

HEPATITIS B IN RONDÔNIA (WESTERN AMAZON REGION, BRAZIL): descriptive analysis and spatial distribution

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ABSTRACT – Background – The Amazon is one of the regions who have the highest rates of infection by the hepatitis B virus in the world. **Objective** – This study aimed to evaluate the epidemiological data and spatial distribution of hepatitis B cases reported between 2002 and 2012 in the Brazilian State of Rondônia. **Method** – Social and clinical data of these individuals were studied through the Information System for Notifiable Diseases (SINAN), including the following variables: gender, age group, vaccination, contact with a known patient with HBV, exposure to risk factors, source of infection, and clinical status. **Results** – There were 7,132 cases reported in Rondônia, with an average incidence rate of 42/100,000 inhabitants per year. The municipalities with the highest incidence rates were Monte Negro (187.6/100,000 inhabitants) and Ariquemes (157.2/100,000 inhabitants). The 20–39 year-old age group had the highest number of cases (n = 3,834), and 69.9% of patients were likely infected via sexual contact. Regarding the clinical disease status, most of the patients (80.7%) were in the chronic phase. **Conclusion** – There was a recent 402% increase in the diagnosis of hepatitis B, which is likely owing to the improvements in the public diagnostic system. This highlights the need for public policies to prevent and control the disease.

HEADINGS – Hepatitis B. Epidemiology. *Hepadnaviridae*. Sexually transmitted diseases

INTRODUCTION

Infection with hepatitis B virus (HBV) is a global phenomenon, with approximately 360 million chronic carriers of the virus. More than a million infected individuals die every year due to complications of hepatitis⁽²⁾. In Brazil, the disease is considered an important public health problem, with the presence of endemic areas in the Northern region and some micro-regions of the States of Paraná, Espírito Santo, and Mato Grosso⁽²⁾. In the Amazon region, 5%–15% of the population are chronic carriers of the virus, representing one of the highest incidences in the world⁽¹²⁾. Specifically, the high endemicity observed in Rondônia, which is a State in the Amazon, may be related to failures in the prenatal program, unprotected sexual activity, absence of sterilization of equipment (dental, manicure, and tattoo), and poor control of blood used in transfusions^(8, 14).

The virus has a high infectivity and is 57 times more infectious than the human immunodeficiency virus (HIV)⁽¹¹⁾. Currently, health professionals, patients on hemodialysis, sex workers, and newborns of mothers with HBV are considered those most at risk.

HBV infection is underreported owing to the broad spectrum of clinical characteristics at presentation and the insidious progression; these characteristics also result in increasing spread of the disease. Thus, given the highly endemic Northern region, the disease is of epidemiological importance⁽⁹⁾. This study aimed to delineate the epidemiology and spatial distribution of hepatitis B in the State of Rondônia during 2002–2012 using data from the Information System of Notifiable Diseases (SINAN/DATASUS).

METHODS

This is an observational and descriptive study of notified cases of hepatitis B in the State of Rondônia between 2002 and 2012. Data from the Information System of Notifiable Diseases, SinanNET and SinanW, were analyzed. The program TABWIN (www.datasus.gov.br/tabwin) was used to generate the maps. The following variables were collected and analyzed: gender, age group, vaccines, contact with a known carrier of HBV, exposure to risk factors, source of infection, and clinical status.

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RESULTS

During the study period, 7,132 cases aged 0–96 years were reported, resulting in an average 648.2 cases per year. The average total incidence was 42/100,000 inhabitants, and the incidence progressively increased from 2002 to 2011 (Figure 1).

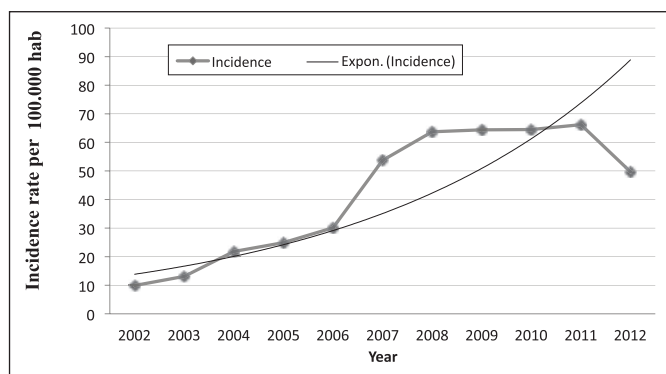


FIGURE 1. Exponential trend and incidence of diagnosed cases of hepatitis B in the State of Rondônia during the period 2002–2012

Source: SINANW and SINAN NET

The municipalities with the highest incidence rates were Monte Negro (187.6/100,000 inhabitants), Ariquemes (175.2/100,000 inhabitants), and Vilhena (136.2/100,000 inhabitants) (Figure 2). Regarding gender, 3,443 cases (48.2%) were men. The highest prevalence occurred in the 20–39 year-old age group (3,834, 53.8%). The full scheme of the vaccine was received by 1,681 (27.8%) patients with HBV. One hundred and twenty-one (1.7%) patients had concomitant HIV infection. Eight hundred and two (11.2%) patients had sexual contact with a known carrier of hepatitis B. The main source of infection was sexual contact for 1,967 (69.9%) patients (Table 1).

