

**ECONOMIC ANALYSIS OF INVASIVE PNEUMOCOCCAL
BACTEREMIA IN A NINE-YEAR-OLD-BOY CAUSED
BY SEROTYPE FIRST**

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Background: Streptococcus pneumonia (S. pneumoniae) is a leading cause of bacteremia, sepsis, meningitis, pneumonia, sinusitis, and acute otitis media in young children. S. pneumoniae are much more likely to be associated with nasopharyngeal colonisation than to cause invasive disease. The bacterial species S. pneumoniae consists of 90 immunologically distinct serotypes. Some serotypes seem to be of disproportionate importance as causes of disease in very young infants, in older children, in immunocompromised individuals, or in elderly people. Some serotypes seem to be associated with particular disease syndromes, such as complicated pneumonias in children, or with higher rates of hospitalisation in children or mortality in adults are consistently responsible for outbreaks in certain populations

Case report: We describe the case of a nine-year-old-boy, who subsequently developed an abscess of pleura and invasive pneumococcal bacteriemia. The boy was admitted by surgeon when he presented with abdominal pain and vomiting accompanied by mild cough and fever. Investigations showed: CRP-386mg/l, ESR-140mm/h, WBC-30G/l (13bands/79 seg/8lymph), fibrinogen-496mg/dl, D-dimer-2223ng/ml and FDPs. Chest X-ray revealed lower left lobe consolidation with pleural inflammation. A repeat chest X-ray performed five days after admission, because of increasing dyspnea disclosed progression of inflammatory process in the left lung and pleural effusion. Chest CT showed extensive interstitial-alveolar changes in the left lung with atelectasis and pleural effusion causing reduction of lung volume up to the fourth rib. Since hospital day six suction drainage and intrapleural administration of alteplase were continued for 5 days. Intravenous antibiotics were administered for 32 days, initially cefuroxime and netilmicin, which were then replaced, following an antibiogram, by benzylpenicillin (15 days). Then cefotaxime and clindamycin-14 days. Intravenous immunoglobulin were administered on 3rd and 5th day of treatment. Course of disease was complicated with labial herpes and acute adenoviral gastroenteritis, despite concurrent treatment with since the first day of treatment. Costs of diagnosis (11,7%), pharmacotherapy (55,2%), hospitalization (30,7%) and additional procedures (2,4%) were about Euro 4444 , when the cost of treatment from the perspective of the National Health Fund were only Euro 1406.

Conclusions: Invasive pneumococcal disease may appear also in children older than 5 years. The therapy of severe pneumonia complicated with pleural empyema (besides targeted antibiotic therapy) may be supplemented with early intrapleural administration of alteplase, which enhanced efficacy of suction drainage and saved the patient from invasive surgical intervention. The costs of treating a boy with sepsis caused by S. pneumoniae serotype 1 was

more than three times higher than from the perspective of providers of the National Health Fund. The administration of a new pneumococcal conjugated vaccine containing serotype 1 (PHiD-CV10 or PCV13) could have prevented invasive pneumococcal disease in the described patient.

*MCPE grant 501-1-1-19-42/09