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CLINICAL-EPIDEMIOLOGICAL PROFILE OF ARBOVIROSIS ZIKA IN THE MUNICIPALITY OF MARABÁ, FROM 2012 TO 2016

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INTRODUCTION

Arboviruses are diseases known to be transmitted to humans and other animals through the bite of hematophagous arthropods. Within the group of arbovoritic infections, Chikungunya, Dengue, Yellow Fever and Zika have stood out for having a great impact on public health, since, in addition to causing serious clinical conditions, they can trigger epidemic outbreaks with major social and economic shocks. The symptoms caused by these diseases are very similar and range from undifferentiated, moderate or severe fever, skin eruptions and arthralgia, hemorrhagic syndrome and other manifestations.

Zika is a pathology that can be prevented, however, there has been a persistence of cases of these diseases in Brazil since they were introduced in 2015. This fact points to serious deficiencies in programs, surveillance and control bodies that aim to reduce the occurrence of cases of these diseases in the country. At the regional level, we have the state of Pará identified as one of the states with a high risk of arbovirus epidemics and at the local level, the city of Marabá is included among the cities in southeastern Pará with the highest incidence of Zika. Such findings demonstrate the importance and need for a study that outlines the panorama and the clinical-epidemiological profile of this arbovirus in the municipality, in the pursuit of at the same time providing contributions to satisfy the lack of research on these diseases at the local level and to provide that promotion actions and prevention are more effective.

METHODOLOGY

Descriptive, retrospective study with a quantitative and analytical approach, which used secondary data from the Notifiable Diseases Information System (SINAN) provided by the Department of Epidemiological Surveillance of the Municipal Health Secretariat (SEMSA) of Marabá, to identify the clinical profile -epidemiology of the Chikungunya arbovirus in the period from 2012 to 2016.

The data obtained were tabulated using Microsoft Excel 2010 and analyzed using the BioEstat version 5.3 program using ANOVA 1 and 2 criteria (post Tukey test), G test and Chi square test. Significance level was considered when the probability (p) of the occurrence of the event was $p > 0.05$.

RESULTS

During the period from 2012 to 2016, the National System of Diseases and Notifications (SINAN) in Marabá reported 116 suspected cases of Zika, of which 14 (12%) were confirmed for the disease. Notifications occurred only in 2015, the year in which there were the first notifications of the disease in Brazil, and in 2016. In 2015, 4% (5/116) of suspected cases were reported and there was no confirmation, and in 2016 there were 111 (96%) notifications and 14 (12%) confirmed cases.

Data referring to gender, in the period from 2015 to 2016, presented notification in the female gender with greater frequency, representing 95.7% (96 ± 37.5), while the male gender obtained 4,3% (20 ± 0,5) (x^2 0,05;1 = 3.8541; p=0.0496). In both years the number of women notified was greater than the number of men, in 2015 3 women and 2 men were notified, while in 2016 18 men and 93 women were notified (Table 1).

Epidemiological variables represented in relative and absolute frequency.

GENDER	2015	2016	Total	%
Masculine	2	18	20	4.3
Feminine*	3	93	96	95,7
TOTAL	**5**	**111**	**116**	**100**

*p=0,0496

Table 1 – Notifications by gender represented in relative and absolute frequency of Fever by Zika Virus, in Marabá-PA, between the years 2015 and 2016.

Source: SINAN/Municipal Health Department of Marabá, 2018.

The predominant age group was 20 to 34 years old, corresponding to 51.72% (60 ± 28) of the notifications, followed by the 35 to 49 years old and 15 to 19 years old age groups, which represented, respectively, 18.10% (21 ± 7, 5) and 12.06% (14 ± 7). Children under one year represented 6.03% (7 ± 3.5), 1 to 4 years 4.31% (5 ± 2.5), 5 to 9 years 3.44% (4 ± 2), 50 to 64 years 2.58% (3 ± 1.5) and 10 to 14 years 1.72% (2 ± 1) (x20,05;7= 58.3112; p < 0.0001). In 2015 there were only notifications for the 20 to 34 years old and 35 to 49 years old groups representing, respectively, 2 and 3 suspicious notifications. In 2016, all ranges were notified (Table 2).

