

## Laboratory and Epidemiology Communications

# Peripheral Blood Plasmacytosis in Severe Fever with Thrombocytopenia Syndrome

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Severe fever with thrombocytopenia syndrome (SFTS) is an emerging infectious disease caused by the SFTS virus (SFTSV), a novel phlebovirus in the *Bunyaviridae* family (1). SFTS is endemic to China, South Korea, and Japan (2,3). Features of SFTS are fever, thrombocytopenia, leukopenia, and gastrointestinal symptoms, followed by disseminated intravascular coagulation (DIC) and multiple organ failure. Bunyaviruses inhibit a host immune response that allows rapid replication of the virus; however, the underlying pathogenic mechanisms are undetermined (1). A previous study showed that SFTSV infection induces a host cytokine storm that is associated with disease severity (4). Hemophagocytic lymphohistiocytosis has been reported in several patients with SFTS (5,6). Another condition associated with increased levels of inflammatory cytokines is peripheral blood plasmacytosis, a transient and polyclonal expansion of plasma cells in the circulation (7–9). Here, we report a case of SFTS with peripheral blood plasmacytosis, which resulted in death.

A 65-year-old man with a history of tick bite was referred to Kanazawa University Hospital because of fever of 10 days duration, a decreased level of consciousness, and cytopenia. He had liver dysfunction, acute kidney injury, and DIC. High lactate dehydrogenase (6,769 IU/L) and hyperferritinemia (67,855 ng/mL) levels were noted. The leukocyte count was 8,310/mcL and included 69% neutrophils, 0% eosinophils, 0% basophils, 0% monocytes, 24% lymphocytes, 4% atypical lymphocytes, 2% myelocytes, and 1% metamyelocytes. Atypical large lymphocytes in his blood smear prompted us to perform immunophenotypic analysis of his lymphocytes via flow cytometry (Fig. 1). It was found that the subpopulation of CD19<sup>+</sup> CD20<sup>−</sup> cells, most of which expressed CD138, increased unusually in the peripheral blood of the patient. The cells did not express CD10, CD33,

or CD34, but expressed CD27, CD38, and HLA-DR. These findings indicated that the cells were plasma cells. Kappa and lambda chains were equally detected on the cells. A bone marrow examination was not performed. The patient died of multiple organ failure despite

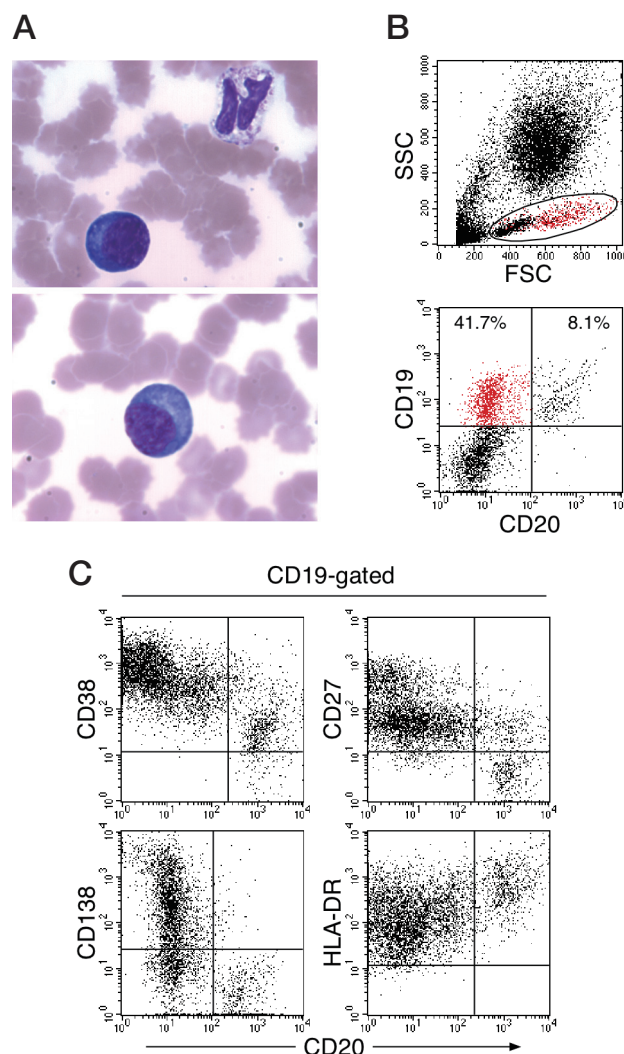


Fig. 1. (Color online) Characterization of the patient's plasma cells. Peripheral blood smears (May–Grünwald–Giemsa) (A). A region of mononuclear cells gated for fluorescence analysis. Red indicates CD19<sup>+</sup> CD20<sup>−</sup> cells (B). The immunophenotype of the patient's CD19<sup>+</sup> cells. FSC, forward scatter; SSC, side scatter (C).

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receiving intensive care on hospital day 2. The detection of the SFTSV by reverse-transcription polymerase chain reaction (RT-PCR) in the peripheral blood led to a diagnosis of SFTS.

Reactive plasmacytosis is an uncommon clinical finding associated with infections, autoimmunity, or neoplastic diseases (8,9). Owing to its rarity, the biology of reactive plasmacytosis is undefined. Two patients with SFTS have recently been described to show plasmacytosis in articles published in languages other than English (10,11). Therefore, similar to Dengue fever, this condition may occur more often than previously thought in SFTS (12). Since plasmacytosis is mostly a manifestation of plasma cell dyscrasias, clonality assessment of plasma cells is necessary to avoid misdiagnosis and delayed diagnosis. In addition, specific diagnostic tools such as RT-PCR and antibodies against SFTSV should be used for all patients with suspected SFTS because the clinical manifestations of SFTS are nonspecific and include plasmacytosis. Early diagnosis is of great importance for better treatment and prevention of transmission in patients with SFTS.

**Conflict of interest** None to declare.

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