Evaluation of Some Clinical, Humoral and Imagenological Parameters in Patients of Dengue Haemorrhagic Fever Six Months after Acute Illness


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Abstract

In this study, the clinical, humoral and imagenological evaluation of 47 adult individuals classified as DHF/DSS six months after the acute illness is described. During the medical interview, 22 cases (48.6%) still showed persistence of some of the dengue symptoms even six months post treatment. Asthenia (27.6%), headache (14.8%), and arthralgia (10.6%) were the most prevailing symptoms. Most of the humoral and all the ultrasonographic and radiological alterations, which appeared during the acute phase of the disease, were not detected during the present study. The findings suggested that some clinical manifestations that appear during convalescence after suffering the severe disease could last for several months.

Keywords: Clinical, humoral, imagenological symptoms, DHF cases persistence, six months post severe illness.

Introduction

Dengue fever is a viral disease transmitted to humans through the bite of Aedes aegypti, the main vector species. The disease can be caused by any of the four dengue serotypes[1]. Dengue virus infection may be asymptomatic or may lead to undifferentiated fever, dengue fever (DF) or may progress to severe forms, viz. dengue haemorrhagic fever/dengue shock syndrome (DHF/DSS)[2].

The clinical manifestations at onset are similar in both syndromes, DF or DHF/DSS. The severe disease commonly begins with a sudden rise of fever, accompanied by headache, nausea, vomiting, abdominal pain, arthralgia, myalgia and sometimes rash, which may be petechial or even ecchymotic. Signs of circulatory failure, as an expression of increased vascular permeability and leakage, are observed shortly after fever drop (usually at day 3 to 7 after fever onset). Patients suffering from DHF/DSS are at risk of dying if appropriate treatment is not started at the earliest[3,4].

Sonographic findings show pleural effusion, ascites, thickening of the gall bladder wall and hepatomegaly. The humoral expression of the disease includes significant thrombocytopenia associated with a rising haematocrit, elevated concentrations of liver...
enzymes, leukopenia and hypo-
proteinemia\cite{2,4,5}. Little is known on the clinical,
humoral and imgenological alterations
observed once the acute phase is over\cite{1}. The
knowledge of these aspects is crucial, not only
to complete the characterization of one of
the most important diseases in large areas of
the tropical world, but to help in the
establishment of the differential diagnosis in
those patients with persistent clinical
manifestations after the acute phase of DHF/
DSS.

A DENV-3 epidemic was reported in
Havana city during 2001–2002\cite{6}. Eighty-one
adult patients were classified as DHF/DSS
according to PAHO/WHO Guidelines\cite{7}. Out
of these, 76 were admitted at “Pedro Kourí”
Tropical Medicine Institute (IPK).

The clinical, laboratory and imgenological
findings observed in a group of DHF/DSS
patients studied six months after the acute
illness are reported in this communication.

**Methods**

Forty-seven out of 76 (61.8%) DHF/DSS cases,
all adults, admitted at the IPK hospital during
the epidemic participated in the study. Dengue
infection was serologically confirmed by
specific IgM detection\cite{7}. Ten patients (21.3%)
had developed shock during illness. Patients
included in the study after informed consent
were interviewed. Several tests were carried
out.

**Clinical data**

Patients were asked on the duration of the
clinical manifestations presented during the
acute phase until 6 months after the onset of
illness.

**Humoral study**

Haemoglobin, haematocrit, platelet count, liver
enzymes (aspartate and alanine aminotransferase), white blood cells count (WBC),
creatine and urinalysis were studied in each
individual. The results obtained were compared
with those recorded during acute illness.

**Imagenological study**

Chest radiographies and an abdominal
ultrasound were made of each individual in
order to find if the abnormalities during acute
illness had disappeared or not.

All the 47 medical records were reviewed
to determine the symptoms/signs and the
humoral and imgenological alterations
presented during the acute phase of the disease.

**Results**

**Medical record review and medical
interview six months after acute
illness**

All patients studied were adults. The youngest
case was 16 years old and the oldest was 64.
The maximum incidence was seen in the ages
25 to 44 years (35 cases, 74.4%). Thirty-one
patients were male and sixteen were female.

Twenty-two (46.8%) cases reported some
dengue symptoms six months after acute phase
of illness, asthenia (27.6%), headache (14.8%)
and arthralgia (10.6%) being the most frequent
symptoms. Patients also referred myalgia,
dizziness and retro-ocular pain at a lower
frequency (Table 1). All these symptoms were
referred to with an irregular appearance, not
constantly, and mostly related to physical or
mental exercising.
Humoral study

At the moment of this study, 100% of patients had achieved normal parameters for anaemia, thrombocytopenia, leukocyturia and haematuria. Four patients still had slight increase in liver enzyme (aspartate aminotransferase between 44 to 99 u/l and alanine aminotransferase 43 to 63 u/l). Slight leukopenia was found in three cases. Two patients, who presented creatinine elevation, exhibited abnormal values during this study. In all cases the elevation of the creatinine levels during the acute phase and six months after were within normal limits (between 110 and 130 mmol/l) (Table 4).

Imagenological study

The imagenological findings observed during the acute illness were pleural effusion (10 cases), thickening of the gall bladder wall (9 cases), splenomegaly (3 cases), hepatomegaly (1 case) and ascites (1 case). At the moment of this study, 100% of the patients did not show any of the imagenological findings reported previously.

