■ S-621 ■

The application of therapeutic plasma exchange in severe fever with thrombocytopaenia syndrome

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Background/Aims: Severe fever with thrombocytopaenia syndrome (SFTS) is a viral hemorrhagic fever with a high fatality rate. However, effective treatments for SFTS cases not responded to supportive therapy have not been established. Herein, we introduced a therapeutic plasma exchange (TPE) in confirming fatal SFTS patients in a single tertiary hospital between May 2013 and June 2016. **Methods:** TPE was performed in patients with rapidly progressing SFTS; i.e., severe thrombocytopaenia, severe neutropaenia, or clinical deterioration. Clinical, laboratory, and virological parameters were compared before and after TPE. **Results:** Among 31 confirmed SFTS patients, 2 patients were treated with TPE and ribavirin combination in May 2013, then, rapidly progressing 15 SFTS patients treated with only TPE from June 2013 to July 2016: their median age was 58.5 years (interquartile range, 49.5−68.7) and 10 (32.2%) were male. Body temperature, pressure-adjusted heart rate, white blood cell and platelet counts, coagulation profile, serum creatinine, and multiple organ dysfunction score were improved immediately after TPE. In addition, the mean cyclic threshold value of real-time RT-PCR for SFTS virus after TPE (31.3±2.9) was significantly higher than that before TPE (26.5±2.9, $p < 0.001$), indicating that serum viral loads decreased after TPE. Finally, 14 (93.3%) of 15 only TPE-treated patients recovered from rapidly progressing SFTS without sequelae. **Conclusions:** SFTS patients treated with TPE showed a rapid improvement in clinical, laboratory, and virological parameters. These findings suggest that TPE has a therapeutic potential as a rescue therapy in patients with rapidly progressing SFTS.

■ S-622 ■

A Case of Invasive Hepatic Aspergillosis and Subsequent Breakthrough Pulmonary Mucormycosis

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Invasive fungal disease (IFD) is one of the impacted complications which can affect the prognosis of patients with hematologic malignancies. Although the recent improvement of antifungal therapy have reduced the morbidity and mortality of IFDs, there are concerns regarding increase of breakthrough IFDs other than aspergillosis or azole resistance. Here, we report a case of transplantation breakthrough invasive pulmonary mucormycosis developed during voriconazole treatment for invasive aspergillosis. The patient recovered from two concomitant IFDs as well as reached to successful stem cell transplantation (SCT) for acute myeloid leukemia (AML). A 63-years-old female AML patient was diagnosed as proven invasive aspergillosis of liver based on a cytology of abscess drainage before second consolidation chemotherapy. She underwent chemotherapy with kept taking voriconazole (400 mg/day) After 10 weeks of voriconazole therapy, she was admitted for allogeneic SCT. Serum voriconazole drug level was within therapeutic range and abdomen CT showed remained but decreased size (from 8.6 cm to 4.8 cm) of liver abscess. On day 6 after SCT, first onset neutropenic fever was developed (up to 38.0℃). Absolute neutrophil count (ANC) was 0/mm^3 and cefepime (4 g/day) and isepamicin (400 mg/day) was started empirically. Chest x-ray showed haziness in right middle lobe (RML), and CT revealed ill-defined consolidation with ground glass opacities. Repeated serum galactomannan tests were negative. Therefore, voriconazole was changed into liposomal amphotericin B (5 mg/kg/day) for galactomannan-negative breakthrough fungal pneumonia. On day 20 after SCT, ANC was revovered and follow-up chest CT showed typical, reverse halo sign. Therefore, she underwent RML lobectomy. Pathology showed non-septated hyphae with broad and right angle budding, which finally proved as mucormycosis. On day 56 after SCT, liposomal amphotericin B was discontinued. On post SCT 1-year follow-up, she completely recovered from both IFDs and AML. Breakthrough IFDs can be occurred during antifungal treatment. Clinicians should consider active diagnostic efforts, such as drainage or surgery, which can lead to successful outcome despite of immunocompromised state of patients.