Case Report

Severe Fever with Thrombocytopenia Syndrome Virus: The First Case Report in Thailand

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Abstract

We report a case of a 70-year-old Thai woman with severe fever and thrombocytopenia syndrome, who had lost all seven of her cats from sickness over a week. Diagnosis was established by the detection of viral RNA in serum via real-time polymerase chain reaction. Her symptoms improved after taking doxycycline orally and supportive treatment.

Keywords: severe fever with thrombocytopenia syndrome virus, Phlebovirus, encephalopathy

Severe fever with thrombocytopenia syndrome (SFTS) is an emerging tick-borne disease in China, South Korea and Japan. This is caused by the SFTS virus (SFTSV), which belongs to the genus Phlebovirus, family Bunyaviridae.1,2 We are reporting the first adult case of SFTS discovered, with classical features of SFTS.

Case report

A 70-year-old woman who was referred from another hospital presented with high-grade fever and diarrhea for 3 days. Upon admission, her body temperature was 39.1°C and her vital signs were stable. The remainder of her detailed physical examination was unremarkable. Laboratory tests showed that her white blood cell count had dropped to 3,700 cells/mm3 (89% neutrophils and 9% lymphocytes), the platelet count was 177,000/mm3 and dengue Immunoglobulin M (IgM) was negative. A diagnosis of acute gastroenteritis was made. Ceftriaxone was prescribed intravenously.

After two days of admission, the patient developed an alteration of consciousness. A brain magnetic resonance imaging (MRI) and lumbar puncture were performed. The MRI result was normal. Cerebrospinal fluid (CSF) analysis showed that her red blood cell (RBC) was 20 per microliter, there was no pleocytosis, mildly elevated protein level (67 mg/dl) and normal glucose level. Bacterial culture of CSF yielded no growth. CSF polymerase chain reaction (PCR) for viral panel was negative. Later, she was referred to Phyathai 3 Hospital.

From the first presentation, she was febrile with temperature of 39°C. The level of consciousness had decreased (Glasgow Coma Score of 9) and she had apparent neck stiffness on physical examination. Motor power was at least grade 3 with a spastic tone of all extremities. An electroencephalogram (EEG) was done. The background activity was moderately slow, indicating the patient had encephalopathy. There was no epileptiform discharge. The laboratory results were remarkable for leukopenia (white blood cell count was 2,100 cells/mm3 with 45% neutrophils and 50% lymphocytes), and thrombocytopenia (platelet count was 88,000/mm3). High D-dimer (2.96 ug/ml), coagulopathy and peripheral blood smear showed decreased number of platelets, few schistocytes, few polychromasia compatible with
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SFTS is an emerging infectious disease caused by SFTSV, a member of genus Phlebovirus, in the family Bunyaviridae. This disease was first reported in rural areas of China during 2010. From the initial report, SFTS cases have been described in South Korea, Japan, and Vietnam. From our review, there was no report of SFTS indicated in Thailand.

SFTS is mainly transmitted by infected ticks, primarily found in Haemaphysalis longicornis, derived from sheep, cattle and dogs. However, the report of human-to-human transmission by direct contact with blood and body secretions and via needle-stick injury have been found.

Leukopenia and thrombocytopenia are most commonly found in laboratory testing. Other laboratory abnormal results may include elevated serum levels of aspartate aminotransferase, alanine aminotransferase, alkaline phosphatase, lactate dehydrogenase, creatine kinase and ferritin levels.

Reverse-transcriptase polymerase chain reaction (RT-PCR) is a method to detect viral RNA in serum, generally 1-6 days after onset. SFTSV virus-specific antibodies are detectable during the second and third weeks of illness.

There is no specific treatment for SFTS. However, there have been a few studies reporting co-infections with SFTSV and Rickettsial infections. Doxycycline could be administered in suspected cases of co-infection. Scrub typhus and Murine typhus are endemic in Thailand. Our patient was empirically treated with doxycycline and tested for antibodies against Rickettsia typhi and Orientia tsutsugamushi.

Conclusion

The disease begins with fever and nonspecific prodrome symptoms, followed by encephalitis and multi-organ failure. RT-PCR is used for detection of SFTSV in serum. SFTS should be considered in a patient with a history of tick or animal exposure.

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Discussion

SFTS is an emerging infectious disease caused by SFTSV, a member of genus Phlebovirus, in the family Bunyaviridae.
References

1. Liu Q, He B, Huang SY, et al. Severe fever with thrombocytopenia syndrome, an emerging tick-borne zoonosis. *Lancet Infect Dis* 2014; 14:763.

2. Yu XJ, Liang MF, Zhang SY, et al. Fever with thrombocytopenia associated with a novel bunyavirus in China. *N Engl J Med*. 2011; 364:1523-32.

3. Shin J, Kwon D, Youn SK, et al. Characteristics and factors associated with death among patients hospitalized for severe fever with thrombocytopenia syndrome, South Korea, 2013. *Emerg Infect Dis*. 2015; 21:1704-10.

4. Jimin Sun, Zhenyu Gong, Feng Ling, et al. Factors associated with Severe Fever with Thrombocytopenia Syndrome infection and fatal outcome. *Sci Rep*. 2016; 6: 33175.

5. Tran XC, Yun Y, Van An L, et al. Endemic Severe Fever with Thrombocytopenia Syndrome, Vietnam. *Emerg Infect Dis* 2019; 25:1029.

6. Liu Y, Huang XY, Du YH, et al. Survey on ticks and detection of new bunyavirus in some vect in the endemic areas of fever, thrombocytopenia and leukopenia syndrome (FTLS) in Henan province. *Zhonghua Yu Fang Yi Xue Za Zhi* 2012; 46:500.

7. Jiang XL, Wang XJ, Li JD, et al. Isolation, identification and characterization of SFTS bunyavirus from ticks collected on the surface of domestic animals. *Bing Du Xue Bao* 2012; 28:252.

8. Chen H, Hu K, Zou J, Xiao J. A cluster of cases of human-to-human transmission caused by severe fever with thrombocytopenia syndrome bunyavirus. *Int J Infect Dis* 2013; 17:e206.

9. Chen Y, Jia B, Huang R, et al. Occupational Severe Fever With Thrombocytopenia Syndrome Following Needle-Stick Injury. *Infect Control Hosp Epidemiol* 2017; 1.

10. Park SY, Kwon JS, Kim JY, et al. Severe fever with thrombocytopenia syndrome-associated encephalopathy/encephalitis. *Clin Microbiol Infect* 2018; 24:432.e1.

11. Wi YM, Woo HI, Park D, et al. Severe Fever with Thrombocytopenia Syndrome in Patients Suspected of Having Scrub Typhus. *Emerg Infect Dis* 2016; 22:1992.

12. Qing-Bin Lu, Hao Li, Pan-He Zhang, et al. Severe Fever with Thrombocytopenia Syndrome Complicated by Co-infection with Spotted Fever Group Rickettsiae, China. *Emerg Infect Dis*. 2016 Nov; 22(11): 1957–1960.

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