AGE GROUP	2015	2016	Total	%
<1 year	0	7	7	6.03
1 to 4	0	5	5	4.31
5 to 9	0	4	4	3.45
10 to 14	0	2	2	1,72
15 to 19	0	14	14	12.07
20 to 34*	2	58	60	51.72
35 to 49	3	18	21	18.1
50 to 64	0	3	3	2.6
TOTAL	**5**	**111**	**116**	**100**

* p < 0.0001

Table 2 - Notifications by age group represented in relative and absolute frequency of Fever by Zika Virus, in Marabá-PA, between the years 2015 and 2016

Source: SINAN/Municipal Health Department of Marabá, 2018

With regard to race/color, there was a predominance of notifications in browns, which represented 76.72% (89 ± 40.5), then whites represented 18.10% (21 ± 9.5), ignored cases, blacks and yellow represented 1.72% (2 ± 1) each, but without statistical significance ($x^2_{0.05;7}$ = 5.5836; p=0.2325). In 2015 there was 1 notification in whites and 4 browns. In 2016, ignored cases, in yellow and black totaled 6 notifications, on the other hand, whites totaled 20 and browns 85 notifications (Table 3).

BREED	2015	2016	Total	%
Ing/White	0	2	2	1.8
White	1	20	21	18.1
Black	0	2	2	1.7
Yellow	0	2	2	1.7
Brown	4	85	89	76.7
TOTAL	**5**	**111**	**116**	**100**

*p=0.2325

Table 3 – Notifications by race represented in relative and absolute frequency of Fever by Zika Virus, in Marabá-PA, between the years 2015 and 2016.

Source: SINAN/Municipal Health Department of Marabá, 2018.

Regarding education, individuals who had completed high school predominated, representing 9.48% (11 ± 4.5), 50% (58 ± 29) of the forms were left blank and 12.93% (15 ± 7.5) do not apply. Individuals who did not complete elementary school II, high school, higher education and elementary school represented, respectively, 7.75% (9 ± 4.5), 5.17% (6 ± 3), 3.44% (4 ± 2), 2.58% (3 ± 0.5). Those who completed higher education, all elementary and elementary I, represented respectively 5.17% (6 ± 0), 2.58% (3 ± 0,5) e 0,86% (1 ± 0,5) ($x^2_{0,05;9}$ = 146.0611; p < 0.0001) (Table 4).

SCHOOL	2015	2016	Total	%
Ing/White	0	58	58	50
Incomplete 1st to 4th grade of elementary school	1	2	3	2.6
4th complete grade of elementary school	0	1	1	0.86
Incomplete 5th to 8th grade of elementary school	0	9	9	7.7
Complete primary education	0	3	3	2.6
Incomplete high school	0	6	6	5.2
Complete high school	1	10	11	9.5
Incomplete higher education	0	4	4	3.44
Complete higher education	3	3	6	5.2
Not applicable*	0	15	15	12.9
TOTAL	**5**	**111**	**116**	**100**

* $p < 0.0001$

Table 4 – Notifications by level of education represented in relative and absolute frequency of Fever by Zika Virus, in Marabá-PA, between the years 2015 and 2016.

Source: SINAN/Municipal Health Department of Marabá, 2018.

DISCUSSION

The data provided by the Epidemiological Surveillance of Marabá are consistent with the Epidemiological Report of the Secretariat of Public Health of Pará in 2015, but in 2016 the data differ, while the files show only 14 confirmations, the Report points to 71 confirmed cases. In any case, the notifications of suspected cases of Zika were not very expressive in the municipality, in the first year of registration of the circulation of the infection in the country, there were no confirmed cases and in the following year, according to the Epidemiological Surveillance of Marabá, only 12% obtained confirmation (MARABÁ, 2017).

It is noteworthy that most of the forms are discarded and most of them are inconclusive, a condition that may be related to the circulation of other diseases, difficulty in differential diagnosis, lack of rapid tests, limitations in immunobiological tests and failure to fill in the notification forms, since, significant amounts of data were left blank or ignored.

Therefore, it is necessary to have a more detailed anamnesis on the part of the professionals responsible for the clinical-epidemiological investigation to avoid and/or minimize the high number of inconclusive or ignored results, as well as to determine a more accurate investigation of the actual diagnosis. In the same way, advances in studies for the development of rapid tests are necessary for application in clinical practice, being used as support by these professionals for more agile and safer results.

Due to the aforementioned incompleteness, it was not possible to estimate the statistical significance of autochthonous cases, since 78% of the forms were ignored for this variable, as well as the evolution of cases, since in 2015 none of the forms was completed for this variable. In view of the above, this becomes a plausible objective and is of paramount importance to be explored in future work, contributing to the work of Epidemiological Surveillance and, consequently, to the health of the Marabá population.

