Secondary capillary leak syndrome - Plasmapheresis: Is it the answer?

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Abstract

Capillary leak syndrome is a dreaded complication of snake bite. Various modalities of treatment have been tried, but prognosis is very poor. We have reported here a case of poisonous snake bite complicated with capillary leak, which survived following plasmapheresis.

Key words

Snake bite, Capillary leak, Plasmapheresis.

Introduction

Capillary leak syndrome (CLS) also known as Clarkson’s syndrome, was first described by Dr. Bayard Clarkson in 1960. It is characterized by hypoalbuminemia without albuminuria, hemoconcentration, hypotension and generalized edema. Capillary leak syndrome is a dreaded complication of snake bite. Various modalities of treatment have been tried, but prognosis is very poor.

Case report

28 years old male admitted with snake bite on medial aspect of left leg near medial malleolus. At the time of admission the patient had abdominal pain and vomiting with pain at the site of bite. On examination, there was local edema. There was no evidence of neurotoxicity or bleeding manifestations or decrease in urine output. In view of the evidence of local and systemic envenomation, he was given 20 vials of antivenom. He subsequently went into oligo anuric state with serum creatinine value of 1.4 mg%, for which renal replacement therapy in the form of hemodialysis was initiated. On the second day he developed chemosis, parotid swelling, right sided pleural effusion along with severe leukocytosis (total count 39000/cumm) and hemoconcentration (Hemoglobin 15 g%, PCV 46%). On the third day, he developed bleeding manifestations in the form of hematuria, melena, subconjunctival hemorrhage. Laboratory investigations revealed thrombocytopenia (platelet count 30,000/cumm). The coagulation parameters...
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Discussion

Capillary leak syndrome (CLS) also known as Clarkson’s syndrome, was first described by Dr Bayard Clarkson in 1960. It is characterized by hypoalbuminemia without albuminuria, hemoconcentration, hypotension and generalized edema. The underlying mechanism is capillary hyper permeability and extravasation of plasma, containing macromolecules up to 900 kD. CLS can be primary (idiopathic) or secondary to conditions like poisonous snake bite (ophitoxemia) [1, 2] and dengue hemorrhagic fever. Toxins and enzymes present in the snake venom cause increase in the capillary permeability leading to leakage of plasma from the intravascular space. There are three phases in the clinical presentation of capillary leak syndrome. First is the prodromal phase when the patient manifests irritability, fatigue, myalgia, abdominal pain, thirst and syncope. Second is the phase of capillary leakage with marked extravasation of intravascular fluid. Marked hypotension, generalized edema, pleural and pericardial effusion, ascites, compartment syndrome, rhabdomyolysis, renal failure can occur in this phase. Renal failure is a common complication. The mechanisms of renal failure include hypotension induced reduced glomerular filtration, acute tubular necrosis and rhabdomyolysis associated pigmenturia. This stage usually lasts for 1-4 days. Third phase is characterized by return of fluid back into the intravascular space and associated polyuria and pulmonary edema. This patient had features of envenomation followed by features like generalized edema, pleural effusion, compartment syndrome, rhabdomyolysis and renal failure [3]. The possibility of thrombotic thrombocytopenic purpura was considered, but there was no evidence of hemolysis. The persistently normal coagulation profile ruled out disseminated intravascular coagulation. Treatment of CLS includes anti-snake venom and supportive care. Disease modifying agents being used in treatment of capillary leak are theophylline, leukotriene antagonists, terbutaline, plasmapheresis, prostacycline, corticosteroids and intravenous immunoglobulin (IG). There is no proven therapy for CLS. The prognosis remains very poor. We postulated that early recognition of CLS and prompt institution of plasmapheresis and use of fresh frozen plasma might have contributed to the successful outcome in this patient.

Conclusion

Capillary leak syndrome is a grave complication of snake bite with no proven treatment modalities. Early recognition and institution of plasmapheresis along with replacement with
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References


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