

127 ETIOLOGIC FACTORS OF VISUAL IMPAIRMENT IN INFANTS, 0-3 YEARS. W. Daniel Williamson, Leora Andrew, Murdina M. Desmond, Patricia M. Shell, Rose M. Hicks. Baylor

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To identify etiologic factors related to major visual impairment in young children, a survey was done of 22 school districts providing educational services to visually impaired infants, birth to 3 years, in Harris County. Review of 102 records yielded the following:

Etiologic Factors		Ophthalmologic Findings	
Prenatal: Undetermined	13	Cortical Blindness	62
Congenital Defects/Syndromes/Genetic Factors	31	Optic Nerve Abnormalities	22
Congenital Infections	10	Cataracts	7
Perinatal: Term Asphyxia	11	RLF	13
Term, Kernicterus	1	Albinism	2
Preterm, RLF	13	Glaucoma	1
Preterm, Non-RLF	7	Choroid/Retina/Macular Lesions	16
Postnatal: CNS Infection	8	Anophthalmus	1
Accidents/Cardiac Arrest	5	Microphthalmus	4
Head Trauma (Abuse)	3	Nystagmus	15

17% had hearing loss, 49% cerebral palsy, 47% seizures (½ with infantile spasms). D.Q. was <50 in 78% of those tested. These data indicate that perinatal or postnatal CNS insult are major causes of visual impairment at 0-3 years. The high incidence of multiple handicap and significant medical problems indicate a necessity for interface between pediatrics and education in management of the young, visually impaired child.

† 128 A STUDY OF CHILD SURVIVORS OF LEUKEMIA: ANXIETY, BEHAVIOR PROBLEMS, SELF ESTEEM, AND ACADEMIC ACHIEVEMENT. Louise M. Wulff (Spon. by Allen D. Schwartz). The University of Maryland School of Nursing, Baltimore, Maryland

The literature on child survivors of leukemia reflects concern focusing mainly on treatment effects on cognitive functioning. Little exists documenting issues in the realm of mental health for children in long-term remission. There have been no attempts to examine disease experiences which might influence behavioral outcomes of illness. This case control study of 53 survivors and their healthy match controlled for the age at diagnosis and time of diagnosis documented a significantly higher level of trait anxiety and number of behavioral problems and a significantly lower level of self esteem and academic achievement for case children than for control children. Regression analysis of variables which were significantly correlated with the outcome measures demonstrated a significant relationship of radiation therapy and the number of venapunctures with trait anxiety; the number of additional family problems recalled at time of diagnosis and the number of hospital admissions with behavior problems; and radiation therapy and the number of hospital days with the level of self esteem.

† 130 CHILDREN'S CARDIOVASCULAR REACTIVITY-RACIAL DIFFERENCES IN CARDIAC INDEX AND SYSTEMIC RESISTANCE RESPONSES TO EXERCISE. Bruce S. Alpert, Darlene Moes, Robert DuRant (Spon. by Albert Pruitt). Medical College of Georgia, Department of Pediatrics, Augusta, GA.

Pilot studies in our laboratory demonstrated that healthy black (B) children had higher blood pressure (BP) responses to exercise than their white (W) counterparts. To investigate the mechanism of this difference, we exercised 39 W and 62 B subjects between the ages of 6 and 18. We used a continuous protocol on a cycle ergometer with three minute stages to exhaustion. Cardiac index (CI) was measured non-invasively at 2/3 of the previously-determined maximal workload; systemic resistance₂(SR) was calculated from mean BP and CI. The CI (L/min/m²) was higher in B males (M) (7.0) compared to WM (6.3) and B females (F) (6.1) vs WF (5.1), p<.04. Within each race, M values exceeded F, p<.001. The SR (Wood units) at 2/3 maximal workload showed an inverse relationship, WM (17.1) vs BM (14.7), WF (20.5) vs BF (16.6); p<.006 between races, p<.04 between sexes. At 2/3 maximal workload, mean BP values (mmHg) were as follows: WM 100.4, BM 98.5, WF 96.8, BF 98.0. Despite larger size of the W subjects, there were no significant racial or sex differences.

These data support the concept that B subjects have higher CI than W early in life and that this evokes an increase in SR. The SR change may cause the overwhelming difference between B and W adults in the incidence of essential hypertension. In the B adolescent, the systemic vascular bed is still reactive to maintain normal BP in the presence of excessive exercise-induced CI increases.

131 HEMODYNAMIC RESPONSES TO EXERCISE IN CHILDREN WITH CONGENITAL HEART DISEASE. Bruce S. Alpert, Darlene Moes, Robert H. DuRant, William B. Strong. (Spon. by Albert Pruitt). Medical College of Georgia, Department of Pediatrics, Augusta, GA.

