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Zika virus: clinical manifestations and treatment at a primary care institution in Colombia

Virus del Zika: manifestaciones clínicas y tratamiento en una institución de primer nivel en Colombia

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Abstract

Introduction: Although Zika virus cases have been reported in Colombia since 2015, its clinical and pharmacological characteristics have not yet been described.

Objective: To describe the main clinical manifestations and sociodemographic characteristics of patients diagnosed with Zika and the treatment provided to them at a primary care hospital in a municipality of Colombia.

Materials and methods: Descriptive cross-sectional study. The study population consisted of patients diagnosed with Zika between January 1 and July 25, 2016 at a primary care hospital. Sociodemographic, clinical, and pharmacological variables, as well as adverse clinical outcomes associated with the infection were included. Descriptive statistics were performed. A χ^2 test was used for categorical variables, and a multivariate analysis was conducted using Epi info 7.1 software.

Results: 254 individuals infected with Zika virus during the study period were identified, and Zika diagnosis was more frequent in women (68.5%). Regarding treatment, 90.9% of the cases were treated using acetaminophen. The most commonly reported symptoms were rash (81.1%) and pruritus (55.9%). In addition, antihistamines were the most frequent comedication (31.9%). Factors such as being a woman, being pregnant and inpatient treatment were associated with adverse clinical outcomes.

Conclusion: The clinical manifestations described here are similar to those reported in other populations. Furthermore, inappropriate pharmacological management practices that can lead to complications in this population, such as bleeding, were observed in some cases. Thus, educational interventions on the proper prescription of medications for treating this disease aimed at general physicians working in Zika affected areas must be implemented to improve the prognosis of these patients.

Keywords: Zika Virus; Acetaminophen; Anti-Inflammatory Agents; Drug Therapy; Epidemiology (MeSH).

Resumen

Introducción. Aunque el virus del Zika está presente en Colombia desde el 2015, sus características clínicas y farmacológicas aún no han sido descritas.

Objetivo. Describir las principales manifestaciones clínicas y características sociodemográficas de pacientes diagnosticados con zika, así como el tratamiento que recibieron en un hospital de primer nivel.

Materiales y métodos. Estudio descriptivo de corte transversal. La población estuvo constituida por los pacientes diagnosticados con zika entre el 1 de enero y el 25 de julio de 2016 en un hospital de primer nivel. Se incluyeron variables sociodemográficas, clínicas y farmacológicas, además de los resultados adversos clínicos y paraclínicos asociados a la infección. Se realizó estadística descriptiva; para las variables categóricas se usó la prueba χ^2 y el análisis multivariado se realizó a través del programa Epi Info 7.0.

Resultados. Se identificaron 254 pacientes con zika, siendo más frecuente en mujeres (68.5%). El 90.9% de la población recibió tratamiento con acetaminofén. Los síntomas más comunes fueron sarpullido (81.1%) y prurito (55.9%). Además, los antihistamínicos fueron la comedición más frecuente (31.9%). Los factores asociados con resultados clínicos y paraclínicos adversos fueron ser mujer, estar embarazada y tener manejo intrahospitalario.

Conclusión. Las manifestaciones clínicas encontradas fueron similares a las reportadas en otras poblaciones. En algunos casos se observó un manejo farmacológico no recomendado, lo que puede generar complicaciones como sangrados; en consecuencia, se deben implementar intervenciones educativas sobre la prescripción adecuada de medicamentos para tratar esta enfermedad, dirigidas a médicos generales que trabajen en regiones afectadas por el zika para, así, mejorar el pronóstico de estos pacientes.

Palabras clave: Virus Zika; Acetaminofén; Antiinflamatorios; Tratamiento farmacológico; Epidemiología (DeCS).

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Introduction

In Colombia, the first suspected Zika virus (Zikv) infection report was made on September 22, 2015 in the municipality of Turbaco, with a subsequent exponential increase, and a total of 341 confirmed cases registered in epidemiological week 43 of 2015. The virus was found in 36 regions, led by the department of Bolívar with 81 cases.¹ In addition, the epidemiological bulletin of week 24 of 2016, issued by the Colombian National Institute of Health (INS), showed how this pandemic became a public health problem after reporting 8 500 confirmed cases and 86 446 suspected cases based on clinical manifestations; 70% of these suspected cases were reported in 502 municipalities where the infection was later confirmed in a laboratory.²

