Myocarditis and Myositis in Melioidosis

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A 22 year-old electrician man (HN 1-92-044773) was transferred to Bangkok General Hospital with a 3-days history of fever, headache and myalgia. He had been healthy before when six days previously, he had an electrical shock accident on his right hand. The transient electrical shock initially caused minor second degree burn of tip of the fingers and chest tightness that followed by abnormal burning pain sensation over the whole body. He decided to get coldness from a heap of sand near by for pain relieving. It was about half an hour of lying in sand before improvement of the symptoms that he could get off and returned to work again.

Three days later he developed acute febrile illness, headache and dry coughing. He also noticed pain over his leg-muscle during walking. One day before admission, he developed severe coughing with blood stained sputum and was admitted to a hospital. There, he had 2-3 times small volume of loose stool and his blood

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pressure dropped to 70/60 mmHg. The intravenous fluid had been rechallenge but failed to restore the blood pressure. He was empirically treated as septic shock and referred to our hospital.

On admission, physical examination revealed a febrile young man, acutely ill with moderately dyspnea and orthopnea. The skin showed generalized mild erythrodema. The second degree burn was noted on tips of middle and ring fingers of his right hand. Vital sign; blood pressure was 80/60 mmHg, heart rate 120/min., temperature 38 °C and respiration rate was 30/min. There were conjunctival injection on both eyes with a right eye-subconjunctival hemorrhage. The neck vein was engorged 4-5 cm above sternal angle. Heart sounds showed S3 gallop. Fine crepitation was detected at both lower lung fields. Liver was enlarged 3 cm. below right subcostal margin with mild tenderness. The lower extremities were moderately tenderness on palpation and no edema.

Laboratory investigations: hemoglobin 10-5 gm%, hematocrit 33 per cent, White blood cell count 12,300 cells/cu.mm. Differential counts revealed polymorph 82 per cent, lymphocyte 15 per cent, eosinophil 2 per cent, monocyte 1 percent. Platelets smear was decreased. ESR 85 mm/hr. Urinalysis: sp. gr. 1010; ph 6, protein and sugar-negative. White blood cell >20 cells/HPF and red blood cells 6-8/HPF.

Blood chemistry: blood sugar 121 mg%, BUN 26 mg%, creatinine 2.3 mg%, sodium 130 mEq/L, potassium 4.1 mEq/L, chloride 105 mEq/L, total CO2, 24 mEq/L. calcium 8.1 mg%, phosphorus 1.2 mg%. Total protein 5.42 gm%, albumin 2.92 gm%, globulin 2.50 gm%. Total bilirubin 1.6 mg%, direct-bilirubin 0.7 mg%, SGOT 92 U/L, SGPT 35 U/L. Alk. phosphatase 104 U/L, LDH-L 223 U/L, Total CPK 1,479 U/L, CPK-MB 43 U/L.

Coagulogram: Prothrombin time 77.9 per cent activity or 16.9 second. FTT 47.6 second. Thrombin time 16.6 second.

Chest radiograph revealed cardiomegaly with bilateral alveolar infiltration both lungs (Figure 1).

Electrocardiograph showed sinus tachycardia at the rate of 120/min with normal p wave, QRS complex and ST-T segment.

Hospital course: The patient was admitted to cardiac care unit. The insertion of Swan-Ganz catheter could measure the patient’s pulmonary wedge pressure of 12-13 mmHg. 2 D-echocardiograph (Figure 2) revealed moderately dilated ventricles. The left ventricle showed fair contractivity. All heart valves were appeared normal with moderately functional regurgitation of mitral and tricuspid valves. No evidence of pericardial fluid was detected. The above clinical findings led to the diagnosis of infectious myocarditis. Blood and urine samples were taken for bacteriologic studies as well as serologic testing for leptospirosis, scrub typhus, anti-streptolysis O, melioidosis, mycoplasma, coxackie B virus and influenza virus.
Fig. 3 Follow up chest radiograph 3 days later, showed no pulmonary infiltration but mild cardiomegaly.

Fig. 4 2D-echocardiograph on Hospital day 10 revealed decreased ventricular dilation and improvement of the contractivity.