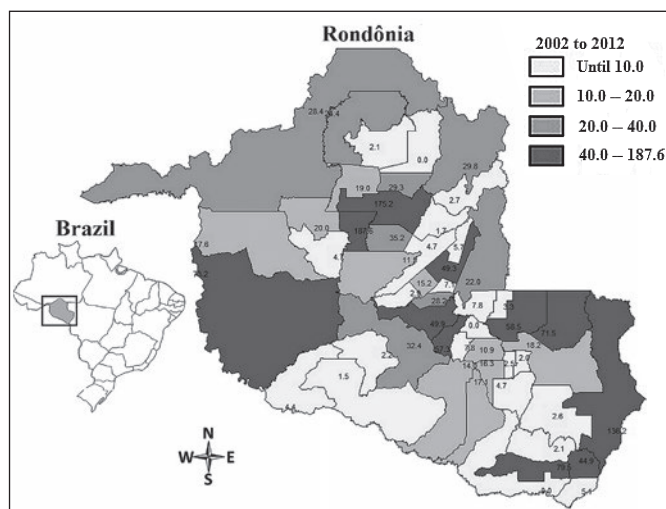


FIGURE 2. Incidence of hepatitis B cases in the State of Rondônia during the period 2002–2012

Source: SINANW and SINAN NET

TABLE 1. Social and clinical data of patients with hepatitis B in Rondônia during 2002–2012

Variables	N°	%	Ignored*
Age group			0
0–9	235	3.2	
10–19	604	8.5	
20–39	3,834	53.8	
40–59	2,038	28.6	
≥60	420	5.8	
Race			298
Brown	3,358	49.1	
White	2,484	36.4	
Black	595	8.8	
Indigenous	255	3.7	
Yellow	141	2	
HBV vaccination			1,089
Complete	1,681	27.8	
Incomplete	659	10.9	
Not vaccinated	3,702	61.3	
Contact with a known carrier with HBV			
Sexual contact	802	11.2	
Intimate contact at home	1,163	16.3	
Exposure to risk factors			555
Dental treatment	2,134	32.4	
Surgical procedure	1,399	21.3	
≥3 partners	812	12.3	
Tattoo / Piercing	402	6.1	
Blood transfusion	329	5.1	
Inhalable illicit drug	182	2.8	
Accident at work	100	1.5	
Intravenous drug	70	1.1	
Acupuncture	63	0.9	
Hemodialysis	52	0.8	
Transplant	11	0.2	
Probable source/mechanism of infection			4,319
Sexual	1,967	69.9	
Intimate contact at home	337	11.9	
Surgical procedure	128	4.6	
Blood transfusion	130	4.6	
Hemodialysis	102	3.7	
Vertical	101	3.6	
Accident at work	27	0.9	
Intravenous drug	21	0.8	
Clinical form			2,343
Acute	532	15.7	
Chronic	2,735	80.7	
Inconclusive	124	3.6	

* Absence of data in the system, due to an incomplete notification form.

Source: SINANW and SINAN NET

DISCUSSION

The Amazon region has high rates of HBV infection⁽⁹⁾, as supported by the results of the present study; the average incidence in the State of Rondônia was 42/100,000 inhabitants, and 9 of the 52 municipalities had an incidence >40/100,000 inhabitants, indicating a high endemicity. These municipalities were primarily located in the West and South of the State. According to the Ministry of Health⁽¹¹⁾, the average incidence in Brazil was 6.5/100,000 inhabitants during the period 2005–2010, while the North region had an incidence of 11/100,000 inhabitants in 2010. A larger proportion of the population in Rondônia has access to diagnostic and treatment services, which promotes not only greater control but also a higher reported incidence, such as in the municipalities of Monte Negro (187.6/100,000 inhabitants) and Ariquemes (175.2/100,000 inhabitants), where there are a blood center and hemo nucleus, respectively⁽⁴⁾.

Most of the patients with HBV in the present study were aged 20–39 years, similar to the findings by Cruz et al.⁽⁷⁾, where 48.6% of the patients were also in this age group. This age range is considered to include sexually active individuals; therefore, preventive measures are required in this age group to prevent sexual transmission of the disease⁽⁷⁾.