The clinical signs and symptoms of Zikv infection consist of conjunctivitis, headache, fever (less than 38.0°C), mild myalgia and arthralgia, rash or maculopapular exanthema with or without pruritus, anorexia, emesis, diarrhea, abdominal pain, lower limb edema, and retro-orbital pain (with less frequency), which last from 2 to 7 days. Fever usually lasts a couple of days and is accompanied by a rash. In general, infection is asymptomatic and self-limited in up to 80% of subjects.^{3,4} However, complicated and rare forms may occur, such as those affecting pregnant or lactating women, or those leading to neurological and ophthalmological complications.⁵

Adequate treatment of Zikv requires dealing with both the syndrome and its complications, which is why it is important to understand the cycle of the virus.^{6,7} Currently, the therapeutic approach is only symptomatic, where drugs, including analgesics and antipyretics, are used. Recently, therapies using antiviral drugs that have been proved to be efficient in the treatment of dengue fever have been attempted, mainly due to the similarity between this condition and Zikv; nevertheless, their efficacy has not yet been proven.^{8,9}

According to the INS, any person with a clinical suspicion of Zikv infection should receive clinical and support management, including adequate hydration and rest. Non-steroidal anti-inflammatory drugs (NSAIDs) and acetylsalicylic acid (ASA) must not be used due to the risk of bleeding, which is similar to that of dengue. Thus, acetaminophen is the only recommended and reliable medication for treatment in the acute phase of the disease.¹⁰

Currently, in Colombia, there is limited information on the epidemiological behavior, clinical characteristics and treatment of Zikv infections, as well as on the variables associated with the impact of this disease on the population diagnosed with it.^{10,11} Therefore, this study was conducted to describe clinical manifestations, sociodemographic characteristics, treatment, and adverse clinical outcomes in patients diagnosed with Zikv disease at a primary care hospital in a municipality of Colombia, from January 1 to July 25, 2016.

Materials and methods

A descriptive cross-sectional study was conducted. The sample consisted of patients who attended medical consultation at a primary care hospital in the municipality of

La Virginia, Risaralda, Colombia, and who were initially diagnosed with Zikv based on physical examination and the symptoms reported. The diagnosis was later confirmed through a RT-PCR test. All 254 patients were diagnosed with Zikv disease from January 1 until July 25, 2016, when the INS reported the Zika epidemic was over.¹²

All cases reported in the primary care hospital during the study period were analyzed. The units of analysis were the medical records of the patients who met the inclusion criteria.

Inclusion criteria

Patients of any age and sex who attended medical consultations at a primary care hospital in a municipality of Colombia, who were initially diagnosed with Zikv based on clinical evidence (cases registered in epidemiological report cards of the National Public Health Surveillance System, SIVIGILA), and whose diagnosis was later confirmed through a RT-PCR test from January 1 to July 25, 2016.

Variables

A database was constructed from the information found in the medical records of the patients who met the inclusion criteria. The records were retrieved from the hospital database and the epidemiology department information recording systems by using ICD10 codes and the SIVIGILA epidemiological report cards for reporting Zikv cases. After the hospitals consented the use of the data, they were entered into an information collection instrument designed through the Epi Info 7.1 software (for Windows). The following variables were obtained:

1. Sociodemographic variables:

Sex, age (years), marital status (single/others), place of origin (urban/rural) and type of enrollment to the General System of Social Security in Health (SGSSS) [subsidized, contributory, linked regime (please note that the latter is for the population that does not have the means to pay for health insurance coverage and is not yet enrolled in the subsidized regime)].

2. Clinical variables:

General: pregnant (yes/no), type of medical service consulted (emergency or outpatient consultation).

Clinical manifestations (yes/no): rash, pruritus, arthralgia, headache, conjunctivitis, asthenia, myalgias, retro-ocular pain, diarrhea, abdominal pain, edema, emesis, bleeding, lymphadenopathy, neurological deficit, rhinorrhea, dehydration.

Vital signs: respiratory rate (breaths per minute), heart rate (beats per minute), temperature (°C), blood pressure (mmHg). The following values were considered as cut-off points for defining abnormalities: tachycardia: heart rate >100 beats per minute; tachypnea: respiratory rate >20 breaths per minute; fever: temperature >38.0°C; hypotension: systolic blood pressure <90 mmHg and diastolic blood pressure <60 mmHg. Laboratory tests (yes/no): blood count, C-reactive protein, urinalysis, and others.

