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Innovative Approaches to Managing Expanded Dengue Syndrome in Nepal

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Description

Dengue fever has become a notable public health issue in tropical and subtropical areas, with a rising incidence over the last twenty years. While the majority of dengue cases are either asymptomatic or exhibit mild symptoms, a minority can evolve into severe forms of the illness, including Expanded Dengue Syndrome (EDS), which may result in multi-organ failure and potentially death. EDS is an unusual presentation of dengue, characterized by neurological, renal, hepatic and various systemic complications, presenting distinct challenges for healthcare providers in diagnosing and treating these patients. This case report of a fatal instance of EDS in Nepal emphasizes the necessity for early identification, prompt intervention, and improved predictive markers to recognize patients at risk for severe dengue progression.

Challenges in diagnosing severe dengue in nepal

The case of a 32-year-old female patient from Sarlahi district, Nepal, serves as a critical reminder of the challenges faced in diagnosing and treating dengue. At first, patient symptoms appeared typical of a mild dengue infection however, as patient condition worsened, it became evident that patient had severe dengue with EDS. The swift advancement of symptoms, such as gastrointestinal issues, severe epigastric pain and abdominal discomfort, followed by shock and multi-organ involvement, underscores the urgent need for increased vigilance among healthcare professionals, particularly in hyperendemic areas like Nepal.

Dengue has posed significant challenges in Nepal since its arrival in 2004 and the recent outbreaks in 2022 and 2023, which impacted tens of thousands of people, have put additional pressure on the healthcare system. Despite the high incidence, fatality rates have remained relatively low, indicating that enhancements in clinical care and early detection are vital to preventing deaths. Nonetheless, the 2022 and 2023 outbreaks also saw a rise in cases with unusual presentations, like the one discussed in this report, leading to a fatal outcome. This trend suggests that severe and atypical dengue cases are becoming more frequent, necessitating better clinical guidelines, public health initiatives and training for healthcare professionals in recognizing these less common forms of the disease.

Identifying high-risk dengue cases: The need for early prediction

A significant concern regarding severe dengue is the absence of specific predictive markers to identify patients at high risk of progressing to life-threatening stages of the illness. As illustrated in this case, the patient's initial diagnostic tests indicated a typical dengue infection, but as patient condition advanced, patient displayed severe organ involvement, including liver transaminitis and thrombocytopenia, which are both indicative of severe dengue. Patient by the time arrived at a tertiary facility, patient condition had deteriorated to the point where intensive care was required, ultimately leading to patient demise from the infection. The failure to predict this deterioration in the early stages reveals a critical gap in our understanding of the disease and highlights the urgent need for dependable biomarkers to identify patients at risk for severe outcomes.

The case also emphasizes the necessity of comprehending the impact of co-infection with various dengue virus serotypes on the development of severe dengue. This patient was co-infected with DENV-1 and DENV-3, which is linked to a heightened risk of severe disease due to the process of Antibody-Dependent Enhancement (ADE). This immunological process happens when antibodies formed from a prior dengue infection facilitate the entry of a different serotype of the virus into host cells, leading to increased viral replication and more severe disease. This co-infection and ADE were likely important factors contributing to the patient's severe clinical condition.

In addition to viral factors, the patient's raised procalcitonin levels and indications of coagulopathy, such as gingival bleeding and excessive bleeding at cannula sites, imply a bacterial superinfection, complicating dengue treatment. Secondary bacterial infections in dengue patients, particularly those with severe disease, can deteriorate the prognosis and necessitate more aggressive treatment approaches. This case further emphasizes the necessity of careful monitoring and prompt intervention to manage the various complications that may arise during the critical phase of dengue infection.

Conclusion

In conclusion, this fatal case of EDS illustrates the challenges of managing severe dengue and the urgent need for early diagnosis,

effective management protocols and improved predictive tools to identify patients at risk. With rising cases of dengue in areas like Nepal, enhancing clinical practices and infrastructure to manage severe cases should be a priority to lessen fatalities and improve patient outcomes. The significance of increasing awareness about the unusual presentations of dengue and ensuring that healthcare professionals are adequately prepared to address such cases cannot be emphasized enough.