

## CASE REPORT

### DENGUE IN AN ELDERLY PATIENT

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#### SUMMARY

Although elderly populations are more exposed to the risk of getting dengue, the clinical peculiarities of this disease in this age range are not well known. This report is about an 80-year-old woman with dengue complications, self-medicated with salicylate. Literature indicates a more severe clinical condition, high hospitalization rate and significant mortality. This is caused by previous infections by other serotypes of this arbovirus, presence of chronic diseases, immunosenescence and high drug consumption, especially salicylates and the like. Analyses are required in a public health perspective in order to help health professionals that care for patients with dengue in this age range.

**KEYWORDS:** Dengue; Elderly; Iatrogenesis; Drugs; Communicable Diseases.

#### INTRODUCTION

Dengue, a feverish acute disease caused by *Flavivirus*, is among the most frequent arboviruses in tropical regions. Nowadays, four antigenically different kinds of serotype (DEN-1 to 4) are known, and their main vector, the *Aedes aegypti*, presents great adaptability to urban environments. Dengue's clinical scope ranges from non-specific and benign virus syndromes to severe and fatal conditions with hemorrhagic displays and shock. The risk of developing a higher clinical severity is related to the type of infecting strain, the patient's genetics and immunity, co-morbidities and previous infections with other dengue serotypes. The presence of different serotypes at the same time, as has been the case in Brazil since 2001, increases the presence of more severe clinical forms of the disease. Regardless of the region, dengue epidemics cause a high number of cases and deaths yearly<sup>8,25,31,33</sup>.

Dengue strikes all ages, and its peculiarities in clinical situations and its complications related to the elderly are not well known. An internet search made in July 2008 with the keywords "Dengue" and "Elderly" in MEDLINE (<http://www.nlm.nih.gov>) and in Scientific Electronic Library Online - SciELO (<http://www.scielo.br>) found, among 740 articles, only nine studies which focused on or had notes related to patients over 60 years of age<sup>10,13-15,20,21,24,32,39</sup>. The study by GARCIA-RIVERA & RIGAU-PEREZ<sup>10</sup> (2003) is the only one which reported clinical aspects of dengue in the elderly. This study observed a prevalence of 4.65% of patients who were 65 years old or over in 17,666 cases of dengue, and concluded that the elderly had a higher risk of complications, hospitalization and death.

Another search performed on the same internet sites, during the same period, with the keywords "Dengue" and "Acetylsalicylic acid" found, among 10 articles, two case reports of complications caused by the use of acetylsalicylic acid in adults, both of whom were under 60 years of age<sup>16,34</sup>.

As shown in this case report, more clinical studies into dengue and the elderly are needed, especially ones mentioning the risk of complications related to the use of drugs that can potentially cause hemorrhages.

#### CASE REPORT

E.C.G., 84 year-old female, widow, retired, born in the city of São Paulo, living in Ubatuba for two years.

Treated by the Geriatrics Out-Patient Department since April 17, 2001 due to a depressive condition, arterial hypertension, osteoarthritis, intestinal constipation, cerumen, and recurrent dizziness. In her clinical follow-up, she presented many episodes of falls and developed urine incontinence. She was medicated with anti-depressant, benzodiazepine, anti-hypertensive, and tiazine drugs. She did not use salicylate due to its association to the appearance of epigastralgy. She mentioned that she had had a sudden fever on August 02, 2006, which was not measured, related to a strong holocranial cephalgia, chills, and asthenia, followed by nausea and vomiting. She looked for assistance at the local emergency room (ER) the following day, where she was re-hydrated and discharged on the same day, with a partial improvement of the

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The study was conducted at Dom Pedro II Geriatric and Convalescent Hospital (*Hospital Geriátrico e de Convalescentes Dom Pedro II*), Gerontology Discipline in the Internal Medicine Department at Santa Casa de São Paulo, Faculty of Medical Sciences, São Paulo, SP, Brazil.

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symptoms. Due to the persistence of cephalgia, the patient took 500 mg salicylate tablets for at least two days after being discharged from the ER. Because she still exhibited symptoms, she went to São Paulo (to stay with a relative), where skin and eye lesions appeared, which led her to look for another medical service. She also mentioned that her housekeeper had similar symptoms. When she was admitted to the hospital on August 09, 2006, she was conscious, lucid, shivering, with bilateral hyphema, bruises on the upper limbs, and petechias on the lower limbs. Her blood pressure was 110/70 mmHg, with heart rate of 78 bpm, axillary temperature of 36.0 °C. Tourniquet test results were positive. Thorax without abnormalities and palpable spleen one finger below the edge of the costal margin. She was hydrated with a 0.9% saline solution, and her temperature ranged from 36.0 °C to 36.5 °C, presenting symptoms as shown in lab results given in Table 1 during hospitalization and further clinical follow-up. She was discharged from the hospital on August 13, 2006 with no complications. On her being discharged, the patient's relatives mentioned that *Aedes aegypti* had been detected in a cemetery near her residence. They also mentioned that other dengue cases had been confirmed in the city of Ubatuba, including the case of her housekeeper. When returning for her clinical follow-up on December 14, 2006, she was informed that the Geriatrics Department was interested in publishing her case, where she signed the Free Informed Consent Form requested by the Ethics in Human Beings Research Committee of the Institution (Project no. 002/07).

