181 DISTRIBUTION AND SIGNIFICANCE OF NO-SALT CULTURES IN THE PRE-COLUMBIAN ERA. William J. Oliver, University of Michigan Medical School, University of Michigan Affiliated Hospitals, Department of Pediatrics, Ann Arbor, Michigan.

Previously, we identified the Yanomama Indians of northern Venezuela and southern Brazil to be a people existing without mineral salt (sodium chloride) or substances of high salinity, a circumstance probably extending over a period of at least several thousand years, and most likely even longer (Circulation 52:146-151, 1975). Other reports have identified additional groups to be characterized as no-salt cultures. This paper presents the results of a review of reports in the world's literature describing observations made of unacculturated groups at the time of initial or early contact. These reports, made by a diverse group of observers including biomedical scientists, epidemiologists, anthropologists, early explorers and travelers, missionaries, and others, identify a signficant number of previously unrecognized no-salt cultures existing in the pre-Columbian era. Perusal of the collected data permits a cautious interpretation that a major portion of the peoples inhabiting North and South America, the continent of Australia, the islands of Oceania, including New Zealand, and other geographic sites can be accurately described as existing and thriving in no-salt cultures. A parallel finding in those groups in which blood pressures have been measured is the consistent absence of hypertension throughout the span of adult life although the associated physiological adjustments include marked increases of renin and aldosterone. From the perspective of the three or more million years postulated for the evolution of man, use of salt is a very recent event and unnecessary for health as a consequence of the adequate homeostatic responses for sodium conservation despite widely varying dietary customs.

182 LONG-TERM RESULT OF AORTIC VALVOTOMY FOR ISOLATED CONGENITAL AORTIC VALVE STENOSIS IN CHILDREN InSook Park, Thomas A. Vargo, Denton A. Cooley, Grady L. Hallman, Dan G. McNamara. The Lillie Abercrombie Section of Cardiology, Dept. of Pediatrics, Texas Children's Hospital and Baylor College of Medicine, Houston, Texas

In this study we evaluated 77 patients (pt) operated upon over 1 year (y) of age who had isolated aortic valve stenosis (AS) and whose follow-up (FU) is at least 2y. There was no operative (op) death. Mean age at valvotomy was 10y (1-17y) and mean FU period was 9y (2-28y). In 50 pt who had postop (po) catheterization (cath), peak systolic pressure gradient between LV and AO (PSPG) decreased in all. In 5/50 PSPG was above 50 mgHg at initial po cath (persistent AS). Out of 15 pt who had two po cath, increased PSPG was demonstrated after apparently adequate initial relief of obstruction in 7 (recurrent AS). 20 pt (26%) required reoperation (reop) during this period at mean age of 18y (10-33y); 5 for persistent AS, 7 for recurrent AS and 8 for severe aortic insufficiency (AI). There was one op death and 2 late deaths. Most of pt who survived reop were in NYHA class I at FU.

Of the 57 non-reop pt, 56 were asymptomatic. AI was present in 44 and was severe in 9 who may require valve replacement in future. In all of 32 non-reop pt who had po cath, PSPG was less than 50 mmHg. The reop group (Gp) had higher preop PSPG (75 vs 92mmHg), higher incidence of severe AI and had more symptoms of congestive heart failure after initial valvotomy than non-reop Gp. We conclude that majority of children improve following aortic valvotomy. However, by young adulthood, 26% of pt require reop for recurrent or persistent AS and/or severe AI. Valvotomy in childhood did not prevent eventual valve replacement in these pt.

183 "RESPIRATOR PARADOX" IN PREMATURE INFANTS WITH RESPIRATORY DISTRESS SYNDROME. Mark D. Reller, Uma R. Kotagal, Richard A. Meyer, Samuel Kaplan, University of Cincinnati College of Medicine, Children's Hospital Medical Center, Department of Pediatric Cardiology, Cincinnati, Ohio.

Eleven premature infants (28-32 wks gestation; 900-1400 grams) had echocardiograms performed during the first week of life. Left ventricular (LV) pre-ejection periods (PEP) and ejection times (ET) were measured for at least 6 cardiac cycles, and their mean changes from expiration to inspiration were analyzed using the paired T test.

In 4 infants breathing spontaneously, PEP increased from 60.3 msec to 65.2 msec for an 8.1% increase (SD = 2.2 msec; $p < .05$). LVET decreased from 184.4 msec to 178.9 msec for a 2.9% decrease (SD = 1.7 msec; $p < .01$).

In 7 infants on positive pressure ventilation (inspired time = 0.6 sec) for respiratory distress syndrome, PEP decreased from 59.5 msec to 57.6 msec for a 3.2% decrease (SD = 0.9 msec; $p < .01$). LVET increased from 163.2 msec to 168.8 msec for a 3.4% increase (SD = 3.8 msec; $p < .01$).

The increased LPEP/LVET ratio from expiration to inspiration during spontaneous breathing is consistent with the reduced stroke volume seen in physiologic pulsus paradoxus.

