Clinical and Immunological Characteristics of Recurrent Respiratory Infections in Children with the Herpes Virus as a Risk Factor

Ala Donos

Pediatrics, State Medical and Pharmaceutical University "Nicolae Testemitanu", Moldova, Republic of

Background: In structure of children diseases, respiratory pathologies occupy the first place (80 – 90 % of acute affections in children until the age of 5 years) special at the expense of recurrent ill children. By WHO in structure of death because of viral infections, Herpes simplex virus (HSV) is on the second place (16%) in world, right after the Flu. Domination of CMV infections (50 – 64 %) is 2 rates higher than herpetic infection at recurrent ill children.

Objective: Clinical and immunological analysis of recurrent infections in children with the presence of fond diseases, herpetic and cytomegalovirotic infections.

Methods: Analysis of the results of the clinical and instrumental investigations of patients with severe course of respiratory diseases at children with positive viral tests (HSV, CMV). Viral exams. Immunologic tests.

Results: The rate of recurrent diseases at children under the age of 1 year is 27%. 73% of children with severe pneumonia are those of ages between 1 and 5 years. All studied children have an associated neonatal pathology in anamnesis: prolonged neonatal jaundice (31%), pneumonia (12%), convulsions (7%) and digestive pathology (50%). Positive HSV anamnesis makes 82,6% of children, this is 3,8 rates higher than with CMV (21,7%). Children infection with CMV is 78%, with HSV type 1, 2, 6 – 26%. (1:3). Level of CD3, CD4, CD20 is normal, relative to age, in majority cases. CD8 level is low at children until the age of 1 year and in those between 1 and 5 years. Conclusions: Amongst respiratory diseases, 1/5 of severe pneumonias have an unfavorable evolution with complications. Presence of herpetic infection and/or CMV infection compromise immunity, being one of unfavorable factors for recurrent respiratory infections. CMV is 3 rates higher than HSV type 1,2,6. As a risk factor, viral herpes-tests are positive at recurrent ill children. This children group represents a reserve of reduction of illness and immature death of community-acquired pneumonia at children under the 5 years old.
Risk Factors in Manifestation of Community-acquired Pneumonia Associated with Cytomegaloviral Infection in Children

Ala Donos, Daniil Afanasiev

Pediatrics, State Medical and Pharmaceutical University "Nicolae Testemitanu", Moldova, Republic of

Background: Pneumonia is a principal cause of infant mortality in the world, according WHO, and annual child deceases prevail over those of HIV/AIDS, tuberculosis and malaria together.

It is registered more than 155 mln of pneumonia cases in children worldwide; 1,5 mln manifest complications of various severity level amongst them.

Cytomegaloviral infection is one of the most wide-spread TORCHE infections. It is estimated a global growth of it, due to diagnostics performances and elevated incidence in population.

Reason of decease or main disease aggravation in 37,5% of neonates died, supported an opportunistic infection. CMV antibodies in children until the age of 2 years are in 33% in countries with high economic level, in developing countries – 69% of children are CMV carriers.

Objective: elucidation of risk factors in community-acquired pneumonia manifestation in children until the age of 5 years with the presence of CMV infection.

Methods: retrospective analysis of medical cases and statistical dates.

Results: In study group 61,3% of mothers had a positive herpetic anamnesis; CMV being 43%, HSV – 33%, and associated HSV – 24% amongst them. Pregnancy had complications in all cases.