Comorbidities (yes/no): hypothyroidism, hyperthyroidism, obesity, hypertension, diabetes, human immunodeficiency

- virus infection (HIV), epilepsy, allergies, chronic obstructive pulmonary disease (COPD), chikungunya virus infection, dengue, malaria, smoking, depression.
3. Pharmacological variables:
Did the physician prescribe any medication? (yes/no): Name of the medication; characteristics of the medication such as formulation, concentration and dosage were considered for each medication.
Consumption of medications (self-medication) for symptom management prior to consultation (yes/no): Name of the medication.
Comedication (yes/no): name of the medication. In this study, comedication is defined as the use of medications for patient-based pathologies different than Zikv symptoms.
4. Adverse clinical outcomes (yes/no): anemia (hemoglobin <11.5 mg/dL), hematocrit (%), leukopenia (<4 000 leukocytes/mL), leukocytosis (>10 000 leukocytes/mL), neutrophilia (>8 000 neutrophils/mL), neutropenia (<2 000/mL), thrombocytopenia (<150 000/mm³), gestational or fetal/neonatal adverse outcomes (yes/no, and name of the adverse outcome), and hospitalization (yes/no).

Statistical analysis

The Epi Info 7.0 statistical software for Windows was used to analyze the data. Descriptive statistics were performed: frequencies and proportions were used for categorical variables, and measures of central tendency and dispersion were used for continuous variables. χ^2 tests were carried out to compare categorical variables. In addition, p values, OR, and confidence intervals were included. A binary logistic regression model was applied where the adverse clinical outcomes associated with Zikv infection were considered as a dependent variable; adverse clinical outcomes that were associated in a statistically significant way in the bivariate analyzes were regarded as independent variables. A $p<0.05$ value was determined as a level of statistical significance.

Reduction of selection biases was achieved by analyzing the information of the all population included in the study; in contrast, a $p<0.05$ value was established for information and confusion bias, which is stricter than the Hosmer-Lemeshow test to reduce overestimation of results.

This study is considered as a “risk-free research” according to Resolution No. 8430 of 1993, issued by the Colombian Ministry of Health,¹³ which establishes scientific, technical, and administrative standards for health research. Likewise, the present study followed the ethical principles for medical research of the Declaration of Helsinki.¹⁴ Additionally, it was granted ethical approval by the Bioethics Committee of Universidad Tecnológica de Pereira as stated in Minutes 23 of December 12, 2016.

Results

In total, 254 patients were diagnosed with Zikv infection from January 1 to July 25, 2016 were found. Diagnosis was more common in women (male-to-female ratio = 2.2:1), and the mean age of the sample was 29.4±18.1 years. The main sociodemographic characteristics of the population are shown in Table 1.

Table 1. Socio-demographic characteristics of patients with Zika virus treated at a primary care hospital in Colombia, 2016.

Variable			n	%
Socio-demographics	Sex	Female	174	68.5
		Male	80	31.5
	Age	<5 years	18	7.1
		>60 years	19	7.5
	Marital status	Single	188	74.0
		Other	66	26.0
	Origin	Urban	214	84.3
		Rural	40	15.7
	SGSSS*	Subsidized	238	93.7
		Others	16	6.3

* General System of Social Security in Health.
Source: Own elaboration.

The most frequent clinical manifestations included rash, pruritus and arthralgias. The main symptoms, clinical characteristics, comorbidities, and laboratory results are presented in Table 2.

Table 2. Clinical characteristics, comorbidities and laboratory test results of patients with Zika virus infection treated at a primary care hospital in Colombia, 2016.

Variable			n	%
Clinical manifestations	Rash		206	81.1
	Pruritus		142	55.9
	Arthralgias		100	39.4
	Headache		97	38.2
	Conjunctivitis		96	37.8
	Asthenia		85	33.5
	Myalgias		55	21.7
	Retroocular Pain		39	15.4
	Diarrhea		33	13.8
	Tachypnea		29	11.4
	Abdominal pain		19	7.5
	Tachycardia		17	6.7
	Edema		17	6.7
	Fever		10	3.9
	Emesis		10	3.9
	Hypotension		9	3.5
	Bleeds		7	2.8
	Lymphadenopathy		4	1.6
	Neurological deficit		2	0.8
Clinical characteristics	Pregnant woman		52	20.5
	Service	Emergency room	99	39.0
		Outpatient	155	61.0
	Referral to tertiary care hospital		8	3.2

Table 2. Clinical characteristics, comorbidities and laboratory test results of patients with Zika virus infection treated at a primary care hospital in Colombia, 2016. (continued)

Variable		n	%
Comorbidities	Hypertension	22	8.7
	Allergic	22	8.7
	Obesity	21	8.3
	Diabetes	16	6.3
	Asthma	16	6.3
	Smoker	12	4.7
	Gastritis	10	3.9
	Cancer	7	2.8
	Hypothyroidism	6	2.4
	Others	17	6.8
Laboratory tests	Hemogram	190	74.8
	C Reactive Protein	53	20.8
	Urinalysis	36	14.2

Source: Own elaboration.

