

# DELTA HEPATITIS IN RONDÔNIA: EPIDEMIOLOGICAL ANALYSIS FROM 1999 TO 2012

## HEPATITE DELTA EM RONDÔNIA: ANÁLISE EPIDEMIOLÓGICA DE 1999 A 2012

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### ABSTRACT

**Introduction:** Hepatitis Delta virus (HDV) is considered an important cause of severe liver disease. **Objective:** This study aimed at an epidemiological analysis of cases diagnosed in Rondônia. **Methods:** A retrospective study from 1999 to 2012 was done through data provided by the State Agency of Health Surveillance of Rondônia (AGEVISA-RO). The variables analyzed were: year of diagnosis, gender, age, contact with patients known to have hepatitis B virus (HBV), ethnicity, vaccination, exposure to risk factors, mechanism of infection and clinical manifestation. **Results:** 149 cases have been reported, with an average incidence of 0.7 cases per 100,000 inhabitants/year; 62.4% of these were males and 5.3%, females. The most common age group was between 20 and 39 years. About hepatitis B vaccination, the majority took no vaccine dose. The most common route of transmission was sexual (71.8%), and most patients were in the chronic phase of the disease (95.9%). **Conclusion:** The population affected by the virus is mainly composed of men in the sexually active age group, with sexual intercourse as the main mode of transmission. Low adherence to vaccination by the population affected was observed; thereby, measures of education and public awareness are needed.

**Keywords:** epidemiology; hepatitis D; Hepacivirus.

### RESUMO

**Introdução:** O vírus da hepatite Delta (VHD) é considerado um importante causador de doença hepática grave. **Objetivo:** Este estudo objetivou realizar uma análise epidemiológica dos casos diagnosticados em Rondônia. **Métodos:** Foi feito um estudo retrospectivo de 1999 a 2012, por meio de dados cedidos pela Agência Estadual de Vigilância em Saúde de Rondônia (AGEVISA-RO). As variáveis analisadas foram: ano de diagnóstico, gênero, faixa etária, contato com paciente sabidamente portador do vírus da hepatite B (VHB), cor, vacinação, exposição aos fatores de risco, mecanismo de infecção e forma clínica. **Resultados:** Foram notificados 149 casos da doença, tendo uma incidência média de 0,7 casos/100.000 habitantes/ano; destes, 62,4% são do gênero masculino e 5,3% são gestantes. A faixa etária mais comum foi entre 20 e 39 anos. Sobre a vacinação da hepatite B, a maioria não tomou nenhuma dose da vacina. A forma mais comum de aquisição do vírus foi a sexual (71,8%), estando a grande maioria dos pacientes na fase crônica de doença (95,9%). **Conclusão:** A população acometida pelo vírus constitui-se, principalmente, de homens na faixa etária sexualmente ativa, tendo como principal meio de transmissão a relação sexual. Observou-se baixa aderência da população acometida à vacinação; com isso, medidas de educação e conscientização da população se fazem necessárias.

**Palavras-chave:** epidemiologia; hepatite D; Hepacivírus.

## INTRODUCTION

Hepatitis D virus or Delta hepatitis (HDV), from the *Deltaviridae* family, requires the concomitant presence of hepatitis B virus (HBV)<sup>(1)</sup> in a human body in order to infect it, and constitutes an important public health problem, once it may cause acute or chronic liver disease<sup>(2)</sup>. It is estimated that about 18 million people around the world are infected by HBV<sup>(3,4)</sup>.

In Brazil, the prevalence of infection varies according to the region: in South and Southeast, endemicity is low; in the Central West and Northeast, it is medium; and in the Amazonic region, endemicity is high<sup>(5)</sup>.

Infection by HDV is worrisome in areas of increased transmission of HBV. In most cases, HDV causes an asymptomatic infection that evolves to chronic disease or origins acute liver insufficiency that may progress to cirrhosis<sup>(6)</sup>.

The Amazonic region has the highest prevalence of HBV in the world and, consequently, the highest rates of HDV superinfection<sup>(7)</sup>. In the Brazilian Amazonia, Delta hepatitis affects many individuals of

river-side and indigenous populations, being associated with severe forms of acute jaundice<sup>(8)</sup>.

