

Pleuropneumonia Caused By *Acinetobacter Baumannii*: A Case Report From Donka National Hospital, Guinea

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Received: 19 Sep 2026; **Accepted:** 24 Sep 2026; **Published:** 30 Sep 2026

Citation: CAMARA Emmanuel, DIALLO Fatoumata Binta, BANGOURA Kaba, et al. Pleuropneumonia Caused By *Acinetobacter Baumannii*: A Case Report From Donka National Hospital, Guinea. *Arch Pediatr Child Health*. 2026; 1(2), 01-04.

Abstract

Mortality attributable to nosocomial infections caused by *Acinetobacter baumannii*, among which ventilator-associated pneumonia and bloodstream infections are the most frequent, may range from 5% in general hospital wards to 54% in intensive care units. We report the case of an 8-year-old boy admitted after a two-month history of cough, fever, dyspnea, and weight loss, with no known history of tuberculosis exposure. Chest radiography revealed bilateral bronchopneumonia, markedly more severe on the right side. Cytobacteriological examination of pleural fluid identified *Acinetobacter baumannii*, with no acid-fast bacilli detected and a negative Xpert MTB/RIF test for *Mycobacterium tuberculosis*. A diagnosis of pleuropneumonia caused by *A. baumannii* was made. The clinical outcome under antibiotic therapy with sulfadoxine-pyrimethamine tablets, intravenous ciprofloxacin, and metronidazole was favorable. This study aims to highlight the occurrence of this condition in our healthcare facilities, where it was identified for the first time, by describing its clinical presentation, diagnostic approach, and therapeutic management and comparing them with data from the literature.

Keywords: *Acinetobacter baumannii*, pleuropneumonia, child, Guinea

Introduction

Acinetobacter baumannii is a Gram-negative coccobacillus that has emerged as a major cause of hospitalization-associated and nosocomial infections. Worldwide, it accounts for 7.9% of all cases of pneumonia requiring mechanical ventilation and 5.7% to 15.7% of all cases of septicemia in intensive care units [1]. Its clinical diversity is largely attributable to its remarkable ability to acquire or overexpress various resistance determinants, making it one of the most successful multidrug-resistant organisms and a threat to current antibiotic therapy [1].

In addition to its remarkable ability to acquire antimicrobial resistance, *A. baumannii* possesses multiple mechanisms that enable it to survive in a wide variety of environments, thereby promoting its spread in hospital settings [2]. Mortality attributable to nosocomial infections caused by *A. baumannii*, among which ventilator-associated pneumonia and bloodstream infections are the most common, ranges from 5% in general hospital wards to 54% in intensive care units [3]. The number of community-acquired *A. baumannii*

infections has also increased [4].

Evidence of extensively drug-resistant (XDR) and pandrug-resistant (PDR) *A. baumannii* isolates is accumulating in several countries [5]. The World Health Organization (WHO) has classified *A. baumannii* among the critical-priority pathogens that pose a major threat to human health and for which new antibiotics are urgently needed [6].

This study aims to highlight the occurrence of this condition in our healthcare facilities, where it was identified for the first time, by describing its clinical presentation, diagnostic approach, and therapeutic management and comparing them with data from the literature.

Case Report

An 8-year-old boy was brought by his mother to Donka National Hospital, Conakry University Hospital, after a two-month history of cough, fever, dyspnea, vomiting, physical weakness, weight loss, and abdominal pain.

The illness had a gradual onset, beginning with rhinorrhea, followed by a dry cough that later became productive and persistent fever. His parents initially administered amoxicillin without medical supervision, with no improvement. The onset of chest pain associated with dyspnea prompted a consultation at a clinic in Siguiri, where pneumonia was diagnosed and ceftriaxone therapy was initiated. Because there was no improvement, he was taken to Kankan Regional Hospital. After 10 days of treatment involving ceftriaxone, ampicillin, and gentamicin, he was transferred to our department.

His medical history revealed a balanced diet consisting of three to four meals per day, complete vaccination according to the Expanded Programme on Immunization, previously normal growth and weight gain, and normal psychomotor development. The parents' socioeconomic status was considered satisfactory based on daily household expenditure and available food supplies. Four months earlier, he had been hospitalized at Siguiri Hospital for severe malaria. There was no known history of tuberculosis exposure, asthma, or passive smoking. He was the eldest of five children, all apparently healthy. His father had died of an undetermined cause, while his mother was alive and apparently healthy.

On physical examination, his general condition was impaired. He was conscious, with a Glasgow Coma Scale score of 15/15, and appeared weak and pale. He weighed 19 kg and was 120 cm tall, with a body mass index of 13.19 kg/m², indicating thinness. His rectal temperature was 39.5°C. He had tachypnea, with a respiratory rate of 56 breaths per minute, nasal flaring, and intercostal retractions. Pulmonary examination revealed decreased vesicular breath sounds and rhonchi and crackles over the left lung. His oxygen saturation in ambient air was 96%. He was tachycardic, with a heart rate of 142 beats per minute, and had a grade 1/6 systolic murmur at the mitral area. The remainder of the physical examination was normal.

The following diagnostic hypotheses were considered: childhood tuberculosis, bronchopneumonia caused by a nonspecific organism, and severe malaria.

A frontal chest radiograph obtained with the patient standing showed a dense, homogeneous opacity involving the entire left lung. Pleural aspiration yielded 5 mL of clear fluid.

The complete blood count showed leukocytosis, with a white blood cell count of 13 G/L, 64.9% neutrophils, and a platelet count of 429 G/L. The hemoglobin level was 8.7 g/dL. C-reactive protein was 16 mg/L, and procalcitonin was 3 ng/L. The thick blood smear was positive for malaria parasites, with a parasite density of 50-100 trophozoites/μL.

