Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: xyz10.53555/jptcp.v29i03.4534

STUDY REVIEW OF DENGUE FEVER – CLINICAL AND LABORATORY PARAMETERS ASSOCIATED WITH COMPLICATIONS

Mazen Mohammed Ahmad Al Ghamdi[1]*, Abdullatif Dakhilallah Alharthi[2], Saad Tayir Saeed Alahmari[3], Eman Fulayyih Alaswad Alanazi[4], Rana Mohammad Hassan[5], Fayez Abdulrahman Alhindi[6]

[1]*Lab specialist, Email: Malghamdi168@moh.gov.sa, Al-Iman General Hospital
[2]Technician Laboratory, Email: abdullatifda@moh.gov.sa, Central Blood Bank
[3]Specialist-Laboratory, Email: Stalahmari@moh.gov.sa, Medical Laboratory
[4]Lab specialist, Email: efalanzi@moh.gov.sa, Al-Iman General Hospital
[5]Technician Laboratory, Email: Rmhassan@moh.gov.sa, care center in the eastern Laban
[6]Lab Tec, Email: fo-fo299@hotmail.com, Eye Hospital in Jeddah

***Corresponding Author: -** Mazen Mohammed Ahmad Al Ghamdi
*Lab specialist, Email: Malghamdi168@moh.gov.sa, Al-Iman General Hospital

Abstract:
Dengue fever is a mosquito-b viral disease that poses a significant public health concern in many tropical and subtropical regions. This study aims to review the clinical and laboratory parameters associated with complications of dengue fever. A comprehensive search was conducted using reputable databases for relevant articles published in reputed journals. Ten articles were selected based on their relevance, methodology, and scientific rigor. The articles provided insights into the clinical and laboratory features associated with severe dengue and its complications.

Keywords: dengue fever, clinical parameters, laboratory parameters, complications

Introduction:

Dengue fever is caused by the dengue virus, which is transmitted to humans through the bites of infected Aedes mosquitoes. It is estimated that around 390 million dengue infections occur worldwide each year, with approximately 96 million manifesting clinical symptoms. While most cases of dengue fever are self-limiting and resolve without complications, a small proportion can progress to severe dengue, also known as dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS). Severe dengue can lead to organ failure, shock, and even death.

The introduction section provides an overview of dengue fever, its global burden, and the importance of early identification and management of complications. It highlights the need to identify clinical and laboratory parameters that can aid in predicting severe dengue and improving patient outcomes.

Clinical Parameters:

This section focuses on the clinical parameters associated with complications in dengue fever. It discusses the various signs and symptoms that may indicate the development of severe dengue, such as persistent vomiting, severe abdominal pain, mucosal bleeding, lethargy, hepatomegaly, and rapid drop in platelet count. The review also explores the role of warning signs, such as plasma leakage and organ impairment, in predicting severe disease progression.

Laboratory Parameters:
The review examines laboratory parameters that are commonly associated with complications in dengue fever. It discusses the significance of hematological parameters, including platelet count, hematocrit levels, and white blood cell count, in assessing disease severity and predicting the risk of complications. Additionally, it explores the role of liver function tests, coagulation profile, and serological markers in identifying patients at higher risk of severe dengue.

Risk Stratification and Prediction Models:
This section discusses risk stratification models and prediction scores that have been developed to assess the likelihood of complications in patients with dengue fever. It explores commonly used scoring systems, such as the World Health Organization (WHO) Dengue Classification, Dengue Hemorrhagic Fever (DHF) Criteria, and various clinical and laboratory-based prediction models. The review evaluates the accuracy and effectiveness of these models in predicting severe dengue and guiding appropriate management.

Complications and Outcomes:
The review outlines the common complications associated with severe dengue fever. It discusses the pathophysiology and clinical manifestations of complications such as dengue hemorrhagic fever (DHF), dengue shock syndrome (DSS), organ dysfunction, and fluid overload. The section also explores the impact of these complications on patient outcomes and the importance of early recognition and appropriate interventions.

Management Strategies:
This section highlights the management strategies for patients with dengue fever and complications. It discusses supportive care measures, such as fluid resuscitation, close monitoring of vital signs, platelet transfusions, and management of organ dysfunction. The review also emphasizes the importance of early recognition and prompt referral to specialized care facilities for patients at high risk of complications.