Discussion

Dengue, particularly DHF/DSS, constitutes one of the most important public health problems nowadays. The critical phase of DHF/DSS, observed on the third or fourth day after the onset of fever, almost always coincides with defervescence and appearance of those manifestations that define the haemorrhagic dengue such as haemorrhages and plasma leakage. After the seventh day, the patient starts a progressive recovery.

This study describes the recovery or convalescence phase in a group of DHF/DSS patients infected by DENV-3 during the Havana epidemic.
city epidemic, 2001–2002. The virological studies carried out at different stages of the epidemic revealed the circulation of DENV-3. After March 2002, no dengue circulation has been demonstrated in Cuba; therefore, this study makes reference to the clinical phase of DHF caused by this specific serotype.

Almost half of the interviewed cases were still presenting symptoms 6 months after the acute phase of illness (Table 1). These observations suggest that the convalescence period of haemorrhagic dengue can last several months. However, in this study there were no control groups (e.g. classical dengue cases or non-dengue cases); therefore, it is difficult to confirm statistically if the symptoms at six months are actually associated with haemorrhagic dengue or not.

Table 2. Clinical manifestations reported by patients of DHF/DSS in the first month after acute illness

<table>
<thead>
<tr>
<th>Clinical manifestations</th>
<th>1st week no (%)</th>
<th>2nd week no (%)</th>
<th>3rd week no (%)</th>
<th>4th week no (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>47 (100)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Headache</td>
<td>45 (95.7)</td>
<td>14 (29.7)</td>
<td>13 (23.4)</td>
<td>13 (23.4)</td>
</tr>
<tr>
<td>Myalgia</td>
<td>36 (76.5)</td>
<td>12 (25.5)</td>
<td>8 (17)</td>
<td>3 (6.3)</td>
</tr>
<tr>
<td>Arthalgia</td>
<td>36 (76.5)</td>
<td>16 (34)</td>
<td>12 (25.5)</td>
<td>7 (14.8)</td>
</tr>
<tr>
<td>Asthenia</td>
<td>32 (68)</td>
<td>25 (53.1)</td>
<td>19 (40.4)</td>
<td>17 (36.1)</td>
</tr>
<tr>
<td>Vomiting</td>
<td>29 (61.7)</td>
<td>1 (2.1)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Retro-ocular pain</td>
<td>27 (57.4)</td>
<td>4 (8.5)</td>
<td>4 (8.5)</td>
<td>2 (4.2)</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>23 (48.9)</td>
<td>3 (6.3)</td>
<td>2 (4.2)</td>
<td>0</td>
</tr>
<tr>
<td>Petechiae</td>
<td>23 (48.9)</td>
<td>10 (21.2)</td>
<td>2 (4.2)</td>
<td>0</td>
</tr>
<tr>
<td>Rash</td>
<td>21 (44.6)</td>
<td>7 (14.8)</td>
<td>4 (8.5)</td>
<td>0</td>
</tr>
<tr>
<td>Gum bleeding</td>
<td>21 (44.6)</td>
<td>9 (19.1)</td>
<td>5 (10.6)</td>
<td>2 (4.2)</td>
</tr>
<tr>
<td>Nausea</td>
<td>20 (42.5)</td>
<td>2 (4.2)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Anorexia</td>
<td>19 (40.4)</td>
<td>16 (34)</td>
<td>8 (17)</td>
<td>3 (6.3)</td>
</tr>
<tr>
<td>Itch</td>
<td>16 (34)</td>
<td>10 (21.2)</td>
<td>4 (8.5)</td>
<td>1 (2.1)</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>16 (34)</td>
<td>1 (2.1)</td>
<td>1 (2.1)</td>
<td>0</td>
</tr>
<tr>
<td>Intestinal bleeding</td>
<td>14 (29.7)</td>
<td>4 (8.5)</td>
<td>2 (4.2)</td>
<td>0</td>
</tr>
<tr>
<td>Vaginal bleeding</td>
<td>10 (21.2)</td>
<td>3 (6.3)</td>
<td>2 (4.2)</td>
<td>0</td>
</tr>
<tr>
<td>Epistaxis</td>
<td>8 (17)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dizziness</td>
<td>5 (10.6)</td>
<td>4 (8.5)</td>
<td>3 (6.3)</td>
<td>2 (4.2)</td>
</tr>
</tbody>
</table>
There are scarce reports on the duration of the symptoms and the humoral and imagenological alterations occurring during the disease. Longer duration of some symptoms, liver cytolysis and sonographic findings were reported during the DENV-2 Santiago de Cuba epidemic of 1997[9].

The normalization of temperature and the laboratory parameters have been reported after one week of the onset of symptoms, except for liver enzymes which normalized after one month[10]. Other authors report that Alanine aminotransferase and Asparate aminotransferase normalize their values in approximately three weeks[11].

The abnormal values of liver enzymes, WBC and creatinine in some of the patients cannot be clearly explained because of the time elapsed between the hospital discharge and the present study. It was impossible to define if those alterations persisted since the acute disease or if they normalized at any moment and how they responded to other conditions different to DHF/DSS.

The description of other symptoms referred by patients as “dengue-related” was of interest. Many of these symptoms could be explained by the presence of psychological alterations, considering the severity of the disease. Insomnia, depression and talking disorders have been described in young adults after the first week of the disease[12]. The results of the study suggest that some signs and symptoms can persist weeks later after DHF/DSS. However, further studies, including a large sample and a control group, are needed to clarify the real relationship between haemorrhagic dengue and these manifestations.
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References


