



Revista Brasileira de Hematologia e Hemoterapia Brazilian Journal of Hematology and Hemotherapy

www.rbhh.org



Original article

Clinical and laboratory characteristics of patients with dengue hemorrhagic fever manifestations and their transfusion profile

Denys Eiti Fujimoto^{a,*}, Sergio Koifman^b

^a Universidade Federal do Acre (UFAC), Rio Branco, AC, Brazil

^b Fundação Oswaldo Cruz (Fiocruz), Rio de Janeiro, RJ, Brazil

ARTICLE INFO

Article history:

Received 6 July 2013

Accepted 18 December 2013

Keywords:

Dengue hemorrhagic fever

Blood transfusion

Hemorrhagic disorders

Platelet transfusion

ABSTRACT

Background: Dengue is an infectious disease with a recurring incidence, especially in developing countries. Despite recent economic growth, success in disease control has not been achieved, and dengue has evolved from cyclic epidemic outbreaks to a lack of seasonality. The lack of scientific basis for the proper management of cases with hemorrhagic manifestations, especially regarding transfusion procedures, might contribute to the high death rate in potentially avoidable cases.

Objective: The aim of the study was to identify the clinical and laboratory manifestations in hemorrhagic dengue fever treated at the emergency services in Rio Branco, AC, Brazil, as well as to describe transfusion characteristics of patients and identify possible prognostic factors. **Methods:** A retrospective descriptive study was performed to analyze the distribution of relative frequencies of clinical and laboratory variables. The study was carried out in Rio Branco with confirmed dengue fever cases. Secondary data were obtained by Acre Epidemiological Surveillance teams of cases with bleeding or platelet counts under $100.0 \times 10^9/L$. The patients' clinical, laboratory and transfusion data were obtained from hospital records.

Results: A total of 90,553 dengue cases were reported of which 7,447 had serologic confirmation; 267 cases had hemorrhagic manifestations and 193 patients were located. Nearly half of the patients had anemia and the mean of the lowest platelet count of these patients was $26.4 \times 10^9/L$. Platelet concentrate was transfused in 22.3% of cases with a mean of 7.5 IU/patient, fresh frozen plasma in 21.2% with a mean of 5.2 IU/patient and just 2.6% of patients received concentrated red blood cells with a mean of 3.2 IU/patient. Bleeding led to transfusions. Signs of plasma leakage and cardiopulmonary dysfunction were correlated to unfavorable outcomes. **Conclusion:** The pattern of clinical and laboratory criteria observed in this investigation does not differ from the literature. Transfusions were used as part of the treatment of dengue hemorrhagic fever manifestations. Some of the clinical manifestations may be related to unfavorable outcomes.

© 2014 Associação Brasileira de Hematologia, Hemoterapia e Terapia Celular.
All rights reserved.

*Corresponding author at: Universidade Federal do Acre, Pró-Reitoria de Pós-Graduação, Programa de Pós-Graduação em Saúde Coletiva, BR 364, Km 04, Distrito Industrial, 69915-900, Rio Branco, AC, Brazil.

E-mail address: denys.fujimoto@hotmail.com (D.E. Fujimoto).

1516-8484/\$ - see front matter © 2014 Associação Brasileira de Hematologia, Hemoterapia e Terapia Celular. Published by Elsevier Editora Ltda. All rights reserved.

DOI: 10.5581/1516-8484.20140027

Introduction

Dengue virus belongs to the genus *Flavivirus* (group B arbovirus, RNA virus) and comprises structural and non-structural proteins.¹ The classic clinical presentation is characterized by the abrupt onset of headache, myalgia and high fever, in addition to arthralgia, retro-orbital pain and hemorrhagic manifestations. The classical presentation differs from dengue hemorrhagic fever, which is characterized by fluid leakage into the interstitium.² Halstead states that in Latin American countries including Brazil, mosquito eradication was achieved in large urban centers after World War II, however, almost 20 years after, there was a resurgence of *Aedes* populations in Brazil. This allowed the first dengue outbreak with viral isolation in 1981 in Boa Vista, state of Roraima, along with the identification of DEN-1 virus and later of DEN-4 virus in 2007.³ DEN-1 and DEN-2 were found in Rio de Janeiro in 1987 and DEN-3 in 2002. Between 2000 and 2005, Brazilian cases represented more than 60% of those registered by the World Health Organization (WHO) and almost 80% of all cases in the Americas.⁴ This increase was identified in reports from the Brazilian Communicable Disease Information System.⁵

