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CHILDHOOD USUAL INTERSTITIAL PNEUMONITIS (UIP): RESPONSE TO AZATHIOPRINE (AZP) DOCUMENTED BY EXERCISE-STRESS EAR OXIMETRY. N.P. Waring, R.C. Beckerman, J.E. Salvaggio, W.W. Waring, Sections of Allergy-Clinical Immunology (Dept.) of Medicine and Pulmonary Diseases (Dept. of Pediatrics) Tulane University, New Orleans, LA.

Two children aged 6 and 9 years with severe biopsy-proven UIP that was progressing on high dose prednisone were treated with AZP 75-50 mg/day. Sequential determinations of exercise-stress induced changes in oxygen saturation (S_{aO_2}) were measured by oximetry and provided objective evidence of pulmonary improvement. These patients were unable to cooperate in standard pulmonary function tests (PFT).

Striking objective evidence of improvement was demonstrated on frequent determinations of forced vital capacity (FVC) and S_{aO_2} determined during exercise. Results at 3 months, 6-9 months are tabulated below:

Patient	Before AZP		After AZP		6-9 mos.		12 mos.	
	FVC*	ΔS_{aO_2}	FVC	ΔS_{aO_2}	FVC	ΔS_{aO_2}	FVC	ΔS_{aO_2}
TR	16	30%	29	16%	43	04%	-	-
NL	24	62%	36	44%	33	42%	37	44%

*FVC expressed as % predicted.

These data indicate that severe progressive childhood UIP with or without auto-allergic features may respond to AZP therapy and that improvement may be reliably quantitated by ear-oximetry during exercise in children unable to cooperate for standard PFT.

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BRONCHOPULMONARY DYSPLASIA (BPD) AND ITS EFFECTS ON OXYGEN CONSUMPTION (VO_2). M.R. Weinstein, and W. Oh, Brown Univ. Prog. in Med., Women & Infants Hospital, Dept. of Ped., Providence, RI

Infants with BPD appear to exert more respiratory effort. We hypothesize that increased respiratory effort may increase resting VO_2 in infants with BPD and consequently increase caloric expenditure. Eight infants meeting the following criteria were evaluated: 1) Diagnostic chest roent 2) Prolonged oxygen requirements and 3) Retraction and/or tachypnea. Control infants (n=7) were selected to match for birthweight (± 270 grms), gestational age (± 1 week) and postnatal age (± 6 days). Both groups of infants were studied on two separate occasions 5 to 8 days apart. VO_2 was measured in the thermal neutral environment using an open circuit flow-through system. Ambient skin and rectal temperatures were controlled to establish similarity in these measurements during corresponding studies. Infants with BPD had a higher respiratory rate (62 ± 9 compared with controls 46 ± 5 ($M \pm SD$), $p < .001$). Resting VO_2 in infants with BPD was higher than controls (8.1 ± 1.3 ml/kg/min versus 6.5 ± 0.5 ml/kg/min. $p < .001$). The estimated caloric intakes were 25% lower in the infant with BPD. Thus, increased resting VO_2 and basal caloric needs coupled with reduced caloric intake may contribute to slower growth in infants with BPD. Maximizing caloric intake should be a goal in providing nutrition in these infants.

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SUDDEN INFANT DEATH SYNDROME (SIDS) IN INFANTS WITH BRONCHOPULMONARY DYSPLASIA (BPD). J. Werthammer, E.R. Brown, R. Neff, H.W. Taeusch, Jr. Department of Pediatrics, Harvard Medical School and Harvard School of Public Health, Boston, MA

Because hypoxemia is associated with SIDS as well as BPD, because of our clinical impression that infants discharged with BPD suffered more than expected risk for SIDS, we undertook a systematic survey of low birthweight infants with and without BPD discharged from our nurseries. The incidence of SIDS was seven times greater in infants with BPD when compared with a concurrent low birthweight group of infants without BPD. Confounding factors, including birthweight, sex, multiple birth, socioeconomic status, and apnea were not different in the two groups.

	Infants with BPD	Infants without BPD
Number of infants	53	65
Average birthweight (g)	1029	917
Gestation age (wks)	28	28
Total SIDS	6/53 (11%)	1/65 (1.5%) *

* $p = 0.034$

We speculate that intermittent and chronic hypoxemia and/or a predilection for upper airway obstruction from prolonged intubation, associated with immaturity of respiratory control centers, may underlie the higher risk for SIDS in infants who have BPD. Our results indicate that there is an association between BPD and SIDS.