## OBJECTIVE

To perform an epidemiological analysis on Delta hepatitis, in Rondônia.

## METHODS

This is a retrospective, descriptive epidemiological study about cases of Delta hepatitis diagnosed in the State of Rondônia from 1999 to 2012. Data and statistics by the Surveillance agency of the State (*Agência Estadual de Vigilância em Saúde de Rondônia – AGEVISA-RO*) were used through *Sistema de Informação de Agravos de Notificação* (Sinan) NET and Sinan W, aiming at a better analysis of the information about the disease.

Variables studied were: year of diagnosis, gender, age group, contact with patients known to have HBV, ethnicity, vaccine, exposure to risk factors, route of infection and clinical presentation. The software used in statistical analysis were *Microsoft Excel 2010* and *BioEstat 5.3*.

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## RESULTS

In the period assessed, 149 cases of Delta hepatitis were reported, with average prevalence of 10.6 cases/year (Table 1) and average annual incidence of 0.7 cases/100,000 inhabitants (Figure 1). In 2007, the prevalence of cases was the highest, with atypical pattern compared to other years (Figure 2). Out of these cases, 93 (62.4%) were in males and 56 (37.6%) in females, and 8 of them (5.3%) were pregnant.

Fourteen individuals (9.3%) had had contact with a patient diagnosed with hepatitis B. As to age groups, the one with larger number

**Table 1** – Prevalence, population, relative frequency and sample proportion of patients with Delta hepatitis in the State of Rondônia (1999–2012).

Year	Variables		
	n	Population	fr
1999	5	1,296,832	0.033
2000	10	1,379,787	0.067
2001	12	1,407,878	0.008
2002	9	1,431,776	0.060
2003	8	1,455,914	0.053
2004	6	1,479,940	0.040
2005	9	1,534,584	0.060
2006	7	1,562,406	0.046
2007	23	1,590,027	0.154
2008	12	1,493,566	0.080
2009	10	1,503,911	0.067
2010	12	1,562,409	0.080
2011	13	1,576,455	0.087
2012	13	1,590,011	0.087
<b>Total</b>	<b>149</b>	<b>-</b>	<b>-</b>

fr: relative frequency.

Source: Sistema de Informação de Agravos de Notificação (Sinan) NET and Sinan W.

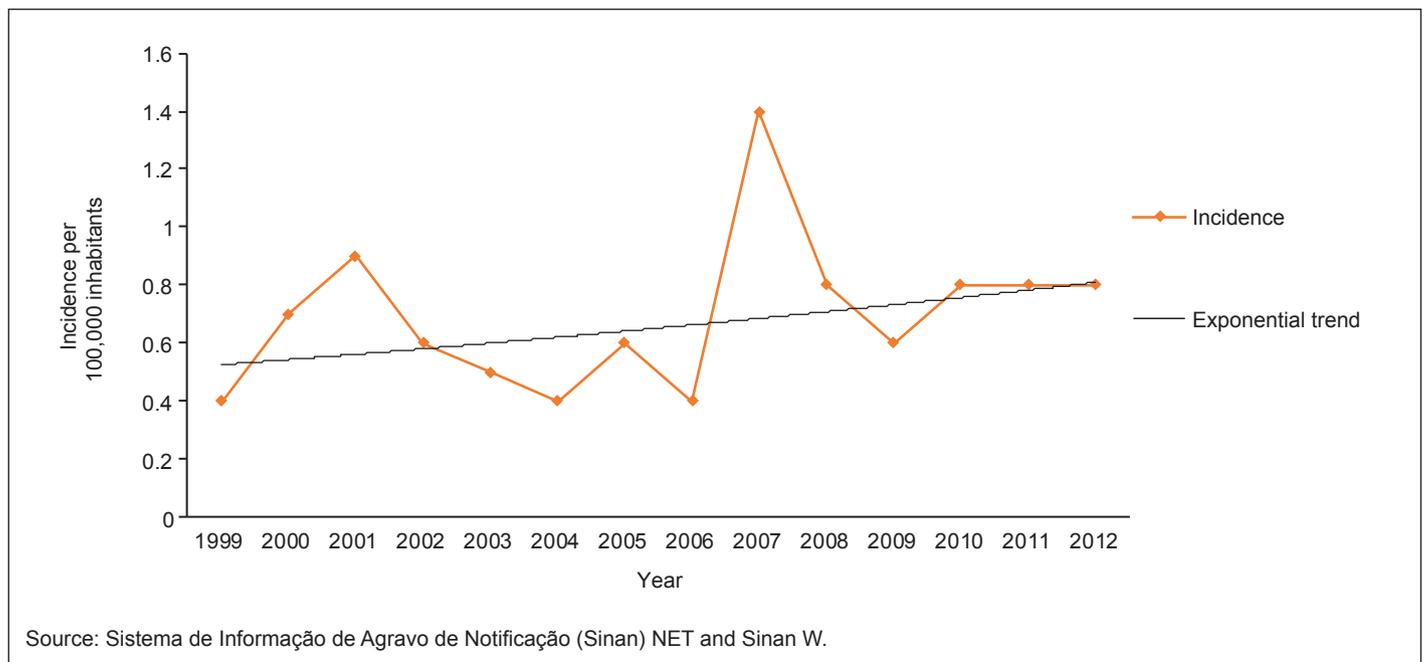
of cases was 20–39 years (51%). The most common ethnicity was Parda (61.1%), and 84% of subjects in the sample had not taken HBV vaccine. As to exposure to risk factors, 41 (27.5%) patients had been exposed to dental treatment and 31 (20.8%) to surgical procedures. The main route of transmission was sexual intercourse (51 subjects, 71.8%). When it comes to clinical presentation of the disease, 4.1% were in the acute phase and 95.9% in the chronic phase (Table 2).