Conversely, the decreased LPEP/LVET ratio during positive pressure ventilation would be consistent with increased stroke volume. This increase could represent enhanced pulmonary venous return (pre-load) and/or reduction of afterload secondary to increased transpleural pressure. Thus, this study supports the concept of respirator paradox in premature infants.

184 EFFECTS OF PROPRANOLOL ADMINISTRATION ON SHR RATS AND THEIR NEWBORNS. Tove S. Rosen, John Mill and Michael Rosen (Spon. by Welton Gersony), Columbia University, College of Physicians & Surgeons, Dept. of Pediatrics, New York

Propranolol (P), 20 mg/kg, was administered via daily orogastric intubation to 12 spontaneously hypertensive Okomoto Aoki female rats starting at 6 weeks of age. We studied the effects of P on maternal blood pressure (BP) and neonatal weight gain, litter size and cardiac function. Controls were 8 intubated and 8 non-intubated SHR females. Tail BP's were measured weekly. All 3 groups were hypertensive by 10-12 weeks of life. Rats were mated with SHR males at 12-18 weeks of age. BP (170-190 mm) did not differ among the 3 groups during pregnancy ($P>.05$) but at term BP fell markedly ($P<.05$). There were no significant differences in maternal weight gain, litter size and pup weights. Pup hearts from each group were studied the day before delivery, day of birth (day 0), and day 1 by excising the right atria, superfusing them with Tyrode's solution and recording surface electrograms during spontaneous beating before and after superfusion with epinephrine (epi) 10^{-7}-10^{-5}M. There were no differences in fetal and day 0 spontaneous atrial rates and response to epi, but on day 1 a significantly greater response to epi occurred in P pups. Thus, although no β-blockade was demonstrated in the fetuses and neonates, rebound supersensitivity to epi occurred. In summary, whereas P did not alter maternal BP, litter size or weight, a potentially toxic effect of P was noted in the neonate.

185 ASYMPTOMATIC CARDIOMYOPATHY IN SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) David G. Ruschhaupt, Nancy A. Hutcheon, Peter C. Sodt, Mark S. Schiffer, Helen Emery, Andrew J. Aronson (Spon. by Rene A. Arcilla); Pritzker School of Medicine, The University of Chicago Hospitals and Clinics, Wyler Children's Hospital, La Rabida Children's Hospital, Department of Pediatrics, Chicago, Illinois

Twelve adolescents with SLE were studied by M-mode echocardiography. All patients had received prednisone for the duration of their illness (1 mo-7 yrs). None had symptomatic heart disease although the following were present: cardiomegaly by x-ray (4 pts), hypertension (8 pts), nonspecific ECG changes (5 pts). Pericardial effusion was present in 6 patients. Left ventricular (LV) end diastolic dimension, percent minor axis shortening and the ratio of pre-ejection period to ejection time were normal. Posterior wall thickness ($p < .001$), calculated LV mass ($p < .05$) and LV mass/volume ($p < .025$) were abnormal but not related (linear regression) to blood pressure. Maximum rates of continuous LV dimension change (dD/dt) were normal. However, the time from electrocardiographic Q-wave to minimum and maximum dD/dt ($p < .025$) and Q-wave to mitral valve opening ($p < .05$), corrected for heart rate, were abnormal. These data suggest that clinically unsuspected cardiomyopathy is associated with SLE and that it is not defined by the usually measured M-mode echocardiographic parameters.

186 EFFECT OF ATRIAL PACING ON ECHO-DERIVED LEFT VENTRICULAR DIMENSIONS IN CHILDREN David G. Ruschhaupt, Otto G. Thilenius, Peter C. Sodt, Rene A. Arcilla; Pritzker School of Medicine, The University of Chicago Hospitals and Clinics, Department of Pediatrics, Chicago

The effects of atrial pacing on M-mode echocardiographic (ME) estimates of left ventricular (LV) dimensions were studied in 19 children during cardiac catheterization. Pacing was in increments of 20 beats/minute up to 160 bpm maximum. Over wide range of heart rate (HR), LV dimensions at Q wave and at peak of R wave were similar for end-diastolic diameter (LVEDD) ($r = .99$) or wall thickness (WT) ($r = .98$). LV measurements were related to HR by regression analysis. With increasing HR up to 140 bpm, LVEDD diminished ($r = -.77$) (from resting HR to 120 bpm, $P < .005$); from 120 bpm to 140 bpm, $P < .001$; from 140 bpm to 160 bpm, P = NS). However, LV end-systolic diameter (LVESD) correlated poorly with HR ($r = -.35$). Because of greater reduction in LVEDD than in LVESD, minor axis shortening decreased with HR ($r = -.60$). Estimated LV mass did not change significantly; however, WT/LVEDD or mass/volume ratio increased with HR ($r = .48$). LV diameters obtained sequentially at 20 msec intervals were analyzed for dD/dt during systole (dD/dt - s) and during diastole (dD/dt - d). From resting HR to 120 bpm pacing, borderline reduction of peak dD/dt - s was observed ($P < .05$); by contrast, significant increase of peak dD/dt - d occurred ($P < .005$) suggesting greater sensitivity of ventricular filling to HR change. ME-derived LV size/function in children must be interpreted taking into consideration not only age and body size but HR as well.