH (+15.6). This suggests a hyperkinetic circulation is present in SH. Some normotensive siblings NE levels overlapped with elevated hypertensives (5/11) while the others were like NC (6/11). This suggests heterogeneity of SNSA may be present in NS. Results support hypothesis that increased SNSA is present in some subjects with juvenile hypertension and may be a factor related to the hypertension.

201 DYNAMIC EXERCISE RESPONSE IN HYPERTENSIVE ADOLESCENTS Falkner, B., Lowenthal, D.T. Department of Pediatrics and Likoff Cardiovascular Institute. Hahnemann Medical College, Phila., Pa., U. S. A.

The cardiovascular response to dynamic exercise in adolescents with borderline hypertension (H) was compared to normotensive adolescents (C). All subjects exercised to exhaustion (HR=200) on a treadmill utilizing the Bruce protocol. Heart rate (HR) systolic (S) and diastolic (D) pressure were monitored. The study population included 7H girls, 8C girls, 8H boys and 8C boys. The mean age was: H girls 16.1 yr., C girls 14.1 yr., H boys 14.2 yr. vs C boys 14.9 yr. H girls and H boys were heavier ($p < .05$). Absolute HR and S were greater in H girls than C at baseline, exercise, and recovery ($p < .01$). The product (HRxS) was greater in H than C (boys and girls) at baseline exercise and late recovery. The sharp decline of (HRxS) at onset of recovery was similar in all subjects. D was greater in H than C (boys and girls) at baseline and late recovery ($p < .01$). During vigorous exercise D decreased in all subjects with no difference between H and C. Conclusions: Adolescents with borderline hypertension have higher HR and S at rest and exercise consistent with a hyperkinetic circulatory state. However, they have a normal diastolic pressure response to exercise and (HRxS) recovery rate. These findings suggest possible benefits from conditioning programs in adolescent hypertension.

202 BLOOD PRESSURE RESPONSES OF ADOLESCENT MALES TO EXERCISE. Steg, N.L.; Levison, S.; and Kovnat, P. Alfred I. duPont Institute, Wilmington, DE, USA, Medical College of Pennsylvania, Phila., PA, USA.

This study was undertaken to characterize the blood pressure (BP) response of healthy adolescent males to dynamic exercise and its significance in the detection of hypertension.

BP and pulse were recorded with an automatic doppler monitor (Arteriosond) in 529 black adolescent males ages 13 to 17, at rest and following submaximal running exercise on three different days, for a total of 27 BP measurements for each boy. Hematocrit, hemoglobin type, lead load, urine protein excretion, and urine osmolality (u/osm) were measured. Multiple regressions and canonical analyses were performed.

Weight was correlated with BP more than height or age. None of the boys with elevated BP had proteinuria. Boys with S hemoglobin had the lowest u/osm. BP varied directly with hematocrit. Systolic BP (SBP) increased with exercise an average of 40 mm. Hg. Diastolic BP (DBP) after exercise fell in 84% of the subjects, remained unchanged in 2% and increased in 14%. There was no correlation between exercise DBP or SBP and resting pressures. Obese boys who had the highest resting DBP had a greater drop in DBP than non-obese boys with lower resting DBP.

Therefore, dynamic exercise doesn't uncover hidden hypertension. Those youngsters with obesity and/or higher BPs should not necessarily be excluded from dynamic exercise.

203 SYMPTOM-FREE ARTERIAL HYPERTENSION IN 30 NEWBORN INFANTS. E.Menghetti, C. Tozzi, G.Ciofetta, D. Narduzzi, S. Arachi. Childhealth Institute, University of Rome.

Both systolic and diastolic arterial pressures were measured in 1115 newborns aged less than 6 days, by using an ultrasound Parks-Doppler apparatus and a 4 cm.width sphygmomanometric cuff placed around the left forearm (wrist).

All the newborns were examined in the supine posture, awake, quiet and far from meals. The body weight, sex, type of delivery, gestational age, parity, haematocrit and dextrostix values and blood group were also recorded for each subject. Hypertension was then defined as the pressure higher than the mean plus 2 S.D.

30 out of the 1115 newborns(2.69%) had hypertension(systolic); here below their features: mean body weight was 3.26 Kg.; 62% were males; 17.8% born by caesarian section; 9% were preterms; 58.3% first sons, 20.8% second sons, 16.6% third sons, 4.1% fourth sons. The mean haematocrit was 62.6¢ and the mean dextrostix was 0.59 mg/100 ml. Blood groups distribution was: 42.8% group O, 35.7% group A, 21.4% group B and 7.1% Rh-negative.

Clinical examination of these newborns was entirely normal, except that 4 of them had jaundice which needed phototherapy. A longitudianl study of these newborns (follow-up) is being started, in order to verify the possible persistence of hypertension and to investigate their renal function, later in childhood.

204 LONGITUDINAL STUDY OF BLOOD PRESSURE (BP) IN CHILDREN IN ZURICH. Leumann E.P., Bodmer H.G., Vetter W., Epstein F.H. Dept. of Pediatrics, Internal Medicine and Inst. of Preventive Medicine, Univ. of Zurich, Switzerland.

In 1977, a study of 1600 schoolchildren (age 7-11 yrs.) was begun to examine a) correlations of BP with selected variables, b) tracking of BP and c) familial aggregation of BP. BP was measured by random-zero-sphygmomanometers, using large (10 and 12 cm) cuffs. Results: BP was low, e.g. in 308 children aged 11 systolic (SBP) 98 and diastolic II (DBP) 54 mm Hg. Correlation of SBP with weight (W) and height (H) was better than with age and skinfold thickness triceps. With W: r = 0.45 in girls and 0.38 in boys; with H: r = 0.40 in girls and 0.32 in boys. For children of similar height, SBP correlated strongly with W and W/H^2, but only weakly with skinfold thickness triceps. Tracking correlations (r) in 308 12 y/o children re-screened 1978 were, for SBP 0.58 in girls and 0.49 in boys, and for DBP 0.41 in girls and 0.34 in boys. It is concluded that weight, height and body mass are strong determinants of BP and that strong tracking correlations for BP exist in childhood.