In addition, an average of 4833.33 leukocytes per mm³ (95%CI: 4 699.00-5 000.00) was reported in the medical records of the patients included in this research. Regarding hemoglobin, hematocrit, and platelets count, an average of 12.33 g/dL (95%CI: 12.00-13.00), 37.33% (95%CI: 36.00-40.00), and

286 312.9 per mm³ (IC95%: 198 000.0-303 000.00) was found, respectively.

Pharmacotherapy

Five different pharmacological groups were prescribed, namely, antipyretics, antihistamines, rehydration salts, corticosteroids and NSAIDs, being acetaminophen the most commonly used (90.1%), followed by corticosteroids and NSAIDs (3.5% and 0.7%, respectively). Drugs prescribed by attending physicians for the treatment of Zikv infection are depicted in Table 3.

Regarding the use of drugs for treating symptoms prior to consultation at the hospital (self-medication), the medical records of the patients described that 84 (31.9%) reported the use of antihistamines; 21 (8.3%), opioids; 17 (6.7%), antibiotics; 16 (6.3%), antiemetics; 14 (5.5%), vitamins; and 13, anti-ulcers (5.1%). Likewise, 59 more patients (16.3%) used other self-medicated drugs for symptoms management (16.3%) prior to consultation.

146 patients (57.4%) used 1 comedicated drug, 14 (5.5%) used 2 comedicated drugs, and only 2 (0.8%) used 3 or more comedicated drugs. Use of comedication was not described in 92 patients (36.2%).

Adverse clinical outcomes

Regarding variables associated with adverse clinical outcomes, alterations in blood analysis were the most frequent, being anemia the most common finding (18.5%). The main adverse clinical findings are described in Table 4.

Table 3. Prescribed drugs for the treatment of patients with Zika virus infection in a primary care hospital in Colombia. 2016.

Name	Presentation	n	Daily prescription (mean)	Days of duration (mean)	95%CI	
					Lower	Upper
Acetaminophen	Suspension 150mg/5mm	28	3.78	4.14	3.84	4.41
	Tablet 500 mg	203				
Loratadine	Suspension 5mg/ml	8	1.04	5.67	5.06	6.43
	Tablet 10 mg	102				
Rehydration salts	WHO formula	166	1.23	3.45	3.28	3.64
Corticoids			2.33	22.33	7.00	30.00
Dexamethasone	Blister 4 mg	2				
Betamethasone	Ointment 0.05%	1				
Beclomethasone	Inhaler 250 µg	6				
NSAIDs			2.5	2.5	2.00	3.00
Diclofenac	Blister 75 mg	1	1	3		
Naproxen	Tablet 250 mg	1	3	3		

CI: confidence interval; WHO: World Health Organization; NSAIDs: Nonsteroidal anti-inflammatory drugs.

Source: Own elaboration.

Multivariate analysis

A binary logistic regression in the associated variables of the bivariate analysis (described in Table 5) allowed finding that factors like being a woman ($p=0.045$, OR: 2 410.0, 95%CI: 1.018-5.703), being pregnant ($p=0.000$,

OR: 11.077, 95%CI: 4.329-27.938), and being hospitalized ($P=0.006$, OR: 4.995, 95%CI: 1.578 -15.280) were associated with a greater probability of having adverse clinical outcomes.

Table 4. Adverse clinical outcomes in patients with Zika virus infection treated at a primary care hospital in Colombia, 2016.

Variable	n	%
Anemia	47	18.5
Leukopenia	17	6.7
Neutrophilia	11	4.7
Leukocytosis	9	3.6
Neutropenia	8	3.1
Other	5	2.0
Guillain-Barré	2	0.8
Premature rupture of membranes	2	0.8
Abortion	1	0.4
Pneumonia	1	0.4
Thrombocytopenia	0	0.0
No complication	151	59.0
Total	254	100

Source: Own elaboration.

