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PSYCHOSOCIAL FACTORS IN TURKISH CHILDREN WITH ASTHMA

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In order to determine the relevant psychosocial factors associated with onset and severity of childhood asthma, fifty children with this disease and the accompanying family member were interviewed by a psychiatrist and sociodemographic data, child's psychomotor development, psychic complaints and variables about sickness and treatment were assessed. The accompanying family member was given Zung Depression and Spielberger Anxiety Scale.

54% of the accompanying persons, frequently the mother, was significantly depressed. 38% of them and 56% of them had higher than average state and trait anxiety scores respectively. The higher educated the mother is the more likely for the child to present behavioral disturbance and poor treatment compliance. In the families who are informed about the disease the compliance and acceptance of treatment is better. The reverse was true whenever the emotional factors are related with asthma attacks. Emotional factors were relevant with the asthma attack in 38% of the cases.

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MEASUREMENT OF FUNCTIONAL RESIDUAL CAPACITY (FRC) WITH HELIUM/OXYGEN (HELIOX) AS A WASHOUT GAS IN A MECHANICAL LUNG MODEL
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OBJECTIVE: To test, whether FRC measurement by heliox washout is as reliable as with the standard oxygen washout technique, because even short term lung measurements with hyperoxic condition are potentially harmful to premature infants.

METHODS: We used a mixture of helium/oxygen (60/40) in an open circuit N2 washout technique. N2 was continuously measured with a N2-UV-analyzer and FRC calculated with a standard lung function cart (Sensormedics 2600). Using a calibrated syringe (20-80 ml) as a model lung of spontaneous breathing and a rubber lung (48 ml) as a model of the ventilated lung different volumes were washed out, the initial FiO2 in the "lung" varying between .21 and .75.

RESULTS: Using the same calibration volumes the heliox technique yielded more N2 counts and the calibration line was steeper as compared to the O2 washout. With 10 measurements for each setting deviation of the mean volume from the expected volume ranged from -11.5 to 6.1% for the spontaneous breaths and from -17.2 to -7.6% for the ventilated lung. Maximal coefficient of variation was 9.1%.

CONCLUSION: Heliox used as a washout gas gives reproducible results with high accuracy in FRC measurement of low volumes, even with elevated FiO2 and although a mass spectrometer is not used for N2 detection.

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CARDIORESPIRATORY POLYGRAPHY IN PEDIATRICS FOR DIAGNOSIS AND EVALUATION OF SLEEP RELATED BREATHING DISORDERS (SRBD)

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Introduction: During the last several years SRBD in children has received considerable attention. Unfortunately only a few hospitals have facilities for all-night cardiorespiratory polygraphy. To improve this situation and to show the importance of diagnosis and evaluation of SRBD we use a special device. This could be available in any hospital to diagnose SRBD, e.g. periodic breathing, central, mixed and obstructive sleep apnea.

Method: For diagnosing SRBD we use an integrated mobile 8 - 10 channel system (SIDAS 2010). The available parameters are thoracal and abdominal motion, nasal airflow, oxygen saturation and heart rate. Changes of intrathoracal pressures indirectly measured by means of an optical distance measuring device attached to the jugular. At least eye-movements by an EOG and body movements by an actigraph. Two additional channels permit the optional recording of EEG, ECG, EMG or blood pressure.

Results: In our clinic we measured 140 children with SIDAS 2010. Of these children 31% were premature infants, 69% of them infants/children. Pathological breathing was shown by 16 premature infants so a home-monitore was ordered. Obstructive sleep apnea was found in 14 children. Central sleep apnea was diagnosed in 2, alveolar hypoventilation in 1 infant.

Conclusion: Often SRBD in pediatrics are ignored. The difficulty of these diseases is an objective diagnosis. This problem can be solved by the SIDAS 2010 system. It differentiates physiological and pathophysiological breathing during sleep and most of the forms of sleep related breathing disorders. So a especially therapy e.g. theophylline, nasal continuous airway pressure, surgery is possible.

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HYDROXYCHLOROQUINE IN THE TREATMENT OF CHRONIC INTERSTITIAL LUNG DISEASE IN INFANTS

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We report on our experience in 8 patients with different forms of chronic interstitial lung disease. These included lymphocytic interstitial pneumonitis and chronic bronchiolitis.

