Necrotizing pneumonia caused by methicillin-resistant Staphylococcus aureus

Toshiki Hiramatsu[1] and Kazunori Tobino[1]

[1]Iizuka Hospital

December 1, 2021

Abstract

We report a fatal case of methicillin-resistant Staphylococcus aureus (MRSA)-induced necrotizing pneumonia that was refractory to adequate vancomycin treatment (trough value, 13.1 μg/mL), drainage of a hydropneumothorax, and veno-arterial extracorporeal membrane oxygenation. MRSA infection can cause rapidly progressive disease with a high case fatality rate, even with appropriate treatment.

Necrotizing pneumonia caused by methicillin-resistant *Staphylococcus aureus*

Toshiki Hiramatsu,[1] Kazunori Tobino[2]

[1] Department of Critical Care Medicine. Iizuka Hospital, Iizuka, Japan

[2] Department of Respiratory Medicine, Iizuka Hospital, Iizuka, Japan

Correspondence

Toshiki Hiramatsu, Department of Critical Care Medicine, ASO Iizuka Hospital, 3-83 Yoshio-machi, Iizuka 820-8505, Japan

Phone: +81-948-22-3800

Fax: +81-948-29-8162

Email: t-hiramatsu@umin.ac.jp

Key Clinical Message:

We report a fatal case of methicillin-resistant *Staphylococcus aureus* (MRSA)-induced necrotizing pneumonia that was refractory to adequate vancomycin treatment (trough value, 13.1 μg/mL), drainage of a hydropneumothorax, and veno-arterial extracorporeal membrane oxygenation. MRSA infection can cause rapidly progressive disease with a high case fatality rate, even with appropriate treatment.

KEYWORDS

Methicillin-resistant *Staphylococcus aureus* , necrotizing pneumonia, vancomycin

What bacteria caused this pneumonia? Could the prognosis have been predicted?

Response:

1 | CASE DISCUSSION

A 63-year-old man presented with fever, cough, a sore throat, and dyspnea. On examination he was febrile (38.2°C), tachypneic (32 breaths/min), and hypotensive (blood pressure, 102/74 mmHg). He was intubated, admitted to the intensive care unit, and treated with intravenous vancomycin. Chest computed tomography (CT) revealed multiple centrilobular lung nodules and bronchial thickening bilaterally (Figure 1A). Vancomycin-susceptible methicillin-resistant *Staphylococcus aureus* (MRSA) was identified in blood and sputum cultures. On day 3, chest CT revealed expansion and consolidation within the right lung (Figure 1B). The vancomycin trough value was adequate (13.1 μg/mL). Veno-arterial extracorporeal membrane oxygenation was initiated on day 5, but the clinical condition worsened. Chest CT on day 10 (Figure 1C) showed worsening lung consolidation, multiple cavities, and a left hydropneumothorax. He was diagnosed with necrotizing pneumonia, a chest drain was placed in the left thoracic cavity. On day 13, chest CT (Figure 1D) showed increased cavitation within the left lung. He died on day 18. Predicting the rapidly progressive destructive pneumonia based on the initial CT findings was impossible. MRSA-induced necrotizing pneumonia can be rapidly progressive and fatal, even with appropriate treatment.[1,2]

ACKNOWLEDGEMENTS

None.

INFORMED CONSENT

Informed consent has been obtained for the publication of this clinical image.

CONFLICT OF INTEREST

None declared.

AUTHORSHIP

Toshiki Hiramatsu: patient care; writing the original manuscript.

Kazunori Tobino: patient care; editing and revision of the original manuscript.

FUNDING

This research was not supported by any specific grant from any funding agency in the public, commercial, or non-profit sectors.

DATA AVAILABILITY STATEMENT

All of the data that pertain to this report are available from the corresponding author on reasonable request.

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FIGURE LEGENDS

FIGURE 1 Computed tomography (CT) showing rapid progression of the necrotizing pneumonia caused by methicillin-resistant*Staphylococcus aureus* , despite appropriate antibiotic therapy. (A) Plain CT showing bilateral multilobular lung nodules and bronchial wall thickening on day 1. (B) Chest CT showing the expansion of bilateral consolidation on day 3. (C) Chest CT showing necrotizing pneumonia with a left hydropneumothorax on day 10. (D) Chest CT showing the expansion of the cavity in the patient's left lung on day 13.