The blood pressure and urine output were monitoring hourly. They could be maintained in normal range with dopamine continuous infusion. Antibiotics therapy were prescribed parenterally including: cloxacillin 6g/day, ceftazidime 6 g/day and doxycycline 200 mg/day to cover all possible above bacterial pathogens.

His clinical improvement could be observed by subsided of fever and dopamine could wean and off in 3 days. Erythroderma was decreased without subsequent desquamation. The myalgia was decreased and absent in 5-6 days of hospitalization. Chest radiograph followed up 3 days later, showed the improvement by absent of pulmonary infiltration and decreased in heart size (Figure 3). Serum CPK and SGOT on hospital day 5 was decreased to 143 U/L and 121 U/L respectively.

The results of blood and urine cultures yielded no pathogen. All serologic studies were negative except melioidosis. It was positive at the titer of 1:640 on both the first and the fifth hospitalization day.

He was on treatment with co-trimoxazole and doxycycline orally as well as an angiotensin converting enzyme inhibitor for myocardial problems. By the tenth day of hospitalization, repeated 2-D echocardiograph (Figure 4) detected improvement of the ventricular contraction but still had mild dilatation of chambers. He was discharged on hospital day 10.

A week later, the patient's clinical was recovered fully. Chest radiograph now showed the normal heart size (Figure 5) and a follow up melioidosis titer demonstrated a rising titer to 1:10240. He was planned to be treated with co-trimoxazole for a further period of 3 months.

DISCUSSION

The bacterium, Pseudomonas pseudomallei can be isolated from soil and water surface in endemic area...
(1, 2). In Thailand, the epidemiologic surveys (3, 4) found the bacterium isolated throughout this country but not from Bangkok metropolitan. Most reported cases in Bangkok and acquired the infection from other provinces. Our patient had such an acute infection here. Though, the organism was not detected from blood cultures but diagnosis was performed by the increasing melioidosis titer over 4 fold of the follow up period. According to the new clinical classification of melioidosis (5), we would classify the patient as probable melioidosis. Because of no active inflammatory wound, he might had infection via inhalation dust containing organism during his friends dug sand to cover his body. Interestingly, sources of sand for cement preparation here was carried from countryside where the pathogen has existed. The short incubation period of air-borne infection is best known by the development of pulmonary melioidosis in many American Air-Base servicemen in Vietnam who inhaled contaminated dust particles stirred up by the helicopter’s rotor during landing and take off (6).

Clinical presentation of our patient on arrival was mimicking to gram-positive bacterial sepsis or toxic shock syndrome. Not only Staphylococcus aureus strains producing enterotoxin, but now strains of group A streptococi (7, 8) and Pseudomonas pseudomallei (9) reported having toxic shock-like syndrome as well. In our experiences, we observed some patients sepsis from melioidosis had skin sign of an "erythroderma". This patient had clinical of myocarditis and myositis. Cardiac involvement in melioidosis reported from 686 cases (5) recognized only 17 patients or 2.5 per cent, mostly had pyopericardium and a rarely case of probable endocarditis. Myocarditis was first suspected by Paton and Peck (10) in 1947 in a foreign prisoner of war who died from the disease. Bauman and Morita (11) found a post-mortem myocardial infraction from melioidosis had abscess in the myocardium. Punyagupta (12, 13) had recently reported 2 patients developed sudden cardiac arrest during recovery period from melioidosis septic shock. They were suspected having myocarditis. Though, we did not perform endomyocardial muscle biopsy in this patient but the findings from 2-D echocardiograms and chest radiographs both before and after treatment showed significantly improvement in the heart size and myocardial function. This is a good example case for one would be differentiated the causes of "shock" in melioidosis. It could be complicated not only septic shock but myocarditis as well.

The striated muscle inflammation or myositis in melioidosis was rarely found (14, 15). Most reported cases had muscle tenderness localized to an extremity and they were early abscesses formation, not true myositis. No such patient had high elevation of muscle enzyme like this patient. The inflammatory process was spontaneously resolved after treatment.

SUMMARY

We reported a patient with melioidosis whose presentations was similar to gram-positive bacterial sepsis. The mode of acquired infection was probable from inhalation organism during his friends dug sand to cover his body for the relieving burning pain symptom from an transient electrical shock accident. The findings of erythroderma, myocarditis and myositis complicated in this patient was not commonly observed before. It was improved by appropriated antibiotics treatment.

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