

## ● 265

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#### EARLY LUNG DEVELOPMENT IN THE RAT AND ITS PERTURBATION BY NITROFEN EXPOSURE.

In search for mechanisms underlying pulmonary hypoplasia we have studied early lung development in the rat and its perturbation by Nitrofen exposure using serially sectioned embryos. The lung primordium is visible from day 12 of gestation, firstly as an outgrowth of the bottom of the larynx, and on day 13 as a triplicate tube growing in caudal direction. The longitudinal growth speed of the lungs exceed the growth of the whole embryo, resulting on day 15 in a longitudinal lung length of 20% of the embryo. During this period the lung primordium, is built up of undifferentiated epithelium surrounded by mesenchymal tissue. Exposure to Nitrofen on day 10 reduces the early proliferation and growth of the lung primordium, as measured in serial longitudinal sections of treated embryos. In fetuses that did not develop diaphragmatic hernia (DH) lung length had recovered to control range by day 20, irrespective of the Nitrofen dosage applied. In fetuses with leftsided DH, leftsided lung hypoplasia occurred in conjunction with right lungs that were significantly longer than controls. The results suggest two determinants of development of lung hypoplasia in this model; an early effect on proliferation of the lung primordium, and a late effect related to the presence of DH.

## ▲ 266

*Maintenance, bacterial contamination and performance of jet nebulizers used by out patients.*

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Jet nebulizers are frequently used for asthma treatment in children. Aim of study To evaluate technical maintenance, cleaning procedures, bacterial contamination and performance of nebulizers used by out patients. Methods We selected 39 families where an asthmatic child was on maintenance treatment with a nebulizer. User aspects of nebulizer therapy were evaluated with a questionnaire. Bacterial samples were taken from the liquid container of the nebulizer, the NaCl 0.9% solutions used as diluent, and from the aerosol. We measured the operating pressure generated by the compressor with a manometer. Particle-size of the aerosol was measured by laser diffraction. Results None of the nebulizers were periodically maintained. The cleaning procedure was insufficient in 38% of the users. One or more strains of pathogenic micro-organisms were cultured from 18/39 reservoirs, 16/39 NaCl 0.9% solutions, and 5/10 aerosols. Operating pressure was lower than specified by the manufacturer in 50% of the nebulizers. There was a straight negative linear correlation between age of the nebuliser and the respirable output. Conclusion Periodically technical maintenance of nebulizers and evaluation of user aspects is needed. Only single dose vials of NaCl 0.9% should be used to dilute aerosol medication.

## ▲ 267

**POSTURAL DRAINAGE EXACERBATES GASTRO-OESOPHAGEAL REFLEX IN PATIENTS WITH LUNG DISEASE; IS POSITIVE EXPIRATORY PRESSURE AN ALTERNATIVE?** Brenda M. Button, Ralf G. Heine, Anthony G. Catto-Smith, Peter D. Phelan, Departments of Physiotherapy, Gastroenterology and Thoracic Medicine, Royal Children's Hospital, Melbourne, Australia.

Some patients with Cystic Fibrosis (CF) report symptoms of gastro-oesophageal reflux (GOR) during chest physiotherapy (PT) incorporating postural drainage (PD). Positive Expiratory Pressure (PEP) therapy, in the upright position, may be less likely to induce GOR and potentially improve pulmonary function (PF). Aims: to establish if (1) PD increases GOR; (2) a change to PEP improves PF. Method: 30 patients with CF aged 4 months to 19 years (18 male, 12 female; mean age 9.6 years) were studied. 24 hour pH monitoring was undertaken, including 2 PT sessions incorporating head down tilt in 4 widely used PD positions. PD was subsequently changed to PEP in those with increased symptoms of GOR. PF was studied longitudinally. Results: PD increased GOR in 19 subjects. 6 months following the change from PD to PEP there was a significant increase in mean FVC (54.5±11.2 to 75.1±13.1 percent predicted (%); p<0.001) and FEV1 (43.8±9.6 to 61.5±12.7%; p<0.001). 6 subjects studied over 2 years continued to improve PF. Annual hospital bed days decreased from a mean of 91±5 pre- to 27±28 post change from PD to PEP (p<0.005). Conclusions: PD exacerbated GOR in 19 patients with CF, but did not increase GOR in 11 subjects with normal pH studies. All patients with symptoms of GOR during PD reported increased comfort with PEP therapy

## ● 268

ROUND PNEUMONIAS IN CHILDREN. Paulo A M Camargos & Cid S Ferreira. Medicine School, Dept of Pediatrics, Federal University of Minas Gerais, Brazil.

