

# Management of Empyema in a Patient with Super Super Obesity: A Case Report

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## BACKGROUND

Super super obesity (SSO; BMI  $\geq 60$  kg/m<sup>2</sup>) is a rare but severe condition that significantly impairs respiratory mechanics due to reduced chest wall compliance and decreased functional residual capacity. These physiological limitations complicate the management of severe infections such as empyema. Reports on ventilatory weaning in SSO patients with respiratory failure remain limited.

## CASE PRESENTATION

A 44-year-old man (170 cm, estimated 220 kg, BMI 76 kg/m<sup>2</sup>) was admitted with fever and dyspnea. He was diagnosed with pneumonia complicated by a large right-sided empyema and developed respiratory failure requiring intubation and mechanical ventilation with high airway pressures (PEEP 20 cmH<sub>2</sub>O). Chest tube insertion was technically difficult due to the thick chest wall. Prone positioning and ECMO were deemed unfeasible because of the patient's extreme body habitus. A multidisciplinary team initiated broad-spectrum antibiotics, pleural drainage, nutritional support, and early rehabilitation. Over the following weeks, progressive weight reduction (220 → 192 kg) improved respiratory mechanics, and successful extubation was achieved on day 27. He was mobilized with standing and walking training, antibiotics were switched to oral agents on day 43, and he was discharged to the referring hospital on day 49.

Table 1. Day:1 blood and pleural fluid tests

◆ABG analysis (FiO <sub>2</sub> : 0.70)	◆Coagulation
pH 7.251	aPTT 37.1 sec
pCO <sub>2</sub> 71.9 mmHg	PT 15.9 sec
pO <sub>2</sub> 84.3 mmHg	Fib >1000 mg/dL
HCO <sub>3</sub> 30.9 mmol/L	D-dimer 9.56 μg/mL
Lac 1.2 mmol/L	
◆CBC	◆Pleural fluid
WBC 22790 / μL	pH 6.781
Hb 11.4 g/dL	TP 5.7 g/dL
Plt 30.4万 / μL	Alb 2.7 g/dL
◆Biochemistry	LDH 1197 U/L
TP 7.2 g/dL	T-Bil 0.8 mg/dL
Alb 2.4 g/dL	Amy 33 U/L
AST 129 U/L	Glu 21 mg/dL
ALT 124 U/L	Chol 122 mg/dL
LDH 479 U/L	
BUN 66.5 mg/dL	Nucleated cell count
Cre 2.53 mg/dL	2889 / μL
Na 139 mEq/L	Neutrophils 96.8 %
K 4.6 mEq/L	Lymphocytes 1.0 %
Cl 95 mEq/L	Histiocytes 2.2 %
Ca 9.0 mg/dL	Eosinophils 0 %
Glu 154 mg/dL	Basophils 0 %
CRP 25.96 mg/dL	
BNP 80.9 pg/mL	
Procalcitonin 6.42 pg/mL	

Figure 1.

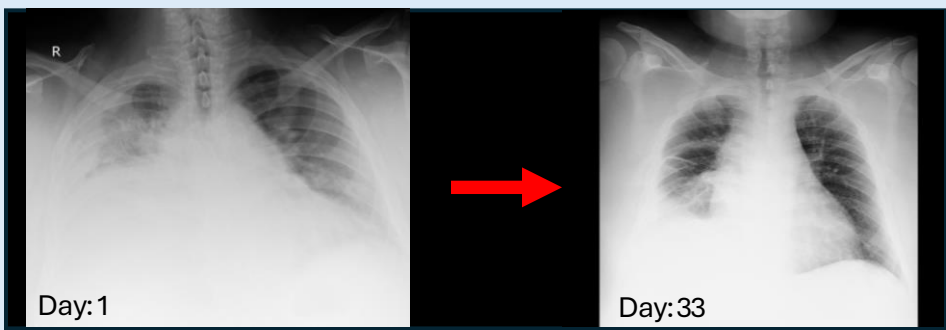


Fig 1. The right empyema showed progressive improvement following treatment, and the patient subsequently initiated gait training.



Figure 2.

