Financial Analysis of a Large-Scale Student-Run Free Clinic: A Model for Cost Optimization and Sustainability

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Background: Hemophagocytic lymphohistiocytosis (HLH) is a severe systemic inflammatory disorder driven by the excessive activation of dysregulated cytotoxic T lymphocytes, macrophages, and natural killer cells. This hyperactivation can result in tissue infiltration by lymphohistiocytes, leading to multiorgan failure and potentially fatal outcomes. The primary mechanism that leads to further fatality is believed to be associated with the excessive cytokine storm.

Case Report: A 27-year-old male without any significant past medical history and no medication use was admitted with a chief complaint of nausea, vomiting, and diarrhea with cyclical febrile episodes at home ongoing for three days prior to admission. The patient was noted to be tachycardic on admission with a heart rate in the 140s but otherwise normal vital signs. Other significant lab work revealed acute kidney injury with creatinine of 3.59 mg/dL and creatine kinase (CK) of 14255 IU/L peaking at 46057 IU/L. EBV and cytomegalovirus (CMV) were ordered and were found to be positive, and the patient was started on ganciclovir. Following further fluid resuscitation, acute kidney injury and rhabdomyolysis drastically improved. Follow-up soluble CD25 (sCD25) was positive. The patient was subsequently diagnosed with HLH and prompt therapy was started with dexamethasone. The patient was treated with steroids and valacyclovir on discharge for CMV, with follow-up in the outpatient setting revealing the resolution of symptoms without any long-term complications.

Conclusion: HLH is a significant systemic inflammatory state that should be treated swiftly, as mortality is high without appropriate treatment. As seen in our case, rhabdomyolysis as a presenting feature of HLH is a novel

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presentation. This along with the infection of EBV should be a raise concerns about an underlying etiology, which in our case, led to the discovery and prompt treatment of HLH.

Keywords: Infectious Disease, HLH, EBV, Rhabdomyolysis

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