A quick dengue infection confirmation test is not available, and a complete blood count (CBC) might show characteristics such as leukopenia and thrombocytopenia.⁶ These findings can be explained by peripheral platelet destruction mechanisms in the liver and spleen via the action of immunocomplexes or the complement system, in addition to the inhibition of medullary hematopoiesis⁷ and disseminated intravascular coagulation.⁸ A coagulogram might also indicate changes such as prolonged prothrombin and activated partial thromboplastin times, in addition to decreased serum fibrinogen concentration without increased levels of fibrinogen degradation products; these signs occur mainly with the hemorrhagic form of dengue fever.⁹ According to Lupi, "[...] Increased aspartate aminotransferase (AST) can be observed in 30%-90% of classic dengue cases";⁸ this increase might correlate with thrombocytopenia, and thus, the Sri Lanka Medical Association considers a normal AST level to be a strong negative predictor of dengue hemorrhagic fever and its complications.¹⁰

The Ministry of Health recommends platelet transfusion when platelet levels are less than $20 \times 10^9/L$ with significant bleeding or when platelet counts range from $20-50 \times 10^9/L$ with suspected central nervous system (CNS) bleeding.² Singhi et al. recommends platelet concentrate transfusions at lower platelet counts ($10 \times 10^9/L$).¹ The authors of a population-based study conducted in India mentioned that 42.6% of the patients with confirmed dengue and thrombocytopenia (platelet count $< 40 \times 10^9/L$) received platelet concentrate transfusions.¹¹ In Singapore, platelet transfusion was performed in approximately 12% (249 patients) of 1,973 cases with a mean platelet count of $15 \times 10^9/L$.¹²

The infusion of fresh frozen plasma (FFP) at a dose of 10 mL/kg given every 8 or 12 hours according to changes in the coagulogram, is also recommended.² However, a prospective, randomized, double-blind study was conducted to evaluate the

efficacy of FFP versus isotonic saline solution infusions, and a significant increase in the platelet count was observed during the first 12 hours after infusion only in the FFP receiving group.¹

The municipality of Rio Branco, located in the western Amazon region, has shown a marked annual increase in the incidence of dengue infections, especially since 2009,⁵ and also an increase in the incidence of dengue hemorrhagic fever. Patients rely on emergency and urgent care services in two emergency healthcare units. The most serious cases and those that require transfusion are transferred to the Hospital de Urgência e Emergência de Rio Branco (HUEBR).

Platelet concentrate and FFP transfusions have been used as a measure to prevent the increasing clinical evolution of dengue hemorrhagic fever, thus preventing evolution of the disease towards death. Nevertheless, the criteria for making a decision regarding the implementation of transfusion are not clearly defined, and therefore such decisions are made relatively empirically, based on the experience of emergency center health professionals.

Objective

This study sought to determine the clinical and laboratory characteristics, transfusion aspects and mortality of patients with dengue hemorrhagic fever treated by emergency services in the city of Rio Branco, Acre.

Methods

This retrospective descriptive study employed secondary data on dengue cases confirmed via serology by the State Epidemiological Surveillance Service. Only cases with bleeding or platelet counts less than $100 \times 10^9/L$ from January 3rd, 2007 to June 14th, 2011 were included. Additional information was obtained from the medical records of the health services. Anemia was defined as hemoglobin levels less than 13.0 g/dL or hematocrit less than 40% for males, and a hemoglobin level less than 11.5 g/dL or hematocrit less than 36% for females at any point during hospitalization. Eosinophilia was defined as an eosinophil count above the normal range ($0.04-0.4 \times 10^9/L$) at any point during hospitalization. This project was approved by the Research Ethics Committee of the Universidade Federal do Acre (UFAC; number 23107.011739/2011-15). A relative frequencies analysis of clinical and laboratory variables and transfusion aspects was performed, and the distribution of parameters was determined with 95% confidence intervals. Additionally, the possible effect on mortality was compared between groups that did or did not receive platelet concentrate or FFP transfusions, according to the chi-squared method with the level of significance being set at 5%.

Results

A total of 90,553 dengue cases were reported in Rio Branco during the study period. Serology was performed in

Download English Version:

<https://daneshyari.com/en/article/3333152>

Download Persian Version:

<https://daneshyari.com/article/3333152>

[Daneshyari.com](https://daneshyari.com)