Clinical presentation consisted in tachypnoea, cyanosis, cough, crepitant rales and failure to thrive.

Diagnostic work up included lung function studies in all patients, bronchoscopy with bronchoalveolar lavage (BAL) in 7 patients and open lung biopsy in 4 patients.

Therapy included oral and inhaled steroids, inhalation with bronchodilators and oral hydroxychloroquine.

While most of the patients did not respond to steroids alone, hydroxychloroquine improved the clinical and laboratory findings in a majority of our patients.

Conclusion: Further controlled studies are required for proper evaluation of the effect of hydroxychloroquine in the treatment of chronic interstitial lung disease in children.

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ALTERED ANTIOXIDANT ENZYME ACTIVITY IN LUNGS OF NEONATAL RATS WITH CONGENITAL DIAPHRAGMATIC HERNIA DURING ARTIFICIAL VENTILATION.

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Introduction: In children who survive congenital diaphragmatic hernia (CDH) the incidence of bronchopulmonary dysplasia is more than 30% (Pediatr Pulmonol 1993;15:231). This may be due to a failing antioxidant enzyme activity (AOA). Therefore the effect of artificial ventilation on AOA in an experimental model of CDH was studied.

Methods: In neonatal rats CDH was induced by Nitrofen given at day 12 of gestation (J Pediatr Surg 1990;25:850). Pressure-controlled ventilation was performed with 100% oxygen, frequency 40/min, inspiratory peak pressure of 17 cm H₂O and PEEP 3 cm H₂O. The lungs were examined for activity of glutathione peroxidase (GPX), catalase (CATA) and glutathione reductase (GR) directly after birth and after six hours of artificial ventilation.

Results: AOA activity, all values expressed as IU/mg lung, mean (SE)

	CONTROLS (n=11-13)		CDH (n=10-13)	
	t=0 hours	t=6 hours	t=0 hours	t=6 hours
GR	0.035 (0.002)	0.052 (0.002)	0.039 (0.002)	0.057 (0.002)
CATA	30.0 (0.8)	50.0 (1.1)	42.4 (1.6)	50.3 (1.2)
GPX	0.065 (0.003)	0.122 (0.004)	0.088 (0.015)	0.117 (0.006)

At t=0 CATA and GPX are significantly higher in CDH compared to control rats (p<0.001). After six hours the AOA increases significantly (p<0.05) for all enzymes in both groups.

Conclusion: Immediately after birth no deficient AOA was found in CDH. Whether the observed increase in AOA in CDH reflects adaptation to the artificial ventilation remains speculative. (Supported by NAF 91.56).

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HISTOLOGICAL FINDINGS IN ARTIFICIALLY VENTILATED NEONATAL RATS WITH CONGENITAL DIAPHRAGMATIC HERNIA.

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Introduction: In children with congenital diaphragmatic hernia (CDH) artificial ventilation with high pressures and high inspiratory oxygen fraction is often required. We studied the effect of artificial ventilation in CDH in an experimental rat model of CDH. Earlier studies revealed that after ventilation with peak inspiratory pressures (PIP) of 17 cm H₂O no aeration of lungs was observed in controls and CDH, but the lungs could be aerated with PIP of 25 cm H₂O. To evaluate optimal ventilatory strategy the clinical and histological aspects were studied using two different ventilatory settings.

Methods: CDH was induced by administration of Nitrofen (J Pediatr Surg 1990;25:850). The animals were delivered at term. Pressure-controlled artificial ventilation started immediately after birth for six hours. Group 1 was ventilated with PIP of 25 cm H₂O, group 2 with of 25 cm H₂O for 15 minutes followed by PIP of 17 cm H₂O. Other settings for both groups were: PEEP 3 cm H₂O, freq. 40/min and F_{IO2} 1. The lungs of surviving rats were fixed in formalin without standard inflation.

Results:

	GROUP 1 (PIP 25)		GROUP 2 (PIP 17)	
	CDH	Control	CDH	Control
pneumothorax	10/11	6/10	20/53	0/33
lung expansion	CA (n=1)	50% NA	64% CA	58% NA

Conclusion: We conclude that high opening pressures are needed. The centroacinar lung expansion and the incidence of pneumothorax in CDH rats is similar to the situation seen in premature children with respiratory distress syndrome and primary or secondary surfactant deficiency. (Supported by the Netherlands Asthma Fund 91.56).