Table 5. Unadjusted analysis of the variables associated with adverse clinical outcomes in patients with Zika virus infection treated at a primary care hospital in Colombia, 2016.

Variable		Clinical alterations % (n)	No clinical changes % (n)	OR Lower	95%CI		p
					Higher		
Sex	Female	39 (68)	61 (106)	5.061	2.373	10.793	0.000
	Male (r)	11 (9)	89 (71)				
Treating service	Emergency (r)	52 (51)	48 (49)	5.272	2.961	9.387	0.000
	Outpatient consultation	17 (26)	83 (129)				
Pregnant women	Yes (r)	81 (42)	19 (10)	20.040	9.187	43.716	0.000
	No	17 (35)	83 (167)				
Gastritis	Yes (r)	80 (8)	20 (2)	10.145	2.101	48.975	0.000
	No	28 (69)	72 (175)				
Conjunctivitis	Yes (r)	18 (17)	82 (79)	0.351	0.190	0.650	0.001
	No	38 (60)	62 (98)				
Retro-ocular pain	Yes (r)	15 (6)	85 (33)	0.369	0.148	0.921	0.027
	No	33 (71)	67 (144)				
Hospitalization	Yes (r)	69 (18)	31 (8)	6.445	2.663	15.600	0.000
	No	26 (59)	74 (169)				

CI: confidence interval; r: reference.

Source: Own elaboration

Discussion

This study identified the main clinical manifestations and sociodemographic characteristics of patients diagnosed with Zikv infection disease in the municipality of La Virginia, Risaralda, in 2016, as well as the characteristics of the treatment provided to them in a primary care hospital. Similar studies carried out in Colombia and Brazil^{4,15,16} have reported a higher frequency of Zikv infection disease in women, but these findings should be contrasted with the percentages of asymptomatic Zikv. In this regard, in 2016, the Zika virus response epidemiology and laboratory teams of the CDC published a report on the adequate monitoring of people with suspected Zika virus disease and the interpretation of zika

virus antibody test results¹⁷, stating that interpretation of said results may be difficult in women, particularly in pregnant women, due to cross-reactivity with other flaviviruses, which may hinder the proper identification of the infecting virus.¹⁷ Currently, and despite this finding, there is not enough information to explain why Zikv disease is more frequently found in women and why there is a higher clinical manifestation in this population. In the present study, the average age in both men and women was 30 years, which is similar to what other studies have reported. For example, Vargas *et al.*,¹⁸ in a series of cases of women who gave birth to neonates diagnosed with microcephaly in Pernambuco, Brazil, reported an average age of 25 years (range: 16 to 41 years). Likewise, in a descriptive study carried out in

Rio de Janeiro and that is similar to the research presented here, an average age of 37 years (range: 9 to 60 years) was described¹⁶ which suggests that Zikv infection is more frequent in people who are in their twenties or thirties. Likewise, based on the age distribution data obtained for the inhabitants of the municipality of La Virginia, it is possible to conclude that people in their twenties or thirties constitute the largest age group in this area, which may explain why the proportion of Zikv infection cases in this age range is higher.¹⁹

Regarding symptoms, Paz-Bailey *et al.*,¹⁵ in a study on the persistence of Zikv in body fluids, reported that rash (93.8%), pruritus (80.7%) and fever (78.8%) were the most common symptoms. Likewise, Brasil *et al.*¹⁶ described that rash (97%), pruritus (79%), prostration (73%), headache (66%) and arthralgia (63%), with or without associated edema, were the symptoms most frequently manifested. These data agree with what was found in the present study, since rash, pruritus and arthralgias were the most common symptoms according to the medical records analyzed.

Considering this information, a physician should always suspect Zikv infection in all patients that experience a rash, pruritus, and arthralgias and are living or visited Zika endemic areas. However, if a patient experiences these three symptoms, it does not necessarily mean that he is infected with Zika, since they are also associated with Chikungunya disease; so, in order to avoid confusions, intense joint pain or absence of conjunctivitis can help differentiate the diagnosis.¹⁰

Fever was not observed in most of the patients included in this study (3.9%), a finding that has been previously informed in other studies; for example, one study carried out in Brazil reported that fever, with a maximum duration of one day, was only present in 36% of the study population.¹⁶ However, a high frequency of fever events in the pregnant population has been reported,²⁰ and this may be a topic that future studies should address to determine whether fever in Zikv infected pregnant women is associated with their hormonal characteristics, or if it leads to the development of complications.

