

A Case of Flu and Many Complications

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Port J Pediatr 2019;50:130-1
DOI: <https://doi.org/10.25754/pjp.2019.14133>

Eleven-month old baby girl, previously healthy, with fever, rhinorrhea, and dry cough was diagnosed with flu-like syndrome. On day 11 of the disease, she was admitted with grunting, tachypnea, and tachycardia. Hemoglobin was 8.7g/dL, leukocytes 14,160 cells/ μ L, 90% neutrophils, C-reactive protein 523 mg/L, and the chest X-ray showed bilateral consolidation and left pleural effusion (Fig. 1). She was vaccinated with two doses of 13-valent pneumococcal polysaccharide conjugate vaccine. The polymerase chain reaction in throat swab was positive for influenza A H3N2 virus. She was started on oseltamivir and amoxicillin/clavulanic acid. The ultrasound revealed a 25 mm pleural empyema. A thoracoscopic debridement of the pleural space was performed and antibiotic therapy was switched to ceftriaxone and vancomycin. Both blood and pleural effusion cultures were negative but pleural fluid polymerase chain reaction identified *Streptococcus pneumoniae* serotype 3. On the seventh day of hospitalization, there was clinical worsening with respiratory distress and hypoxemia. Chest computed tomography scan revealed bilateral necrotizing pneumonia and loculated pneumothorax communicating with subcutaneous tissue (Fig. 2). Seven days later, she presented with left tension pneumothorax

with mediastinal shift with a bronchopleural fistula (Fig. 3) requiring chest drainage for 21 days. She presented progressive clinical improvement and was discharged

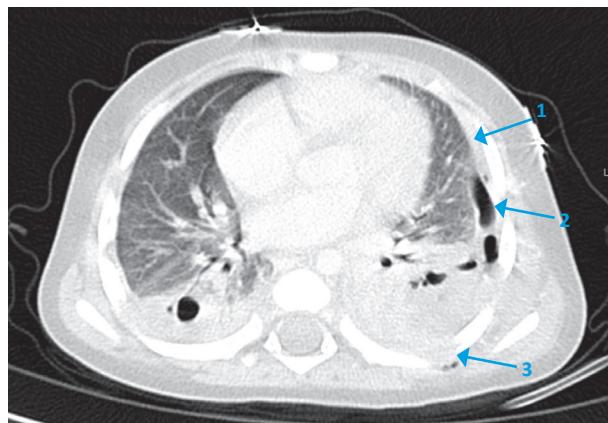


Figure 2. Chest computed tomography scan on the seventh day of hospitalization: bilateral necrotizing pneumonia with small left pleural effusion (arrow 1) and partially loculated pneumothorax (arrow 2) with external locus communicating with the subcutaneous cellular tissue (arrow 3).

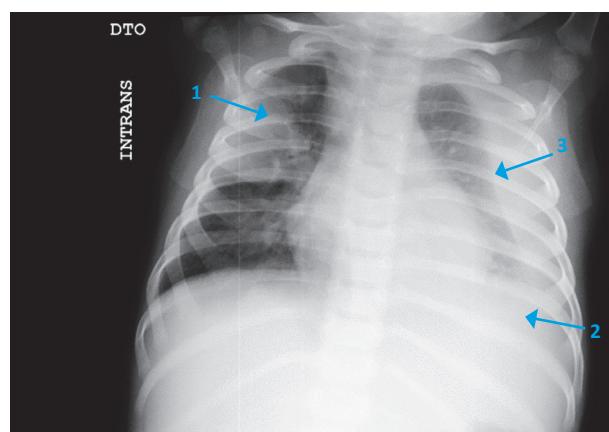


Figure 1. Postoperative chest X-ray performed in the emergency room: consolidation in the upper third of the right hemithorax (posterior segment of the right upper lobe) (arrow 1) and left inferior lobe (arrow 2) and left pleural effusion (arrow 3).

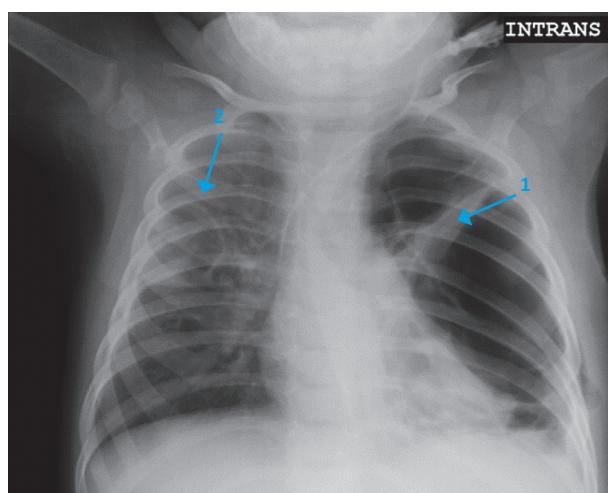


Figure 3. Posterior-anterior chest radiograph performed on day 14 of hospitalization: tension pneumothorax with collapsed left lung parenchyma; right mediastinal shift; opacity of the upper third of the left hemithorax associated with left upper lobe collapse (arrow 1); cystic image with a defined wall in the right upper lobe associated with pneumatocele (arrow 2).

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Received: 02/04/2018 | Accepted: 21/10/2018

after 39 days of hospitalization. At one year of follow-up, she is clinically well, and immunodeficiency was excluded. Influenza virus causes high morbidity and mortality.¹ Much of the mortality is attributed to secondary bacterial pneumonia, particularly by *Streptococcus pneumoniae*.² Serotype 3 produces higher levels of capsular polysaccharide compared to other serotypes, which explains its greater virulence.³ Conjugate vaccines were a milestone in reducing invasive pneumococcal disease. However, vaccination does not seem to have the same impact on the decrease of serotype 3 as in other vaccine serotypes, and the clinical relevance of this fact in the induction of long-term immune memory is unknown.⁴

Keywords: Coinfection; Infant; Influenza A Virus, H3N2 Subtype; Orthomyxoviridae Infections/complications; Pneumococcal Infections/complications

WHAT THIS REPORT ADDS

- Influenza virus predisposes patients to bacterial infections and maintained or worsening fever should raise suspicion of a complication.
- Oseltamivir should be prescribed in all patients hospitalized for influenza, regardless of the day of illness, although it is most effective within the first 48 hours.
- In pleural empyema, if culture tests are negative, polymerase chain reaction for *Streptococcus pneumoniae* should be performed to identify the etiologic agent in the pleural fluid.
- *Streptococcus pneumoniae* serotype 3, even in children vaccinated with 13-valent pneumococcal polysaccharide conjugate vaccine, can cause severe pneumonia.
- In cases of severe pneumonia and unfavorable course, in the absence of antimicrobial susceptibility tests, it is reasonable to start broad spectrum antibiotic therapy.

Conflicts of Interest

The authors declare that there were no conflicts of interest in conducting this work.

Funding Sources

There were no external funding sources for the realization of this paper.

Provenance and peer review

Not commissioned; externally peer reviewed

Consent for publication

Consent for publication was obtained.

Confidentiality of data

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

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