Since 2000, the hepatitis B vaccine is mandatory for all newborns and individuals aged up to 49 years, to ensure immunological protection for at least 20 years. However, despite mandatory vaccination, there are several barriers to achieving vaccination of the entire target population, including fears of adverse reactions, absence of information about the transmission of the virus and risk of infection, lack of time due work, and difficulty accessing immunization^(1, 10). In Rondônia, 61.3% of individuals who acquired the virus had not been vaccinated; in addition to the factors already mentioned, there was a period of time when adults were not vaccinated, which may explain this high proportion of people who were not vaccinated in the present study. At the same time, according to Chávez et al.⁽⁶⁾, 95% of individuals vaccinated against hepatitis B develop adequate levels of antibodies; in other words, the vaccine is effective for 95% of people, while the remaining 5% remains resistant to antigens or requires additional doses of the vaccine to be sensitized. In the present study, 27.8% of individuals infected with HBV

had been properly vaccinated. These individuals may not have achieved seroconversion to the vaccine or may have had the virus before receiving the vaccination. Furthermore, 10.9% of the HBV-infected individuals did not complete the full course of the vaccination.

Regarding comorbidities, 1.7% of patients were also HIV carriers in the present study. It is believed that this value may be even higher, because HIV in Rondônia tends to be underreported^(13, 15). Despite the low proportion of HIV, these patients should be routinely evaluated and with greater caution, because the acquired immunodeficiency syndrome (AIDS) associated with HBV causes deterioration of liver function in a short period of time, even with the use of anti-retroviral therapy⁽³⁾.

The costs of treatment for HBV and its complications are high, with average annual values for the following treatments: decompensated cirrhosis, R\$20,184.50; hepatocellular carcinoma, R\$5,000; and liver transplantation, R\$87,372.60. These costs are comprised of medical fees, laboratory tests, and diagnostic procedures used to verify the patient's condition, but do not include spending on antiviral therapy⁽⁵⁾. These costs highlight the importance of disease prevention, to avoid the high costs generated in the health system of Rondônia, which is considered an endemic region⁽¹¹⁾.

In conclusion, hepatitis B is a serious health problem in the State of Rondônia, with high incidence rates that are progressively increasing. Better vaccination management is required by public health authorities, in view of the high rates of absence of immunization and incomplete vaccination. Thus, epidemiological surveillance and reporting systems are of extreme importance to control and prevent hepatitis B in the State of Rondônia, in order to identify failures and plan necessary measures for the prevention and control of the disease.

Author contribution

Vieira GD, Florão M, Castro KPO and Alves TC participated in the data collection, data interpretation, and manuscript writing processes. Vieira GD, Florão M, Castro KPO, Alves TC, Vaiciunas S, Honda ER, Camargo LMA and Sousa CM participated in the data interpretation and manuscript writing processes. All authors read and approved the final manuscript.

Vieira GD, Florão M, Castro KPO, Alves TC, Vaiciunas S, Honda ER, Camargo LMA, Sousa CM. Hepatite B em Rondônia (região da Amazônia Ocidental, Brasil): análise descritiva e distribuição espacial. *Arq Gastroenterol.* 2015;52(1):18-21.

RESUMO – *Contexto* – A Amazônia é uma das regiões que possui as maiores taxas de infecção pelo vírus da hepatite B do mundo. *Objetivo* – Esse estudo teve como objetivo avaliar dados epidemiológicos e a distribuição espacial dos casos de hepatite B notificados no Estado de Rondônia no período de 2002 a 2012. *Método* – Foram estudados dados clínicos e sociais desses indivíduos através do Sistema de Informação de Agravos de Notificação (SINAN). Foram analisadas as seguintes variáveis: gênero, faixa etária, vacinação, contato com paciente sabidamente portador do vírus hepatite B, exposição do paciente aos fatores de risco, fonte de infecção e forma clínica. *Resultados* – Foram notificados 7.132 casos, tendo uma incidência de 42/100.000 habitantes por ano. Os municípios que apresentaram as maiores taxas de incidência foram Monte Negro, 187,6/100.000 habitantes e Ariquemes, 157,2/100.000 habitantes. A faixa etária com maior número de casos foi de 20-39 anos (n=3.834), sendo que 69,9% dos pacientes se infectaram provavelmente por via sexual. Em relação à forma clínica da doença, a maioria dos pacientes (80,7%) se encontra na fase crônica. *Conclusão* – Houve um aumento do diagnóstico do vírus da hepatite B da ordem de 402% nos últimos anos, seguramente pela melhora no sistema de diagnóstico da doença, sendo necessário uma maior atenção das políticas públicas de prevenção e controle da doença em função de sua elevada prevalência.

DESCRITORES – Hepatite B. Epidemiologia. *Hepadnaviridae*. Doenças sexualmente transmissíveis.

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