## DISCUSSION

Recent urbanization of the Brazilian population in the last few decades is interfering in the Brazilian demographic pattern. The cities present dwellings, employment patterns, and access to information and services which promote the reduction of birth and death rates. This is causing a progressive inversion of age proportions. It is estimated that 650,000 Brazilians reach the age of 60 years each year and are included in the elderly age range<sup>9,36-38</sup>.

Aging is becoming a political problem, especially concerning public health. This is caused by the high prevalence of chronic diseases in this age range and, as a consequence, the simultaneous use of several drugs. Thus, there is an increasing risk of hospitalization and/or treatment interruption caused by drug interactions and side effects<sup>11,12,28</sup>.

Vascular diseases, common among the elderly, promote a regular prescription of salicylates and the like to patients of this age range<sup>11,28</sup>. Acute feverish conditions also lead the patients to take the same drugs, mostly by self-medication<sup>7</sup>.

The increase in the aging population and drug consumption along with several coinciding dengue outbreaks is a present problem in Brazil. Authors have addressed the paradoxical coexistence of dengue - which is a disease usually found in underdeveloped regions - and the elderly population in a scenario that is compatible with developed areas<sup>15,32</sup>. Data from the Health Department<sup>3</sup> states that the dengue incidence rate in 2004 was 35.00/100,000 inhabitants in Brazil, and 27.09/100,000 in Brazilians 60 or older. The same source of data shows that in the state of São Paulo, the dengue incidence in 2004 was 8.73/100,000 inhabitants in all age ranges, and of 7.40/100,000 among the elderly. Although both incidences - in Brazil and in the state of São Paulo - present lower figures for the elderly than the population in general, there is no statistical significance ( $p = 2.53$  [Yates]) that differentiates the incidence rates between the two age and/or geographical ranges. The Injury Report Information System (*Sinan, Sistema de Informação de Agravos de Notificação*) registered 62 dengue cases in the city of Ubatuba during 2006, among them five cases of people who were 60 years old or over (8.1% of the total cases reported in the city). Although this case does not appear in Ubatuba's statistics because it was reported in São Paulo, it is shown in the data of the same source as the only case in 2006 of an 80-year old person living in that city<sup>5</sup>.

Patients with epidemiologies compatible with dengue, presenting acute feverish conditions associated with symptoms such as cephalgia, asthenia, nausea and vomiting, followed by hemorrhagic manifestations - spontaneous and with positive tourniquet test results - with minor hemodynamic repercussion considering the arterial hypertension background, were between groups B and C of the disease stage<sup>4</sup>. Laboratorial confirmation was obtained through the method of choice for dengue diagnosis - serology after the sixth day from the onset of the symptoms<sup>4</sup> - in the case reported, collected on the 9<sup>th</sup> and 22<sup>nd</sup> days, respectively, with the presence of IgM, and an expressive increase of IgG (Table 1).

It was not possible to report the initial fever degree because the temperature of the patient was first measured in the hospital seven

**Table 1**  
Lab tests in a case of dengue for an elderly woman

Lab test		August 9, 2006	August 11, 2006	August 13, 2006	August 24, 2006
Hemogram	Erythrocytes	5220000	4650000	4580000	
	Hemoglobin	14.0	14.0	13.8	
	Hematocrit	47.0%	41.2%	40.8%	
	RDW	13.5%	13.2%	13.4%	
	Leukocytes	2100	4600	5300	
	Platelets	121000	74000	117000	
Seric Sodium		134	134	139	
Serology for dengue			IgM 2.4		IgM 3.1
			IgG < 0.9		IgG 5.2

**Table 2**

Cases of dengue in patients over 60 years old. The publications took place due to their rare complications, and not because of the patients' age

Author(s)	Publication year	Age (years)	Gender	Clinical condition	Evolution
VASCONCELOS <i>et al.</i> <sup>35</sup>	1998	86	Female	Meningism Encephalitis + shock	Remission
		67	Female		Death
NOGUEIRA <i>et al.</i> <sup>26</sup>	2002	67	Male	Encephalitis	Remission
HORTA VELOSO <i>et al.</i> <sup>17</sup>	2003	61	Male	Myocarditis + Atrial fibrillation	Remission
CHEN <i>et al.</i> <sup>6</sup>	2004	66	Female	Pancreatitis	Remission
McBRIDE <sup>24</sup>	2005	70	Male	Melena + shock	Death
BASÍLIO-DE-OLIVEIRA <i>et al.</i> <sup>1</sup>	2005	63	Male	Dengue hemorrhagic fever + shock	Death
KARAKUS <i>et al.</i> <sup>18</sup>	2007	66	Male	Rhabdomyolysis + shock	Death