<table>
<thead>
<tr>
<th>Pathologic pregnancy (anemia, toxicosis)</th>
<th>IgM positive CMV</th>
<th>IgG positive CMV</th>
<th>IgM neg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>58,06%</td>
<td>40%</td>
<td>25%</td>
</tr>
<tr>
<td>2. Threatening abortion</td>
<td>45,16%</td>
<td>40,9%</td>
<td>&lt;10%</td>
</tr>
<tr>
<td>3. Allergic affectections anamnesis</td>
<td>19,35%</td>
<td>20%</td>
<td>12,9%</td>
</tr>
<tr>
<td>4. Congenital pneumonia</td>
<td>19,35%</td>
<td>38,63%</td>
<td>6,45%</td>
</tr>
<tr>
<td>5. Prolonged jaundice</td>
<td>16,12%</td>
<td>15,9%</td>
<td>-</td>
</tr>
<tr>
<td>6. Community-acquired pneumonia more than 3 times in amamnesis</td>
<td>6,45%</td>
<td>9,09%</td>
<td>-</td>
</tr>
</tbody>
</table>

One risk factor is the age of a child. Community-acquired pneumonia is the most frequent in infants (49,9%); 1 – 3 years old – 33,9%; and in the age of more than 3 years – 16,03%. Boys are the most vulnerable sex (67,92%). In study group CMV seropositive, pathologic pregnancy was maximum rates. Antenatal risk factors, being determined by threatened abortion in ½ of cases, anemia, toxicosis in more than 1/3 of moms and about 20% supported allergic affections.

Conclusions: Herpetic infection presence in mother’s anamnesis determines pathologic pregnancy and contributes to the congenital pneumonia rates growth to 38,63% of cases with IgG seropositive CMV. Prolonged jaundice in children of seropositive CMV mothers can be treated as a diagnostic algorithm. Seropositive IgG CMV children support pneumonia 1,5 times frequently than those seropositive IgM CMV.
Background: In children, evidence showed that using metered dose inhalers (MDIs) with spacer (MDIs-spacer) might be superior to nebulizers (MDIs-spacer are easier to use, require less effort and time, and do not require dose preparation or electricity for delivery with equivalent efficacy compared to nebulizers). Despite all of these facts, nebulizers are still the most frequently used modality for the administration of bronchodilators (BDs) and inhaled corticosteroids (ICSs) in the majority of hospitalized pediatric patients.

Objective: To investigate the impact of changing the practice of nebulizers use to MDIs-spacer on the utilization of hospital resources.

Methods: A prospective study of hospitalized pediatric patients in whom management plans required initiation or continuation of BDs and ICSs. In the first 2 weeks of the study, all patients kept on their regular treatment by nebulizers, this was followed by a washout period for 2 weeks where all the health care providers involved in the patients care introduced to the project of switching patients to MDIs-spacer instead of nebulizers. Primary outcomes included: the mean time (in minutes) of medication preparation and delivery. Secondary outcomes included: manpower saving, estimated cost of medications, and patient/caregiver satisfaction among both groups.

Results: 575 treatment sessions were enrolled (291: nebulizers, 284: MDIs-spacer). The duration of treatment preparation and delivery was significantly lower in MDIs-spacer group (2 minutes difference for preparation time and 5 minutes difference for delivery time; P 0.01). Caregiver mastered MDIs-spacer use after an average of 2 supervised sessions. Patient/caregiver satisfaction survey found to be in the “very good” to “excellent” range in both groups. Use of MDIs-spacer resulted in cost cutting in relation to medications and devices costs. MDIs-spacer use associated with more efficient utilization of respiratory therapy services.

Conclusion: Replacing nebulizers by MDIs-spacer as the delivery system of choice for BDs and ICSs will improve the utilization of hospital resources.
Inhaled Corticosteroid for Treatment of Severe Inspiration Deficiency due to Acute Laryngitis - a Pilot Study

Ivanka Galeva, Milena Yankova, Sirma Mileva
Pediatric Clinic, University Hospital Alexandrovska, Medical University, Bulgaria

Aim: Assessment of clinical benefits of inhaled corticosteroid Pulmicort® for overcoming the acute severe inspiration deficiency in small children with acute laryngitis.

Method: Inhalations with Pulmicort® 1 ml mixed with 1ml Saline solution 0.9% were performed twice daily through nebulizer (PARI BOYS) in 63 children – 43 boys and 20 girls, aged 12-24 months, with acute laryngitis and severe inspiration deficiency in Pediatric Clinic. In another 24 aged matched children in the same condition corticosteroids were used I.V. The breath and heart frequency, oxygen saturation, voice changes, clinical status and Patient’s behavior before and 2-hours after corticosteroid administrations, as well as, the final disease outcome were assessed in both groups.