Aims: to present the role of pneumococcus in the etiology of tumor-like shadows.

Clinical material: ten children, aged 2-12 years, acutely febrile (higher than 38.9 C), with signs and symptoms of pneumonia and leukocytosis (higher than 17.000/mm<sup>3</sup>), with a left shift. All patients had a well-circumscribed spherical shadow of water density on their chest roentgenogram. Three children responded to procaine penicillin and seven of them to a single dose of benzathine penicillin. Within 48 hours they became afebrile and symptoms subsided. Films taken around the 7th. and 14th. day showed a progressive radiographic improvement in all cases.

Conclusions: these data correspond to findings obtained in the experimentally produced pneumococcal pneumonia in dogs (Frazer & Wortzman, 1959). A pneumococcal origin should be considered in round shadows (Swischuk, 1986) principally if they are associated with clinical and laboratory findings suggesting an infectious disease, because of the quick response to penicillin in this series, specially to single doses of benzathine penicillin. It would allow a differentiation between pneumococcal pneumonia and more serious disease, e.g., pulmonary and mediastinal neoplasms.

## ● 269

THE SOONER THE TREATMENT, THE SOONER THE RADIOGRAPHIC INVOLUTION: WILL THAT BE TRUE? Paulo A M Camargos, Cid S Ferreira, Maria J F Fontes. Medicine School, Federal University of Minas Gerais, Brazil.

Aims: to analyze the association of the interval between the onset of the symptoms and the start of the treatment with the involution of the radiographic shadows in presumed pneumococcal pneumonia.

Methods: 134 children, 2-12 years, all of them with leukocytosis (higher than 15,000/mm<sup>3</sup>) and/or positive C-reactive protein and acute lobar/segmental pneumonia (ALSP). No prior antibiotic had been administered. All these children were treated with penicillin and the interval between the onset of symptoms and the drug administration was recorded. All patients got cured. Films were taken around the 7th and 14th days after the beginning of treatment and were interpreted blindly. Statistical analysis included the Chi-square test (significant level: p lower than .05).

Results: no statistical difference was detected in total clearing when the children were treated before or after 24 hours of the onset of the symptoms, for films taken around the 7th and 14th days (p=.80 and p=.96, respectively). Conclusions: these results suggest that early treatment do not determine more rapid chest X-ray clearing in children with ALSP.

## ● 270

CROUP IN A PEDIATRIC EMERGENCY DEPARTMENT (ED).

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The aim of this study was to assess clinical patterns and management of croup in a well defined area, served by only one children's hospital during one year. 91 patients (pts) presented croup (0.5% of total ED consultation, 4.7% of ac. resp. tract disease): 80 were diagnosed as ac. laryngotracheobronchitis (LTB), 11 as spasmodic croup (SC). LTB pts (61% male) were aged from 1 month to 15.5 yrs (M 3 yrs); 45% presented in autumn, 41% during the night. Symptomatology consisted of cough (73%), dyspnea (29%), fever (21%) and dysphonia (20%). Most common treatments were nebulized sterile saline (nss) alone (53%) or combined with beclomethasone (bt, 9%), phenylephrine (pe, 3%), bt+pe or oral corticosteroids (cs, 13% each one). 15 pts were hospitalized: management consisted of aerosol with pe (69%) or with bt (31%), plus nss or oral cs (23% each one). Hospitalization lasted less than 2 days. SC pts (64% female) were aged from 8 months to 7 yrs (M 2.8 yrs). 55% presented in winter, 72% during the night. Most common symptoms were cough (96%) and dyspnea (46%). Management consisted of nss alone (55%) or in combination with bt (9%), pe (9%), bt+pe (27%). One patient was hospitalized for a night and treated with nss+bt. In our area croup is usually managed at home. Patients referring to the ED are newly diagnosed or have not responded to home treatment.