Cytobacteriological examination of the pleural fluid revealed an aerobic Gram-negative bacillus identified as *Acinetobacter baumannii*. No acid-fast bacilli were detected, and the Xpert MTB/RIF test was negative for *Mycobacterium tuberculosis*. Echocardiography was normal.

The final diagnosis was bronchopneumonia caused by *Acinetobacter baumannii*, associated with severe malaria.

The following treatment was initiated:

- Oxygen therapy at 1 L/min;
- Oral sulfadoxine-pyrimethamine at 50 mg/kg/day in two divided doses;
- Intravenous ciprofloxacin at 25 mg/kg/day in two divided doses;
- Intravenous metronidazole at 30 mg/kg/day in three divided doses;
- Artesunate at 3 mg/kg per dose at hours 0, 12, and 24, followed by one dose every 24 hours;
- Iron and folic acid syrup at 10 mL/day;
- Paracetamol at 15 mg/kg for temperatures of 38.5°C or higher;
- Multivitamin solution at 10 drops per dose;
- Feeding and oral hydration at 80 mL/kg.

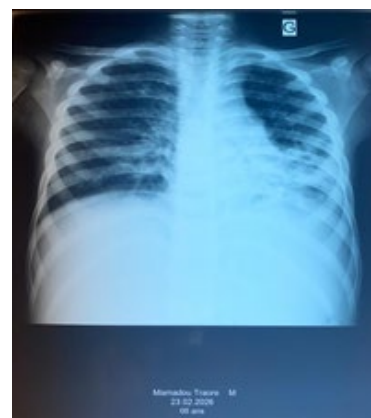
The clinical course was favorable. Fever resolved within 72 hours of treatment. Respiratory function returned to normal after 10 days of antibiotic therapy, with oxygen saturation reaching 100% under oxygen therapy at 1 L/min. Chest radiographs showed marked regression of the opacity after 7 and 21 days of antibiotic treatment.



Picture 1: J0 of admission



Picture 2: J7 of admission



Picture 3: J14 of admission

Discussion

Acinetobacter baumannii is a strictly aerobic Gram-negative bacillus and a commensal organism of the human microbiota, normally found in the throat and on the skin of 7% to 25% of healthy individuals. It is frequently involved in nosocomial infections, particularly bronchopulmonary infections in patients receiving mechanical ventilation and/or prior antibiotic therapy [7]. Our patient had received prolonged antibiotic therapy before admission.

Nosocomial infections caused by *A. baumannii* are currently a major public health problem, particularly in intensive care units and among patients requiring prolonged hospitalization [7]. The 2006 French national prevalence survey reported a national prevalence of infected patients of 6.1% [8]. In Morocco, M. Bouizmaoun et al. identified 30 cases in a hospital department between January 2022 and December 2023 [9].

In children, these infections may have various clinical presentations, including bacteremia, meningitis, and pneumonia, with mortality of approximately 14.5% reported in some pediatric series [10]. In our patient, the infection involved the respiratory system. This is consistent with data from the literature identifying prolonged hospitalization, invasive procedures, and previous use of broad-spectrum antibiotics as major risk factors for *A. baumannii* infection [11].

Mechanical ventilation, intravascular catheters, and surgical procedures have also been described as factors promoting colonization and infection by this pathogen [12]. M. Bouizmaoun et al. reported a pulmonary infection site in 60% of cases [9].

One of the main challenges posed by *A. baumannii* is its rapidly increasing antibiotic resistance. Studies have reported very high rates of multidrug-resistant strains, with resistance to several classes of antibiotics, particularly carbapenems, which are considered standard treatments for severe infections caused by Gram-negative bacilli [13]. This multidrug resistance considerably limits therapeutic options and may be associated with high mortality, particularly in severe infections.

In our case, identification of the organism through cytobacteriological examination of the pleural fluid and performance of antimicrobial susceptibility testing made it possible to adapt the antibiotic treatment, resulting in a favorable outcome. This diagnostic and therapeutic approach is essential in the management of *A. baumannii* infections because empirical antibiotic selection may be ineffective owing to variable resistance profiles [14].

In our patient, *A. baumannii* was susceptible to sulfadoxine-pyrimethamine and showed intermediate susceptibility to ciprofloxacin. In Tunisia in 2021, Mellouli A. et al. reported high resistance rates among *A. baumannii* isolates: 85.2% to ceftazidime, 95.6% to piperacillin-tazobactam, 95.3% to

imipenem, 91.1% to amikacin, 93.5% to ciprofloxacin, 36.4% to rifampicin, and 88.1% to co-trimoxazole. Resistance to colistin was 1.8%. Among the isolates, 96.6% were multidrug-resistant and 0.3% were resistant to all tested antibiotics [15].

The prevention of nosocomial *A. baumannii* infections is primarily based on strict compliance with hospital hygiene measures, particularly hand hygiene, disinfection of medical equipment, and epidemiological surveillance of healthcare-associated infections. Applying these measures is essential to limit cross-transmission and reduce the incidence of these infections in healthcare facilities.

Conclusion

Acinetobacter baumannii infection represents a major problem in hospital settings because of the organism's high level of antibiotic resistance and its ability to cause severe nosocomial infections, particularly in patients hospitalized in intensive care units or those who are immunocompromised. Early identification of the organism through microbiological or bacteriological examination, together with antimicrobial susceptibility testing, allows antibiotic treatment to be appropriately adapted.

Prompt management combined with strict hospital infection-control measures improves patient outcomes.

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