Results: A mark decreasing in respiratory and heart frequencies and a tendency in normalized the oxygen saturation after corticosteroid administrations were found in both groups. But a faster clinical benefits, voice recovering and overcoming the restless were observed in the group receiving Pulmicort®. 16.3% (n=7) of children in this group developed also acute bronchiolitis compared with 20.0% (n=4) among the group with I.V. corticosteroid administrations. In both groups adverse effects have not been seen.

Conclusion: Inhaled corticosteroid (Pulmicort®) is an easy-used, painless, saved and effective drug in small children for overcoming the severe acute inspiration deficiency due to acute laryngitis.
Peculiarities of Immune Defense in Infants with Inflammatory Diseases of the Respiratory System

Halyna Pavlishin, Victoria Slyva, Irina Sarapuk, Svitlana Nykytuk, Nataliya Haliyash
Pediatrics, Ternopil State Medical University, Ukraine

Background: Respiratory pathology figures prominently in the structure of children's morbidity. Anatomical and physiological characteristics of respiratory and immune system contribute to the development of pathological processes in infant’s lungs. Pathogenetic mechanisms of inflammatory respiratory diseases are closely related to changes of immune cells levels and their apoptosis.

Objective: To investigate the features of non-specific and specific immune defense of infants with respiratory pathology.

Methods: The study involved 70 infants with inflammatory respiratory diseases and 25 healthy children of the control group. The intensity of neutrophils apoptosis and necrosis and cellular immunity parameters were determined by flow cytometry, humoral immunity – by enzyme immunoassay.

Results: In infants with inflammatory respiratory diseases the intensity of neutrophils apoptosis increases compared with healthy infants (p<0.001). With the growing severity of inflammation apoptotic activity of immune cells decreases, while the level of necrosis increases (p<0.001). The study of specific defense has confirmed disorders of cellular immunity (lymphopenia (p<0.001), T-lymphopenia (p<0.01), reduction of the number of T-helper cells (p<0.001), increase of T-suppressors (p<0.001), 0 cells (p<0.001) and B-lymphocytes (p<0.001)) and development of dysimmunoglobulinaemia (decrease of immunoglobulin A (p<0.05) and immunoglobulin G (p<0.05) with simultaneous increase of immunoglobulin M (p<0.05)) in all examined children.

Conclusions: In infants with inflammatory diseases of the respiratory system, disorders of nonspecific immunity in the form of changes in neutrophils’ apoptotic activity were found. Thus, with the growing severity of pathology the apoptosis of these cells was depressed, while necrotic processes were activated, indicating increased inflammatory changes. The signs of secondary immunodeficiency and formation of the immune response suppression were observed.
Background: Chronic hypoxia and failure to thrive in children can be caused by hepatopulmonary syndrome, congenital portosystemic shunt, cystic fibrosis or Williams’s syndrome. Objective. Our goal is to present an interesting clinical case.

Materials and methods: A 4 year old boy was hospitalized because of refractory pneumonia. Signs of chronic hypoxia (digital clubbing, cyanosis, SaO₂ 80 %), failure to thrive (height - 50th percentile and weight - 3rd percentile) and specific facial features (micrognathia, short nose, wide mouth, full lips, widely spaced, pointed teeth) were noticed. At the age of 3 months patient had CT angiography that showed hypoplastic distal aortic arch and proximal descending aorta, persistent left superior vena cava, portal vein draining into inferior vena cava. Sweat testing was performed 3 times, Cl - 44 mmol/l : 71 mmol/l: 51 mmol/l. EchoCs: AoV Ø - 16/20/16 mm, aortic arch Ø - 11 mm, right after constriction 17 mm. Vmax at the LV entry 1,4 m/s, grad. 8,2 mmHg, at the constriction 1,86 m/s and 13,8 mmHg, after the constriction 1,3 m/s and 6,2 mmHg respectively.

