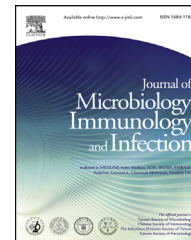




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## CASE REPORT

# *Pseudomonas aeruginosa* sepsis with ecthyma gangrenosum and pseudomembranous pharyngolaryngitis in a 5-month-old boy



Li-Ching Fang, Chun-Chih Peng\*, Hsin Chi, Kuo-Sheng Lee, Nan-Chang Chiu

Department of Pediatrics, Mackay Memorial Hospital, Taipei, Taiwan

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### KEYWORDS

Bacterial pharyngolaryngitis;  
Ecthyma gangrenosum;  
*Pseudomonas aeruginosa*;  
Sepsis;  
Stridor

*Pseudomonas aeruginosa* infection that induced pseudomembranous laryngopharyngitis and ecthyma gangrenosum simultaneously in a healthy infant is rare. We reported on a previously healthy 5-month-old boy with initial presentation of fever and diarrhea followed by stridor and progressive respiratory distress. *P. aeruginosa* sepsis was suspected because ecthyma gangrenosum over the right leg was found at the emergency department, and the diagnosis was confirmed by the blood culture. Fiberscope revealed bacterial pharyngolaryngitis without involvement of the trachea. Because of early recognition and adequate treatment, including antimicrobial therapy, noninvasive ventilation, incision, and drainage, he recovered completely without any complications.

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## Introduction

*Pseudomonas aeruginosa* bacteremia usually occurs in immunocompromised groups, malignancy, chronic disease, burns, or preterm infants.<sup>1</sup> Community-acquired *P. aeruginosa* sepsis in previously healthy infants is not often seen.

Ecthyma gangrenosum is a characteristic skin manifestation of *Pseudomonas* sepsis. The concomitant airway involvement in *P. aeruginosa* sepsis is rare. We report on a previously healthy 5-month-old boy with *P. aeruginosa* sepsis, ecthyma gangrenosum, and pseudomembranous pharyngolaryngitis, all of which initially presented as stridor and respiratory distress.

## Case report

A previously healthy 5-month-old boy was brought to the emergency department with a 5-day history of fever and

\* Corresponding author. Department of Pediatrics, Mackay Memorial Hospital, 92, Section 2, Chung Shan North Road, Taipei 10449, Taiwan.

E-mail address: [pengcc4566@gmail.com](mailto:pengcc4566@gmail.com) (C.-C. Peng).

cough and 2 days of watery diarrhea, vomiting, poor appetite, and progressive dyspnea. He was lethargic, pale, and had barking cough, stridor, and respiratory distress with suprasternal and intercostal retractions. His body weight was 7.57 kg (50 percentile). Vital signs revealed blood pressure at 90/60 mm Hg, pulse rate at 171 beats/minute, respiratory rate at 50 breaths/minute, and temperature at 38.8°C (rectal). Oxygen saturation was 88 % under room air. He had dry lips and an injected pharynx. There were diffuse and bilateral crackles on auscultation. He had decreased bowel sounds and a soft abdomen. Liver and spleen were impalpable. The capillary refill time was 5 seconds. There were two lesions over his right leg with central ecchymotic and reddish indurations surrounded by erythematous halos, which showed the characteristics of ecthyma gangrenosum (Fig. 1). Initial management included intravenous normal saline challenge for shock, oxygen supplement, and epinephrine nebulization for respiratory distress. Then he was admitted to the pediatric intensive care unit.

He had no specific family, travel, or allergy history. However, a dog scratched him about 1 week previously, and he received an appropriate vaccination. Laboratory tests reflected leukopenia (white blood cell count, 2,600/ $\mu$ L; neutrophil, 52%) with left shift (band form, 11%), elevated C-reactive protein (CRP, 14.82 mg/dL), hyponatremia (serum sodium, 126 mEq/L), positive stool occult blood test, metabolic acidosis, and disseminated intravascular coagulation (prothrombin time, 12.1 seconds; partial thromboplastin time, 117 seconds; fibrinogen degradation products >8  $\mu$ g/mL; D-dimer, 2258 ng/mL; fibrinogen 269 mg/dL). Chest radiograph revealed bilateral diffuse infiltration. On the second day of hospitalization, ecthyma gangrenosum over his right leg became progressively larger and increased in number, some with central darker plaques.