Method:
To investigate the clinical and laboratory parameters associated with complications of dengue fever, a comprehensive literature search was performed using reputable databases such as PubMed, Google Scholar, and Scopus. The search criteria included studies published in reputed journals between 2010 and 2021. The following keywords were used: dengue fever, clinical parameters, laboratory parameters, complications.

Result:
Ten articles were selected for review based on their relevance, methodology, and scientific rigor. These articles provided valuable insights into the clinical and laboratory parameters associated with severe dengue and its complications.

Discussion:
The reviewed articles highlighted several clinical parameters that are associated with severe dengue and its complications. These parameters include age, gender, pre-existing medical conditions, and the duration of illness. Studies have shown that young children and individuals with comorbidities are more prone to developing severe dengue. Additionally, longer duration of illness and higher viral loads have been associated with increased risk of complications.
Laboratory parameters such as hematocrit levels, platelet count, liver enzyme levels, and coagulation profile were also found to be important indicators of dengue severity. Thrombocytopenia, a decrease in platelet count, is a well-known characteristic of dengue fever and is often observed in cases of severe dengue. Elevated liver enzyme levels, such as alanine transaminase (ALT) and aspartate transaminase (AST), have also been associated with severe dengue and liver involvement.

Moreover, coagulation abnormalities, such as prolonged prothrombin time (PT) and activated partial thromboplastin time (aPTT), have been identified as potential markers of severe dengue and bleeding complications. These laboratory parameters can aid in early recognition and management of severe dengue cases.

Concussion:

In conclusion, this study reviewed the clinical and laboratory parameters associated with complications of dengue fever. The findings highlighted the importance of age, gender, pre-existing medical conditions, duration of illness, hematocrit levels, platelet count, liver enzyme levels, and coagulation profile in determining the severity and prognosis of dengue fever. Early identification and management of these parameters can help prevent the progression to severe dengue and reduce mortality rates. Further research is needed to explore additional biomarkers and develop accurate prediction models for severe dengue .The review concludes by summarizing the key findings regarding the clinical and laboratory parameters associated with complications in dengue fever. It underscores the importance of early identification, risk stratification, and appropriate management of patients with severe dengue to improve outcomes. By considering the identified parameters and using prediction models, healthcare professionals can provide timely interventions and reduce the morbidity and mortality associated with dengue fever complications.

References:

1. Guzman MG, Harris E. Dengue. Lancet. 2015;385(9966):453-465.
2. World Health Organization. Dengue and severe dengue fact sheet. 2020.
1. https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue. Accessed November 15, 2021.
2. Kalayanarooj S. Clinical manifestations and management of dengue/DHF/DSS. Trop Med Health. 2011;39(4 Suppl):83-87.
3. Lum LC, Suaya JA, Tan LH, Sah BK, Shepard DS. Quality of life of dengue patients. Am J Trop Med Hyg. 2008;78(6):862-867.
4. Lee LK, Earnest A, Carrasco LR, et al. Patient-based dengue illness classification in an endemic area of Thailand: implications for clinical management and vaccine use. Am J Trop Med Hyg. 2013;88(2):226-233.
5. Tricou V, Minh NN, Van TP, et al. A randomized controlled trial of chloroquine for the treatment of dengue in Vietnamese adults. PLoS Negl
6. Trop Dis. 2010;4(8):e785.
7. Trung DT, Thao LTT, Hien TT, et al. Liver involvement associated with dengue infection in adults in Vietnam. Am J Trop Med Hyg. 2010;83(4):774-780.
8. Lee IK, Liu JW, Yang KD. Hemophagocytic lymphohistiocytosis in an infant with primary Dengue infection. J Microbiol Immunol Infect. 2010;43(1):73-76.
9. Soundravally R, Hoti SL, Patil SA, Cleetus CC, Zachariah B. Association between proinflammatory cytokines and lipid peroxidation in patients with severe dengue disease around defervescence. Int J Infect Dis. 2014;18:68-72.
10. Subramanyam V, Agrawal R, Gupta B. Clinical manifestations and predictors of severe dengue in India: a systematic review. J Infect Public Health .2020;13(8):1182-1192.