In this sense, in 2016, Vargas *et al.*,¹⁸ in a study conducted in pregnant women diagnosed with Zikv, reported that 55.8% of them experienced fever, which highly differed from the occurrence of fever cases in the general population included in the same study (3.9%). Yet, there was no statistically significant association of this symptom with the development of complications.¹⁸ In this study, even pregnant women who were asymptomatic during the viremic episode developed complications, highlighting the importance of monitoring pregnant women and children exposed to the Zika virus.¹⁸

Regarding laboratory results, Brasil *et al.*¹⁶ reported a mean white blood cell count of 4 590 cells/mL (range: 2 240 to 11 570 cells/mL), a mean platelet count of 201 000 x mm³ (102 000 to 463 000 x mm³), and mean hematocrit levels of 41.2% (33.2% to 50.3%), while Paz-Bailey *et al.*¹⁵ reported an average of 5 200 leukocytes/mL (range 2 100 to 40 000 cells /mL), a mean platelet count of 216 000 cells/mm³ (80 000 to 373 000/mm³), and mean hematocrit levels of 42.2% (30.9% to 51.9%).¹⁵ These values are similar to those found in our study, although it should be noted that these results were not associated with the adverse clinical outcomes observed in the patients included in the present study.

Nevertheless, Boyer-Chammard *et al.*²¹ published a case report series where severe thrombocytopenia was associated with Zikv infection in 7 patients, while Dirlikov *et al.*²² reported that less than 1% of the patients in their study died after developing severe thrombocytopenia. Consequently, it is not clear what role hemogram alterations play in patients infected with Zikv, thus evidencing the lack of studies addressing the association between blood count and clinical alterations during the course of the disease or afterwards (follow-up consultations).

On the other hand, the present study found 2 patients with Guillain-Barré syndrome but, since this figure is not significant, and considering that these patients were referred to a tertiary care hospital once the diagnosis was made, other probable causes of this pathology are unknown. Therefore, it was not possible to establish a causal association between having Guillain-Barré syndrome (GBS) and being infected with Zikv. In this regard, Mata *et al.*²³ described that in 57 patients with GBS and other neurological alterations who reported having an infectious process up to 31 days before the onset of neurological symptoms, 30 (52.63%) were classified as probable cases of Zikv infection, a causal association that has been informed often in several studies around the world, including Colombia.²⁴⁻²⁶

In the present study, 11 patients received NSAIDs and corticosteroids for treating symptoms, yet no association between using these drugs and clinical alterations was observed. In this sense, in a systematic review, Passi *et al.*²⁷ reported that treatment of Zikv infected patients aims to manage and provide care for symptoms that include pain, fever and pruritus, by prescribing rest and large amounts of fluid intake to prevent dehydration. Furthermore, these researchers state that medications such as aspirin, NSAIDs, corticosteroids, or other alike should not be prescribed until dengue or thrombocytopenia diagnoses are ruled out to avoid bleeding or other complications.

Taking antihistamines, opioids, and antibiotics for managing symptoms before the consultation (self-medication) was considered as comedication in this study. However, only opioids could be indicated for pain management and antihistamines for rash and pruritus management, as antibiotics are ineffective against Zikv infection, thus its indication is useless in these cases.²⁷ To the best knowledge of the authors of the present study, this is the first report analyzing comedication and treatment in patients diagnosed with Zikv infection that has not found any association with any clinical outcome.

Some limitations of this study include its design, since it is not possible to determine what reasons led health care professionals to prescribe medications that are not suitable for the management of Zikv infection symptoms, or the motives behind comedication, by only analyzing medical records. Another limitation is the source and characteristics of the information obtained, since these data were extracted from medical records of adult individuals of any age who attended medical consultation at a primary care hospital in a Colombian municipality and most of them were enrolled in the subsidized regime of the Colombian health care system, so the results found here can only be extrapolated to populations with similar characteristics. Information bias, typical of cross-sectional studies, was reduced using variables with unique options and with previous training for the selection of the variables of the clinical records.

Conclusion

The clinical manifestations described here are similar to those reported in other populations. However, fever was not a frequent symptom (apart from pregnant women); further studies on this symptom in different population subgroups, such as the elderly, children, and pregnant women, are required. Furthermore, inappropriate pharmacological management practices that can lead to complications in this population, such as bleeding, were observed in some cases. Thus, educational interventions on the proper prescription of medications for treating this disease aimed at general physicians working in Zika affected areas must be implemented to improve the prognosis of these patients.

Conflicts of interest

None stated by the authors.

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