days after the onset of the symptoms. During that period (one week of hospitalization) it was possible to determine the patient's baseline temperature<sup>4</sup>. However, it is important to mention that people in their 80's are more likely to present lower baseline temperatures and lower feverish conditions than young adults<sup>19,22</sup>. The temperature measured on the first day of hospitalization was 36.0 °C, compatible with the rule proposed by ROGHMANN *et al.*<sup>29</sup> - subtraction of 0.15 °C in baseline temperature for each decade after 20 years of age, that is: 36.8 °C - 0.90 °C (six decades x 0.15 °C) = 35.9 °C, a result near to the one observed in this case. Taking the feverish dengue pattern into consideration once again<sup>4</sup>, or using the criterion suggested by NORMAN & YOSHIKAWA<sup>27</sup>, in which fever in the elderly is a body temperature increase of at least 2°F (1.1 °C) over baseline values, regardless of the measurement technique (oral, rectal, axillary or auricular), the patient did not present fever during hospitalization, which confirms the one-week evolution of the disease.

Once the feverish period has ended, there is a possibility of hemorrhagic displays like epistaxes, petechias, gingivorrhagias, and maybe hematemesis, melena or hematuria<sup>15</sup>. That risk became more evident due to the ingestion of salicylate for two days<sup>2</sup>, which led to her hospitalization.

A final diagnostic hypothesis was due to the clinical profile and the evolution of the illness, either being classic dengue and/or complicated dengue due to the use of salicylate<sup>4,34</sup>.

Few articles concerning dengue in the elderly were found. TAYLOR *et al.*<sup>32</sup> (1987) and HALSTEAD<sup>15</sup> (1994) discuss the increase of the elderly population in dengue-endemic areas. These authors consider the association between the elderly and dengue a public health problem, because there are high necessities of health assistance in that age range and severe degrees of morbidity and death by the disease. It is important to observe that the elderly, when retired or a widow/widower, as in the case reported, tend to live in seaside/warmer cities, which are prone to the development of dengue epidemics.

MATTOS-ALMEIDA *et al.*<sup>23</sup> (2007) emphasize the fact that the elderly and children, who tend to stay at home longer, are more exposed to *Aedes aegypti* than other age groups. YAMASHIRO *et al.*<sup>39</sup> (2004) and IMRIE *et al.*<sup>14</sup> (2007) found a high percentage of specific IgG to the dengue virus in the cases of patients who were over 60 years old. Other studies confirmed the same occurrence of different serotypes and related it to expressive percentages of severe dengue with hemorrhage

and/or shock<sup>10,13,20,21</sup>. Adding the high prevalence of chronic diseases to that age range, which increased hospitalizations and mortality<sup>10,13,20,21</sup>. Considering that the patient moved to the city of Ubatuba two years before this case report, there is a possibility that it was her first infection, which is probably why complications were not so severe, and suggests salicylate as the stimulating factor for hemorrhages.

The scarce literature concerning dengue and the elderly is also reflected in the number of cases reported individually<sup>1,6,17,18,24,26,35</sup>, usually published due to their rare complications and not explained by the patients' age (Table 2). Only one of these cases described an 80-year old woman<sup>35</sup>.

Two descriptions of the ingestion of acetylsalicylic acid during a dengue infection were found in the sources looked up. When reporting the hospitalization of 24 American soldiers in the Philippines, all between 20 and 43 years old, HAYES *et al.*<sup>16</sup> (1989) discussed a case that developed to shock and high digestive hemorrhage because of the use of salicylate. The other publication<sup>34</sup> describes the case of a 50 year-old Catalan lady who, after traveling to the Caribbean, developed a classic dengue condition with signs of probable hemorrhagic dengue fever degree I, caused by acetylsalicylic acid. According to the authors of the article<sup>34</sup>, the elderly woman had reported taking salicylate on her own account, which also occurred with the patient being reported in this essay. The elderly tend to take unprescribed medications, especially analgesics and antipyretics<sup>30</sup>, a fact that should be considered in endemic dengue areas.

Although more elderly populations are exposed to the risk of getting dengue, the clinical peculiarities of this disease in this age range are not well known, and that motivated this report. Literature consulted indicates more serious clinical conditions, higher hospitalization rates and significant mortality. This was caused by previous infections by other serotypes of this arbovirus, the presence of chronic diseases, immunosenescence, and high drug consumption, especially salicylates and the like. Analyses are required in a public health perspective in order to help health professionals who care for elderly patients with dengue.

## RESUMO

### Dengue em paciente idosa

Embora cada vez mais populações idosas estejam expostas ao risco de contrair dengue, pouco se sabe sobre peculiaridades clínicas desta doença nesta faixa etária, fato este que motivou este relato sobre

octogenária com dengue agravada por automedicação de salicilato. A literatura consultada aponta para quadro clínico mais grave, elevado índice de hospitalizações e mortalidade significativa. Deve-se isto a infecções prévias com outros sorotipos desta arbovirose, presença de doenças crônicas degenerativas, imunosenescência e alto consumo de medicamentos, particularmente salicilatos e similares. Análises, sob a ótica da saúde pública, são necessárias para auxiliar aos profissionais de saúde que assistem pacientes com dengue nesta faixa etária.

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