Results: Based on laboratory and instrumental investigation we diagnosed cystic fibrosis. After the treatment with antibiotics, oxygen therapy, enzymes, special diet and physical therapy due to cystic fibrosis, patient improved (gained 700 grams, coughed less frequently, cyanosis reduced, but SaO₂ remained 84%). However patients clinical condition did not correlate with duration of the disease so we recommended more comprehensive investigation (genetic counseling etc.).

Conclusions: Referring to the phenotypic features and laboratory testing the diagnosis of cystic fibrosis is expected. Dysmorphic face and impairment of large vessels suggests William’s syndrome. Taking into account signs of chronic hypoxia and imaging studies we must think about hepatopulmonary syndrome caused by congenital portosystemic shunt. More comprehensive investigation is needed in order to make an accurate diagnosis.
Side-effects on The Skin, Eyes, Mucous Membranes of The Airways, Adrenal and Stature by Prolonged Use of Inhaled Corticosteroids to Treat Asthma

Nulma Souto Jentzsch, Luísa Alvarenga Guerra Martins, Henrique Senna de Carvalho, Mariana Mattar Sampaio, Leandro Campos Vieira, Cláudio Lovaglio Cançado Trindade, Francisco José Ferreira da Silveira

Pediatrics, Faculdade de Ciências Médicas de Minas Gerais, Brazil

Background: asthma consists on a complex syndrome. Its main treatment consists on prolonged usage of inhaled corticosteroids, but, even though it seems rather safe, this treatment has its side-effects.

Objective: To evaluate the side effects on the skin, eyes, respiratory tract mucosa, adrenal and stature resulting from prolonged use of inhaled corticosteroids to treat asthma in children and adolescents.

Methods: A cross-sectional study with 79 children and adolescents aged 3 to 18 years, with over one year of treatment with inhaled corticosteroids and who belonged to the Pulmonology Unit References Secondary SUS-Belo Horizonte. Participants evaluated changes in the skin (atrophy, ecchymosis and purpura), eye (keratoconjunctivitis, keratoconus, ocular pressure, glaucoma), mucosal airway (cough, hoarseness and presence of fungi), plasma cortisol, bone age and index putting estatural. Categorical variables were developed distribution tables of frequencies. Measures of central tendency and variability were used for continuous variables.

Results: Adverse events observed were cough (24.0%) after the use of medication. Six patients (13.9%) had ocular alterations: hypermetropia, myopia, allergic keratoconjunctivitis, keratoconus and only one establishment had ocular hypertension borderline, which could be attributed to the use of inhaled corticosteroids. The bone age in six (7.6%) had a delay of one year in relation to chronological age and five (6.3%) had a breakthrough year in bone age to RX. The plasma cortisol levels were low in 10 participants (12.6%).

Conclusion: Despite being recommended treatment for asthma with inhaled corticosteroids is necessary to be aware of its side effects.
The Effect of Chest Radiography in Children With Acute Lower Respiratory Infection

Ayse Gul Uslu¹, Gulsen Meral¹, Sinan Uslu², Nimet Pinar Yilmaztas¹, Faruk Akcay¹, Eylem Erzurumlu¹

¹Pediatrics, Kagithane State Hospital, Turkey
²Pediatrics and Neonatology, Sisli Etfal Children Hospital, Turkey

Background: Chest radiography is a very common investigation tool in children with lower respiratory infection, and knowledge of the diagnostic approach of radiograph interpretation is really important when basing clinical decisions on the findings.

Objective: The aim of this study is to determine the effects of chest radiographs on the management and clinical course of children with acute lower respiratory infections (ALRI).