Myocardial oxygen supply during exercise may be impaired in children with cyanotic heart disease (CHD); post-operatively there may be ventricular dysfunction to prevent normal exercise capacity. To assess these hypotheses, we exercised 82 patients (pts) with CHD, 25 pre-op tetralogy of Fallot (TOF), 40 post-op TOF, 10 d-transposition (TGA), and 7 tricuspid atresia (TA). We utilized a continuous protocol on a cycle ergometer with three minute stages to exhaustion. The pts' data were compared to analysis of covariance to 383 healthy normals (N) controlling for race, sex, age, and body surface area. Variables measured were: maximal heart rate (HR), systolic blood pressure (SBP), maximal workload (MWL), and peak working capacity index (PWCI).

	N	TOF(pre)	TOF(post)	TGA	TA
HR(beats/min)	192	166	168	150	142
SBP(mm Hg)	145	154	144	157	132
MWL(KgM/min)	557	538	591	388	173
PWCI(KgM/min/Kg)	14.9	11.9	12.9	12.8	7.4

All pt HR values were lower than N, with the TGA and TA pts significantly lower than TOF. The MWL and PWCI values for TGA and both TOF groups were normal; the TA pts were significantly lower. All SBP means were normal, but within groups, black children had higher SBP values than whites. TA pts have the most severely impaired exercise responses. TOF and TGA pts have selective abnormalities of HR but not SBP or work.

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129 RIGHT VENTRICULAR OUTFLOW TRACT OBSTRUCTION IN EBSTEIN'S ANOMALY: A CAVEAT IN ECHOCARDIOGRAPHIC DIAGNOSIS

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It is critical to distinguish between anatomic [obstructive anterior tricuspid valve leaflet (ATL) or pulmonary atresia (PA)] and functional (tricuspid insufficiency with elevated pulmonary vascular resistance) right ventricular outflow tract (RVOT) obstruction in cyanotic infants with Ebstein's anomaly (EBS). We reviewed 4 cases of EBS to determine the accuracy of 2-D echo in distinguishing anatomic from functional RVOT obstruction. Two of 4 were newborns. The other 2 were children (8; 12 y.o.) with severe cyanosis as neonates, requiring Waterston shunt. EBS with PA was the 2-D echo diagnosis in the 8 y.o., and an obstructive ATL in the 12 y.o. Both were confirmed at operation. The 2 newborns had 2-D echo findings suggesting obstructive ATL with minimal pulmonary valve (PV) motion. Both had shunt operation. One died, and, at autopsy, the ATL was found to be non-obstructive. The other had a 2-D echo 1 month post-operatively, revealing only mild pulmonary valve thickening.

In cyanotic neonates with severe forms of EBS, functional RVOT obstruction can be mistaken for anatomic by 2-D echo. Apparently obstructive ATL and minimal PV motion could be the result of reduced antegrade blood flow. Prior to operation, presumed anatomic obstruction should be confirmed by cardiac catheterization and angiocardiography.

● 132 ASSESSMENT OF MYOCARDIAL CONTRACTILITY USING PULSED DOPPLER ULTRASOUND. D. Alverson, W. Berman, Jr., T. Blomquist, M. Eldridge, C. Intrans, D. Christensen. University of New Mexico, Department of Pediatrics, Albuquerque, New Mexico 87131

We studied the relationship of aortic blood flow velocity variables to left ventricular (LV) pressure events under a variety of inotropic and afterload conditions in ten anesthetized adult mongrel dogs. The peak first derivative of left ventricular pressure with respect to time (dP/dt max) was used as an index of the myocardial contractile state. Peak dP/dt was derived from LV pressure waveforms using a transducer tipped Millar catheter. Blood flow velocity waveforms were derived from a transducer tipped 20 MHz pulsed Doppler catheter in the ascending aorta. Inotropic state was changed using dobutamine or propranolol. Afterload was altered with a balloon tipped catheter in the descending aorta. Strong correlation existed between dP/dt max and time to peak blood flow velocity (T_{vmax}) for all inotropic conditions, independent of afterload (r = -0.92, p<0.001). Linear regression slopes and y - intercepts comparing these two variables were similar in all dogs studied. The peak first derivative of velocity with respect to time (dV/dt max) and peak velocity (V max) were very afterload dependent as reported previously. T_{vmax} approximates closely LV dP/dt max over a range of afterload and inotropy and can be obtained noninvasively with currently available instrumentation.