is recommended that a single trial inhalation using epinephrine or albuterol is to be considered on an individual basis.

Nebulized racemic epinephrine demonstrates better short-term improvement in pulmonary physiology. Combined treatment of systemic glucocorticoids (dexamethasone) and bronchodilators (epinephrine) may significantly reduce hospital admissions.

It is recommended the infant be suctioned, when clinically indicated before feedings, as needed, prior to each inhalation therapy and normal saline nose drops may be used prior to suctioning. Current guidelines do not recommend routine chest physiotherapy in the management of bronchiolitis.

Infants with this severe disease may need supportive care for respiratory failure and dehydration, such as mechanical ventilation and supplemental fluid therapy. Treatment for severe bronchiolitis may include: humidified oxygen therapy, chest physical therapy, bronchodilator medications: Ventolin, Salbutamol, Epinephrine (Adrenalin), anti-viral medication from bronchiolitis: ribavirin, palivizumab, antibiotics for associated otitis media, suspected bacterial pneumonia, and mechanical ventilation.

It is recommended that the family be educated on the following topics regarding the care of a child with bronchiolitis: to call their primary care provider if the following signs of worsening clinical status are observed: increasing respiratory rate and/or work of breathing as indicated by use of the accessory muscle, inability to maintain adequate hydration, or worsening general appearance.

Therapies NOT Routinely Recommended:

It is recommended that scheduled or serial inhalation therapies not be used routinely nor repeated if there is no measured improvement in the clinical outcome after a trial inhalation. Hypertonic saline inhalations are not to be given for the routine treatment of bronchiolitis due to inconsistent evidence regarding its effectiveness. It is recommended at this time that the following drugs not be used in the treatment of bronchiolitis: antibodies (immunoglobulins), Montelukast, Recombinant human deoxyribonuclease (rhDNase), antihistamines, oral decongestants, and nasal vasoconstrictors. Antibiotics are not recommended unless bacterial infection is suggested (e.g., toxic appearance, hyperpyrexia, consolidation or focal lobar infiltrates on chest radiograph, leukocytosis, positive bacterial cultures).

Key words: bronchiolitis, treatment, child.

The role of pulmonary infection in progression of cystic fibrosis lung disease

I. Stan

Department of Pediatrics, Maternal and Child Healthcare Institute, Bucharest, Romania

Corresponding author e-mail: iustinas@yahoo.com

Cystic fibrosis (CF) is a life-shortening genetic disease characterized by variability in the age of death. This is largely due to variability in the rate of progression of lung disease, the primary cause of mortality. In most patients with cystic fibrosis (CF) life expectancy is limited due to a progressive loss of functional lung tissue. 80% of premature deaths continue to result directly or indirectly from loss of lung function.

The factors associated with an increased risk of lung disease progression are: young age, high lung function, being of the female sex, certain CFTR genotypes, pancreatic insufficiency, poor nutritional status, lower socioeconomic status, respiratory viral infections, and infection of *Pseudomonas aeruginosa* or *Burkholderia cepacia*.

Virtually all patients with CF are chronically infected with one or more bacterial species, and the inflammatory response to infection appears to be more intense in patients with CF. Early infection of CF in the airways is mostly caused by *Staphylococcus aureus* and *Haemophilus influenza,* than from *P. aeruginosa* or other gram negative stains. Recent studies, especially those following patients diagnosed by neonatal screening, have shown that infection of P. aeruginosa usually occurs at very young age. Positive antibody response to *P. aeruginosa* was found in children, with the mean age of 15 months, about 12 months before first cultures were positive. Also in young, non-sputum producing children it was found that throat swabs frequently showed positive cultures for *P. aeruginosa*. Chronic infection is prevalent in about 80% of all patients with CF. In patients with chronic infection and alginate-coated mucous strains of *Ps. aeruginosa*, eradication is nearly impossible. CF and *Ps. aeruginosa,* an unfavorable relationship, can be explained by the possibility of CFTR acting as a specific receptor for *Ps. aeruginosa*. CFTR may influence bacterial adherence to epithelial cells. The "overproduction" of pro-inflammatory cytokines and significantly lower levels of the anti-inflammatory cytokine IL-10, which inhibits the production of pro-inflammatory cytokines, results in excessive and persistent inflammation in the CF airways. As a result, lung functioning deteriorates more rapidly in *Ps. aeruginosa*-positive CF patients compared with *Ps. aeruginosa*-negative CF patients. Patients with cystic fibrosis are often colonized with bacteria other than PA, causing bronco-pulmonary infections that lead to the deterioration of lung functioning such as: *Burkholderia cepacia* complex, *Achromobacter xylosoxidans* and *Stenotrophomonas maltophilia*. Patients chronically infected with *S. maltophilia* are cable of rising a specific antibody response against this bacteria associated with worsening lung function. Chronic infection of *S. maltophilia* is correlated with a decline in lung functioning, but this decline was already present prior to the chronic infection, where the high prevalence of *Aspergillus* and ABPA and NTM may have contributed a role in this result.

Staphylococcus aureus (*S. aureus*) is one of the earliest bacteria detected in infants. Treatment with anti-staphylococcal agents reduces the infection rate of MSSA but may lead to a higher rate of infection of *Ps. aeruginosa*. *S. aureus* which isolates harbor to a multitude of virulence factors, overlapping to a large degree in MSSA and MRSA. To date there are no conclusive studies demonstrating that the early aggressive treatment of MRSA respiratory infection can prevent chronic infection or if this approach ultimately improves outcomes.

Key words: cystic fibrosis, pulmonary infection, lung disease.