Methods: The study was performed between January 1, 2012 and December 1, 2012 in the outpatient clinic of Kagithane State Hospital, Istanbul. The children aged 6 months to 6 years who had non-severe pneumonia were randomly allocated to take chest radiography or not. Clinical characteristics and laboratory findings were compared between the radiological evidence of pneumonia (group 1), no radiological findings (group 2) and no chest radiography (group 3) groups. Demographic, clinical and laboratory findings were compared between these groups. Acute lower respiratory infection was diagnosed clinically and according to WHO criteria classified as “non-severe pneumonia”.

Results: A total of 312 children were analyzed in the study. There were 28 (9%) children in group 1, 122 (39%) in group 2 and 162 (52%) in group 3. There were no significant differences between the groups with respect to demographic (gender, age), clinical (fever, cough, respiratory distress, diarrhea, vomiting, presence of wheeze, mean duration of illness, the use of antibiotics) and laboratory (leukocyte count, leukocytosis, CRP, high levels of CRP) data.

Conclusion: Chest radiography is a very popular diagnostic tool in children with ALRI for practical approach. On the other hand it is difficult to distinguish between viral and bacterial pneumonia and X-ray has vary disadvantages (ionising radiation, cost, the time and space used). So, WHO guidelines for the management of children with acute lower respiratory infections in developing countries do not recommend the use of a chest radiograph. In this study, according to comparison of clinical and laboratory findings, chest radiographs have little value in diagnosis and prognosis of ALRI in children.
Acute Cough in Children and Community Pharmacists Counseling of Syrups

François-André Allaert¹, Stéphane Vincent², Geneviève Thevenard³, Laurent Sauvé⁴, Laurence Terzan²

¹Ceren Esc and Département d'Information Médicale, CHU Dijon, France
²Research, Laboratoires Boiron, France
³Pharmacie, Square centre, France
⁴Pharmacie, du Vallon, France

Background: Over the last decade, the role of the pharmacist has evolved from dispensing medications to broader responsibilities of counseling. This pharmacist’s counseling of cough syrups in children, which are largely used, needs to be described and assessed.

Objective: Describe the clinical profile and evolution of children with acute cough for whom pharmacists had counseled a syrup.

Methods: Prospective observational study conducted on a representative sample of community pharmacists in France in 2012. Pharmacists had to include ten consecutive children presenting an acute cough that did not require a medical consultation. Children had to receive a syrup and their parents accepted to fill in an evaluation form of the cough (after 7 days maximum).

Results: 414 children (51.4% boys), 6.0±2.9 years, benefited from a pharmaceutical counseling for a dry cough (45.9%), a productive cough (43.3%), a nagging cough (13.7%) or a barking cough (9.3%) that began less than 72 hours previously and essentially associated to a runny nose (48.3%). Among them, 30.4% received antitussive allopathic syrups, 28.3% expectorant allopathic syrups, 23.7% homeopathic syrups and 17.6% other antitussive syrups. Cough was improved in 84.5% of children after a median duration of 2 days and disappeared in 59.9% of them after 4 days. Logistic regression adjusted on age, sex, severity and nature of cough, previous self-medication with syrups, adverse event notification and compliance, showed that cough disappearance was more frequent with homeopathic syrups compared with expectorant allopathic syrups (OR= 4.1 [95%CI: 1.7-9.8]; p=0.002), other antitussive syrups (OR= 3.1 [1.4-6.8]; p=0.006) and antitussive allopathic syrups (OR= 2.1 [1.0-4.3]; p=0.042).

Conclusion: This study highlights the pharmacist’s role in managing children acute cough. Homeopathic cough syrups are integrated in the pharmacist’s counseling. These syrups may have a real interest in term of public health, especially as no side effects are reported.
Pneumocystis Pneumonia Related to Major Histocompatibility Class II Deficiency: Case Report

Saber Hammami¹, Habib Besbes¹, Khaled Harrathi², Khaled Lajmi¹, Samir Hadded¹, Chebil Ben Meriem¹, Leila Ghedira¹, Néji Guediche¹
¹Pediatric Department, Fattouma Bourguiba Hospital, University of Monastir, Faculty of Medicine, Tunisia
²ORL Department, Fattouma Bourguiba Hospital, University of Monastir, Faculty of Medicine., Tunisia

Background: Major histocompatibility complex class II deficiency is a rare primary combined immunodeficiency with autosomal-recessive inheritance. It’s known to be among the most prevalent combined immunodeficiency in the Mediterranean areas, especially in North Africa.

