INTRODUCTION

Atypical hemolytic uremic syndrome (aHUS) is a rare, life-threatening disease caused by uncontrolled chronic activation of the complement alternative pathway, resulting in systemic microvascular thrombosis, organ ischemia and organ damage. Prognosis is poor: up to 65% of patients require dialysis, have permanent kidney damage or die despite treatment with plasma exchange/plasma infusion (PE/PI).

CASE DESCRIPTION

We describe the case of a 23-year-old female who after a pre-eclampsia induced premature delivery showed signs of thrombotic microangiopathy (TMA). The patient was admitted with tonicoclonic seizures, anasarca edema and high blood pressure while laboratory investigation revealed acute renal failure (creatinine 4.9 mg/dL), thrombocytopenia (platelets 40 x 10^9/L) with elevated lactate dehydrogenase (LDH 3254 IU/L) and presence of schistocytes on blood smear. She was initially diagnosed with thrombotic thrombocytopenic microangiopathy (TMA) and intensive PE was initiated twice daily. She also received dialysis for 1 month. Three months after initial admission, the patient was discharged with non-diabetes dependent renal failure (creatinine 2 mg/dL) and without signs of hemolysis. In the next three months, the patient was readmitted with signs and symptoms of TMA. Further investigations showed a negative Coombs test and detectable ADAMTS13 activity excluding TTP. No genetic abnormality in complement genes was detected. Stool samples could not detect E. coli O157:H7/O104:H4 or Shiga toxin, excluding Shiga toxin E. coli HUS (STEC-HUS). The patient was diagnosed with aHUS. A renal biopsy was performed that showed TMA; the patient later developed signs of cardiomyopathy (left ventricular ejection fraction 25%). Due to failure of PE and dialysis to reverse TMA, the patient was started on eculizumab (complement inhibitor), which improved clinical and laboratory parameters. During long-term eculizumab treatment renal and cardiac functions were restored and TMA manifestations reversed. No further clinical symptoms and signs of TMA have been observed. The patient currently remains under chronic eculizumab treatment, without the need for any other invasive treatment.

DISCUSSION

Eculizumab is a humanized monoclonal antibody that binds to complement component C5 inhibiting its cleavage to C5a and C5b, and hence inhibits deployment of the terminal complement system including the formation of membrane attack complex (MAC). Thus it reverses complement mediated TMA in patients with aHUS. The optimal duration of treatment remains to be determined.

CONCLUSIONS

Chronic eculizumab treatment can rapidly block complement activation, successfully reverse systemic TMA and improve organ function in aHUS patients. According to our knowledge this is the first case of postpartum aHUS treated with eculizumab. The patient is in persistent remission of aHUS for 2.5 years.