

Review article

Disseminated intravascular coagulopathy in dengue: a brief review

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Abstract

Dengue infection is an arboviral infection with a very high prevalence in tropical Southeast Asia. This infection presents as a clinical illness comprising of very high fever with several hematologic aberrations. In this article, the author briefly reviewed the report on disseminated intravascular coagulopathy (DIC), a severe complication, in dengue.

Keywords: Dengue; DIC

INTRODUCTION

Dengue infection is an arboviral infection with a very high prevalence in tropical Southeast Asia. This infection presents as a clinical illness comprising of very high fever with several hematologic aberrations^[1-3]. Thrombocytopenia and hemoconcentration are common hematological aberration in dengue^[1-3]. However, there are only a few reports concerning the abnormal of coagulation pathway. In this article, the author briefly reviewed the report on disseminated intravascular coagulopathy, a severe complication, in dengue.

Alteration of coagulation pathway in dengue

Dengue infection can affect the coagulation pathway. Chua et al said that activated partial thromboplastin time (a PTT) and prothrombin (PT) could be an index in predicting bleeding in patients with dengue hemorrhagic fever^[4]. They noted that tendency to bleed was any cases with a PTT or PT levels greater than 30 seconds^[4]. Kittigul said that longer PT were found to be significantly higher in adults than in children^[5]. Prolonged PT is also noted as a result of

hepatic dysfunction in dengue infection^[6,7]. However, there is no difference of PT between dengue and dengue hemorrhagic fever (DHF) case^[8].

Chadwick et al also proposed that PT can be used in a mathematical model for discriminate dengue from other tropical infection with similar clinical signs and symptoms^[9]. When coagulation tests were considered, a model for diagnosis was composed of: absence of nasal discharge, leukocyte count $<$ or $=$ 4 500/.l, prothrombin time $>$ 14 seconds, and partial thromboplastin time $>$ 29 seconds^[10]. In addition, prolonged a PTT and PTT are also proposed for relation to acute renal failure^[11] and abnormal chest X ray^[12] in dengue.

Disseminated intravascular coagulopathy in dengue

Increased intravascular clotting can be seen in dengue. This is usually evidenced by mildly and variably low factors II, V, VII, VIII, IX, X, and XII, and by mild to moderate increase of fibrin degradation products as well as low platelet counts and fibrinogen^[13]. Disseminated intravascular coagulation (DIC) is accepted as a serious complication in dengue and corresponds to sever bleeding. DIC is prominent in patients with shock^[14]. Vitarana et al said that the distinctive features in DHF are the occurrence of shock, thrombocytopenic purpura and sometimes DIC^[15].

Prolongations of a PTT and PT and decreases of

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platelet counts, fibrinogen, prothrombin, factor VI-II, plasminogen and antithrombin III activities can be observed transiently during the acute stage of DHF^[16,17]. However, FDP is slightly increased but not as high as in classical DIC^[18]. The most severe DIC and massive bleeding are the result of prolonged shock and cause a fatal outcome^[14]. It is noted that almost all cases of dengue shock syndrome have DIC^[19]. It is also noted that DIC in a majority of DHF patients are most likely responsible to the low ESR especially during shock period^[20]. Heparin is suggested for patients with prolonged shock and severe acidosis when DIC becomes clinically apparent^[21]. Supportive therapy with blood products (blood, FFP and platelet transfusions) in addition to basic fluid therapy is also recommended^[22]. Concerning the prevalence of DIC in dengue, Tripathi et al reported 3 from 60 cases in India^[23]. According to the study of Tripathi, all DIC cases died^[23]. Another study by Kamath and Ranjit indicating 6 from 858 cases^[24]. All DIC cases in this series died as well^[24]. Purpura fulminans^[25] and lymph node infarction^[26] are special manifestation in dengue cases with DIC.

CONCLUSION

DIC is an important hematological complication in dengue infection, especially for those with severe DHF. The special additional treatment for these complicated cases is suggested.

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