Another challenge found comes from the recent insertion of the virus in Brazil, its difficult diagnosis and because its impact on public health is more expressively related to its neurological effects. As a result,

research involving zika virus focuses on its relationship with diseases such as Guillan-Barré Syndrome and Microcephaly in fetuses of infected women.

For these reasons, few studies address the social impact of acute infection and no studies were found that delineate its epidemiological clinical profiles. However, because it has similar clinical manifestations and the same vector, comparisons will be made based on clinical-epidemiological studies of other arboviruses from different regions of the country and America.

Outlining the sociodemographic profile, the female gender was predominant in the last two years, representing 95.7%. This result differs from that found by Tabile et al (2014) in the Yellow Fever (YF) outbreak in 2009 in the municipality of Santa Cruz do Sul (RS), where males predominated in 70% of cases. Likewise, Neto et al (2017) recorded 100% of the cases of YF in men from Imbé de Minas and Assunção and Aguiar (2014) recorded a smaller difference, 51.4%, still with a prevalence of males in the dengue profile traced in the municipality of Juscimeira (MT), but without justification.

Other authors report the predominance of disease transmission among women, such as the results found by Travassos da Rosa (2000) in Belém-PA (54%), by Guollo et al. (2015) in Cuiabá-MT (53%), by França et al. (2011) in Jaciara-MT (58%), by Costa (2011) in Coari-AM (54%) and by Silva et al. in Paripiranga-BA (67%). However, the results are not as expressive as reported in the present study.

The justification for the greater occurrence in women, according to França et al., (2011), is due to the fact that in the Amazon, a developing area, the home environment is occupied longer by the female sex, a place which, after urbanization, became be preferred by the vector for offering favorable conditions. Another factor would be women looking more for health services (case notifiers).

The age group of 20 to 34 years predominated in 51.72% of the notifications, corroborating with a study carried out in Juscimeira-MT by Assunção and Aguiar (2014). Generally, this pattern is established in arbovirus-free areas (NETO & REBÊLO, 2004).

Tabile et al (2014), Mendez et al (2017) and Neto et al (2017) did not use the standard established by the notification forms in their studies and used the mean age of the patients as a basis, obtaining numbers close to, but higher than, the age range of the present study, with the exception of the registry in Mérida. Therefore, in Santa Cruz do Sul-RS the average was 38.5 years, in Imbé de Minas-MG 35 years and in Mérida-México the average is inserted within the range of 20 to 34 years, being 27.4 years.

The predominant race/color was brown, with 76.72% different from that found in Imbé de Minas, by Neto et al (2017), where the most expressive race was white (50%). This high rate found in the municipality can be justified, according to IBGE data (2011), by the state of Pará, as well as the northern region of Brazil, with a predominantly brown population.

Analyzing education level, 50% of the forms were ignored for this variable, not allowing a conclusive result. Excluding the ignored forms, the predominance occurred in individuals who had completed high school (9.48%). Corroborating the result of the analysis carried out from 2009 to 2010 by Assunção and Aguiar (2014) in Juscimeira-MT, however, in the 2011-2013 interval of the same study, those affected with elementary education prevailed.

Cunha and Hamad (2015), in a study carried out with 515 families in Campina Grande-PB to analyze the occurrence of dengue and its relationship with the

environment, also found a greater number (47.14%) of infections in individuals with fundamental, largely incomplete, noting that the lower the level of education, the greater the risk of contamination.

Considering the evolution of the cases, 78% evolved to cure. Similar results were found by Tabeli et al (2014) in Santa Cruz do Sul (RS) where 80% were cured. In Mérida, Mendes et al (2017) recorded only one death from Chikungunya, in Imbé de Minas the evolution to cure occurred in 50% of cases.

The criterion of laboratory confirmation predominated in the present study (41%), as Assunção and Aguiar (2014) pointed out in Juscimeira, according to the researchers, the request for supporting tests must be in accordance with the epidemiological period. Therefore, in non-epidemic periods, all suspects must undergo it, while in epidemic periods, only cases with the most alarming symptoms must be submitted.

CONCLUSION

The epidemiological clinical profile of Zika virus fever reports was concentrated in women (95.7%), young adults aged 20 to 34 years (51.72%), brown race (76.72%) with complete high school (9.48%), most contaminations (41%) being confirmed or ruled out by laboratory criteria. The incidence of notifications was 0.43%, as well as the prevalence and morbidity, since all cases were new, since the lethality rate could not be calculated, due to the lack of notification of death due to contamination in the period of study.

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