

Tuberculosis Associated Sepsis Shock

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Abstract

Tuberculosis associated sepsis shock is very rare case due to the difficulty in establishing a diagnosis and finding the underlying disease. A Woman 55 years old with Tuberculosis and sepsis shock hospitalized Wangaya General Hospital, Denpasar, Bali. The patient was consulted to an internist with complaints of weakness, nausea and low intake, five times had diarrhea, three weeks for a cough. Patients has a positive bakteriologis. Patient has a history of AIDS on treatment with ARV, a history of a lump in the right neck since 1 month ago and a fine needle aspiration biopsy (FNAB) was carried out with the results in the form of a cytomorphological picture that suggested a focus of atypical cells with a background of suppurative chronic inflammation. The results of the physical examination revealed fever (38.0C), blood pressure 78/46mmHg, pulse rate 110x/min. Laboratory results obtained WBC: 2.60, HB: 7.5, HCT: 23.3, Plt: 353, SGOT/SGPT: 68/8, GDA: 142, BUN/SC: 108/2.6, Na: 141, K: 2.7, Cl: 107, thorax x-ray results showed signs of Miliary DD TB/ Metastatic.

Keywords: Tuberculosis, Miliary Tuberculosis, Septic Shock, Metastatic.

Introduction

Sepsis is the body's dysregulation of the response to infection. Sepsis remains the leading cause of mortality in the world. Sepsis was recorded at 48.9 million cases and 11 million deaths and around 20% of global deaths were associated with sepsis (Rudd KE, 2020). Bacterial infections are most often reported to cause sepsis, of which respiratory infections have the most significant proportion (Mayr FB, 2014), (Ferrer R, 2014). Tuberculosis (TB) with an estimated disease burden of 2.64 million and nearly 1.5 million deaths per year, this disease is still the main cause of death worldwide (Fukunaga R, 2019). Approximately 3.4% of TB patients require intensive care (Muthu V, 2018).

Case Reports



A 55 year old female housewife came to the emergency room with complaints of weakness, nausea, vomiting and no appetite, 5 loose stools, and coughing for 3 weeks. The patient has a history of bacteriologically confirmed TB since 12/6/23 and is currently undergoing OAT treatment, as well as a history of HIV stage IV on ARV treatment for 1 year, a history of a lump in the right neck since 1 month ago and a fine needle aspiration biopsy (FNAB) has been performed with results in the form of a cytomorphic image showing a focus of atypical cells on a background of chronic suppurative inflammation.

Laboratory results (table 1) showed anemia (Hb: 7.5 g/dL), decreased kidney function (Urea: 108 g/dL and Creatinine: 2.6 g/dL, Glomerular Filtration Rate: 23 mL/min//1.73m²), blood sugar: 142, SGPT/SGOT: 8/68, Sodium 141, Potassium 2.7, Chloride 107, Leukocytes 11.60 x 10³/uL, Hemoglobin 7.5 g/dL, Thrombocytes 261 x 10³/dL.

Table 1. Laboratory Result

Examinations	Result
Complete Blood Count	
Leucocytes	11,60 x
Hemoglobin	7.5 g/dL
Hematocrit	30.0%
Platelets	261 x 10 ³ dL
Diff Count	
Neutrophils	73.9%
Lymphocytes	19.2%
Monocytes	6.9%
Mean Corpuscular Volume	87.9
Clinical Chemistry	
Ureum	108mg/dL
Creatinine Serum	2.6 mg/dL
SGOT	68 U/L

SGPT	8U/L
Electrolyte	
Sodium	141 mmol/L
Potassium	2.7 mmol/L
Chloride	107 mmol/L

Anteroposterior (AP) chest x-ray examination (Figure 1) showed a reticulogranular appearance in both lung fields, which was concluded as DD miliary TB/ Metastatic.



Picture 1. Anteroposterior chest x-ray examination showed a reticulogranular appearance in both lung filed, which was concluded as DD miliary TB/ Metastatic

The patient was treated in a regular room with an admission diagnosis of HIV on ARVs + Severe anemia (7.5) + TB confirmed by bacteria on OAT Advanced phase + Hypokalemia (2.7). Then the patient received potassium correction therapy, PPI class, III generation cephalosporin (ceftriaxone) and Vasoactive because hemodynamic disorders were found in patients with blood pressure of 80/60 mmHg.

Discussion

Miliary tuberculosis is a form of extra-pulmonary TB due to the hematogenous spread of the *Mycobacterium Tuberculosis* germ. Extra pulmonary TB commonly occurs after HIV infection, HIV is a risk factor for extra pulmonary TB (WHO, 2015). TB with septic shock occurs more frequently in adults than in children (Pavlinac PB, 2016). TB in immunocompromised patients can cause SIRS (Systemic Inflammatory Response Syndrome) and multi-organ dysfunction and ultimately fall into a state of sepsis or septic shock (Kethireddy S, 2013). Chest X-ray findings are less specific and often overlap with a diagnosis of community-acquired pneumonia (CAP) (Thomas L, 2021). An effective strategy for detecting pulmonary TB is by bacteriological examination or sputum BTA (Acid-Resistant Bacteria), which is easy and quick to do but has low sensitivity, apart from that in patients with extra-pulmonary TB often negative BTA sputum results are obtained (Muthu V, 2018).

In this patient, the cause of septic shock was possibly due to extra pulmonary TB infection and was exacerbated by the presence of immunocompromise (HIV) in the patient, but other causes could not be ruled out.

Conclusion

TB with septic shock still cannot be established as a cause of septic shock, especially in areas endemic to tuberculosis. Immediate diagnosis, fluid resuscitation, administration of inotropes and appropriate antibiotics remain the main therapeutic management for TB with septic shock, as with any septic shock. A high level of suspicion for septic shock and immediate septic shock management can save many lives. As a doctor, you must be alert to tuberculosis that appears as septic shock, especially in endemic areas. Multicentric observational studies are needed to identify the prevalence and factors that predict the development of tuberculosis septic shock in order to optimize clinical care.

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