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SURFACTANT CHOLESTEROL: A POSSIBLE INHIBITOR OF SURFACE ACTIVITY. J. Werthammer, I.R.S. Sosenko, M.D. Cunningham, I.D. Frantz III. Department of Pediatrics, Harvard Medical School, Boston, MA and University of Kentucky, Lexington, KY

We have previously shown that fetuses of diabetic rabbit does have diminished pulmonary surfactant function. To determine whether increased cholesterol may inhibit surfactant function in vitro, crystalline cholesterol in amounts 4-17 times higher than found naturally was added to lung lavage fluid of 30 day gestation fetal rabbits. Surfactant function was determined on a modified Wilhelmy surface balance. The minimum surface tension of lung lavage containing added cholesterol was 17.5 mN/m, compared to 7 mN/m for untreated samples ($p < .001$). None of six samples with added cholesterol reached a minimum surface tension of less than 12 mN/m, whereas all untreated samples reached this value. To determine whether naturally occurring cholesterol content of diabetic fetal lung lavage is increased above that of normal fetuses, lavage cholesterol from 27.5 day gestation rabbit fetuses was measured by gas chromatography. Lavage cholesterol content was found to be elevated in diabetic fetuses 50-100% above controls. We conclude that exogenous cholesterol can inhibit surfactant function in vitro, and may be responsible for the diminished surfactant function seen in vivo in offspring of diabetic pregnancies.

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CHURG-STRAUSS SYNDROME (ALLERGIC GRANULOMATOSIS) IN AN ADOLESCENT MALE: DEVELOPMENT OF CARDIOMYOPATHY DURING TREATMENT WITH STEROIDS. Marcia M. Wishnick, Quentin Valensi, Nancy B. Genieser and Eugene F. Doyle, Departments of Pediatrics, Radiology and Pathology, New York University College of Medicine, University Hospital, New York.

This case represents the first in-depth prospective report of an adolescent with Churg-Strauss syndrome and the first to be reported in the pediatric literature. The patient presented with pulmonary lesions, vasculitis, severe gastrointestinal involvement and leukocytosis with hypereosinophilia.

Pathological examination of a wedge section from the lung revealed necrotizing granulomata filled with necrotic eosinophils. Arteries and veins of all sizes were affected with perivascular eosinophilic-rich palisaded giant cell granulomata with evidence of partial or complete occlusion.

The patient was treated with prednisone with excellent resolution of his symptoms. He had recurrent episodes of pneumonia and wheezing which responded to increased levels of prednisone plus bronchodilators and antibiotics.

Cardiomyopathy developed after two years while on steroid therapy. ECG studies revealed left anterior hemiblock, frontal QRS axis of -30° , LA and LV hypertrophy and non-specific ST and T wave changes. Marked depression of the ejection fraction was also noted on echocardiogram studies. He was treated with digoxin, diuretics and increased amounts of steroids. Although clinical improvement has been noted, objective studies show minimal resolution of his cardiomyopathy.

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NEW RECOMMENDATIONS FOR ENDOTRACHEAL TUBE POSITIONING IN THE NEWBORN INFANT. Diane L. Woodall, Jonathan M. Whitfield, and Michael M. Grunstein (Spon. by James K. Todd). The Children's Hospital, Department of Perinatology, Denver, Colorado.

Optimal positioning of the endotracheal tube (ETT) during mechanical ventilation of the newborn is essential to avoid intubation or inadvertent right or left main stem bronchial intubation. Using a new prototype fiberoptic bronchoscope (FOB) (0.6. 1.8mm) we examined ETT position in 34 infants (birthweight 715g-3500g, gestational ages 26-42 weeks). The tracheal length (TL), defined by distance from vocal cords to carina, was measured in neutral (N), flexion (F), and extension (E) head positions. ETT movements in right lateral (RL), left lateral (LL), F, and E positions were also measured. In infants < 1750 g mean TL in the N position was 3.9cm (range 3.4-4.6cm), and mean TL was 5.2cm (range 4.3-8.4cm) in infants > 1750 g. Relative to the N position, the ETT moved maximally 3.5cm cephalad with E, and 1.8cm caudad with F. Corresponding TL changes were $+3.1$ cm ($+62\%$ of TL in N position) with E and -0.9 cm (-16% of TL in N position) with F. We concluded: due to small TL in infants < 1750 g any significant movement of the head can lead to significant tube malposition; TL significantly increases with extension of the head and therefore some of the ETT movement is apparent rather than real; since TL changes with head position, previous recommendations relating ETT position to weight and/or body length are clinically unreliable. We recommend ETT position be checked by chest x-ray or FOB, with the head flexed and be 0.5cm above the carina.