Flexible bronchoscope found whitish exudates (pseudomembrane) coating on pharynx and tonsils without

involvement of trachea (Fig. 2). Pathologic examination of the tissue specimen obtained from the pharynx when bronchoscope examination revealed numerous bacteria. No pathogen was identified from the throat virus culture, and the throat bacterial culture found normal flora. Blood culture yielded *P. aeruginosa* that was susceptible to ceftazidime and amikacin. Stool culture grew *Salmonella* group C2, which was susceptible to ceftazidime, and *Aeromonas* species. Empiric antibiotics including vancomycin (40 mg/kg/day), ceftazidime (150 mg/kg/day) and amikacin (20 mg/kg/day) were prescribed initially, but were changed to ceftazidime with amikacin according to the culture reports. Noninvasive ventilation was used for 3 days and fever subsided on the sixth day of hospitalization.

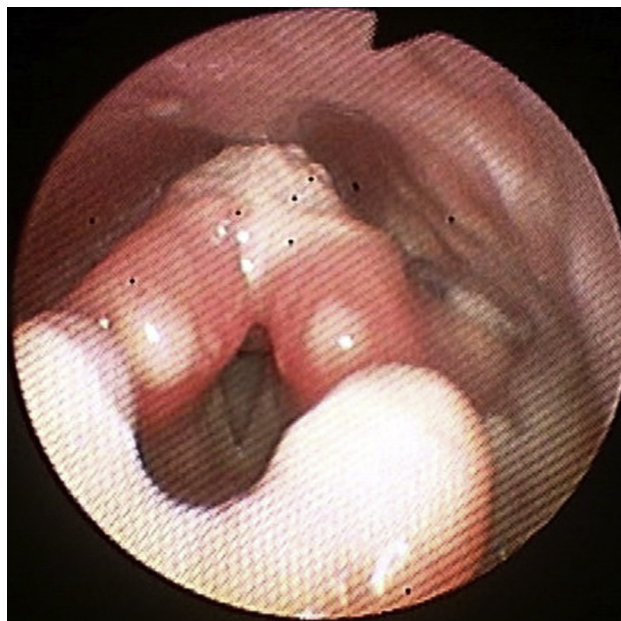
After 14 days' therapy with ceftazidime and amikacin, three skin lesions on the right leg progressed to central darker color with pus. Wound incision and drainage were performed (Fig. 3). Pus cultures of two skin lesions on Days 15 and 21 still yielded *P. aeruginosa*. Antibiotic therapy with ceftazidime alone was given from Day 15 until Day 28. The boy was discharged without any complications. In addition, the immunologic survey showed within normal limits the following: immunoglobulin (Ig) G 475 mg/dL (172–1069), IgA 80 mg/dL (4.4–84), IgM 62 mg/dL (33–126), IgE 49 IU/mL (0–170), CH50 67.8 CAE units (63.0–145.0), CD3 625 % (48.0–75.0), CD4 32.2% (33.0–58.0), CD8 27.2% (11.0–25.0), CD19 27.6% (14.0–39.0), CD16+56(NK) 7.5% (5.6–31.0), and active T cell 13.0% (8.0–15.0).

## Discussion

The annual detection rate of *P. aeruginosa* bacteremia in children less than 18 years old was 3.8/1000.<sup>1</sup> *P. aeruginosa* sepsis rarely occurred among immunocompetent infants and children. Chusid and Hillmann postulated that viral infections could either directly weaken the mucosal barrier



**Figure 1.** The upper skin lesion was over the right thigh (1 × 1 cm), with a central ecchymotic induration. The lower skin lesion was over the right lower leg (4 × 4 cm) with a central reddish plaque. Both were surrounded by erythematous halos.



**Figure 2.** Whitish exudate (pseudomembrane) coating over the pharynx and tonsil.

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