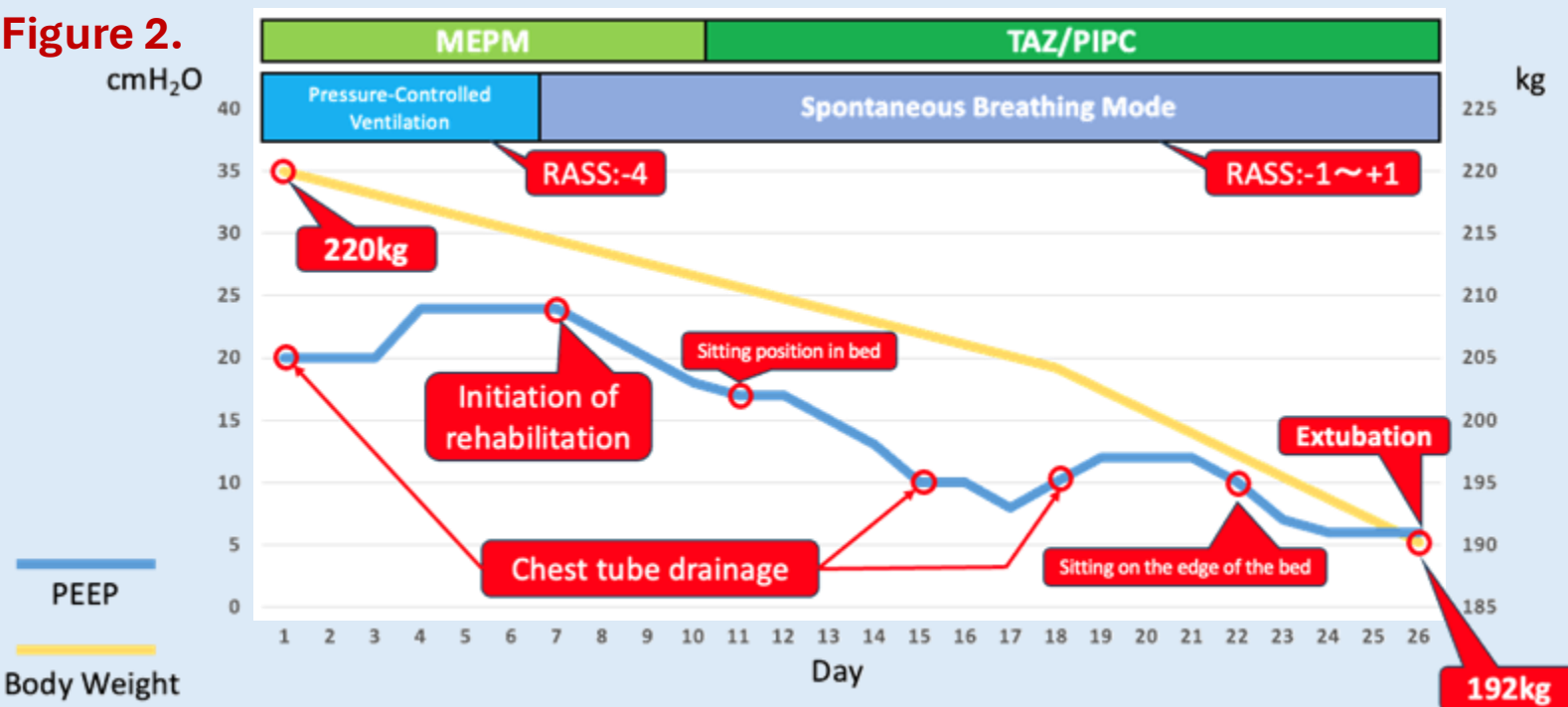


Fig 2. Treatment and body weight course until extubation.

## DISCUSSION

Management of empyema in patients with SSO is particularly challenging. Nutritional intervention and structured rehabilitation facilitated weight reduction, which in turn improved ventilatory mechanics and supported weaning from mechanical ventilation. Sedation was carefully managed: while lipophilic agents such as midazolam and propofol may accumulate in obese patients and prolong awakening, dexmedetomidine allowed light sedation with minimal respiratory suppression, facilitating rehabilitation. This case highlights the importance of a multidisciplinary strategy that extends beyond infection control to include tailored respiratory management, nutrition, and rehabilitation.

## CONCLUSION

This case demonstrates the successful management of empyema in a patient with SSO through a multidisciplinary approach. Critical components included early initiation of nutritional and rehabilitation programs, and careful selection of sedatives. Weight reduction should be prioritized in SSO patients with severe respiratory infections to improve respiratory function and overall clinical outcomes.

## REFERENCE

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