Objective: Report a new case of an infant with major histocompatibility complex class II deficiency revealed by hypoxemic pneumonia due to Pneumocystis carinii.

Observation: A 6–month–old infant, of healthy consanguineous parents, was admitted to our pediatric unit with fever and cough. The infant had a one month history of dyspnoea and cough. Psychomotor development was normal. He weighed 4500 g. Physical examination revealed polypnoea, tachycardia without signs of heart failure, and cyanosis. A chest X-ray revealed bilateral alveolar-interstitial infiltrates. Chest computed tomography noted bilateral interstitial infiltrates. The infant received broad-spectrum antibiotic and oxygen. Initial clinical course was unfavorable, with persistent oxygen dependence. Microbiologic tests revealed an infection with Pneumocystis carinii. The infant received Trimethoprim and sulfamethoxazole (TMP/SMX) at 100 mg/weight/day. The evolution was favorable. Thanks to Immunological investigations, the diagnosis of MHC class II deficiency was made. Unfortunately, the infant did not have an HLA-identical donor. Other recurrent infections such as pneumonia, thrush and gastrointestinal infection marked the evolution. The infant died at the age of 18 months from severe malnutrition and septicemia.

Conclusion: Report of this new case of Major histocompatibility complex class II deficiency confirms the frequency of this disease among the North African population. Severity of recurrent infection and failure to growth suggest the diagnosis.
Pulmonary Veno-Occlusive Disease in Children: A Case Report

Saber Hammami, Habib Besbes, Ahlem Hellara, Khaled Lajmi, Samir Hadded, Leila Ghedira, Chebil Ben Meriem, Néji Guediche

Pediatric Department, Fattouma Bourguiba Hospital. University of Monastir, Faculty of Medicine., Tunisia

Background: The pulmonary veno-occlusive disease (PVOD) is a rare form of pulmonary hypertension. This condition is characterized by obstruction of the pulmonary veins and venules by intimal fibrosis and thrombosis.

Objective: Report a complex pediatric case of this rare disease.

Observation: A 6-year-old female with history of right nephrectomy at the age of 3 years for Wilm’s tumor; she underwent perioperative chemotherapy based on Vincristine and Adriamycin. The girl was also hospitalized two years ago for exploration of cholestatic jaundice; the diagnosis was a hepatitis A with a favorable outcome. 1 year later, the child was admitted for exploration of hepatomegaly and dyspnea. The examination showed hepatomegaly with hard consistency, sharp lower edge, chest and abdominal collateral venous circulation, bilateral jugular pulse, edema in the face and lower limbs and ascites. Diffuse wheezing in auscultation. Chest radiography showed alveolar-interstitial syndrome and Echocardiography found a right cavitary dilatation and post-capillary Pulmonary arterial hypertension (PAH) signs to 50 mmHg. Biology confirmed hepatocellular insufficiency. Etiological diagnosis came back negative. The liver biopsy showed signs of portal fibrosis without specific lesions. The thoracoabdominal CT angiography revealed smooth interlobular septal thickening, diffuse ground glass opacities, multiple small nodules and prominent mediastinal lymphadenopathy. The diagnosis of PVOD probably due to chemotherapy was retained. Doppler ultrasonography of hepatic portal showed no signs evoked Hepatic Veno-Occlusive Disease (HVOD).

Conclusion: Pulmonary veno-occlusive disease and Hepatic Veno-Occlusive Disease, even if they have similar names, have different pathophysiological mechanisms and are never associated. Severe Pulmonary veno-occlusive disease has a poor prognosis, with a high mortality rate associated with multiple organ failure.