## DISCUSSION

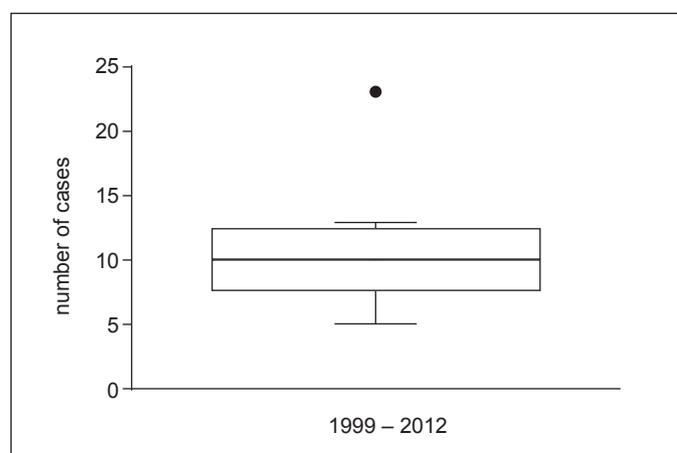
In Brazil, from 1999 to 2011, 2,197 cases of Delta hepatitis were reported, being these, 1,679 (76.4%) in the North region<sup>(9)</sup>, which shows the high prevalence in this portion of the country. Observing the box plot for the prevalence of cases in Rondônia, one notes an atypical number in 2007; according to AGEVISA, this is due to a change in the information centre during that year, going from Sinan W to Sinan NET.

According to Fonseca et al.<sup>(10)</sup>, most patients with hepatitis are males because they are also widely affected by HBV. In a study about hepatitis markers in a hospital of Pará, Amaral et al.<sup>(11)</sup> found a higher prevalence among males (83.3%) and noticed that the mostly affected age group is that between 31 and 45 years and that Pardos were more prone to the disease. According to Alboleda et al.<sup>(12)</sup>, in the Amazonian region, due to early infection by HBV, a large number of cases is reported in individuals under the age of 15. In other regions of the world, the disease affects older people, being a lot more common in the 3<sup>rd</sup> and 4<sup>th</sup> decades of life<sup>(13)</sup>. In our study, we also found a high prevalence among males, Pardos and people aging 20–39 years.

We found a rate of 6.8% of indigenous subjects infected. Many Brazilian studies have shown high endemicity in this population<sup>(14,15)</sup>. Braga et al.<sup>(16)</sup> performed a study in 7 indigenous villages and found a prevalence of 13.4% for HDV in people infected by HBV. HDV



**Figure 1** – Incidence and exponential trend of cases of Delta hepatitis diagnosed in the State of Rondônia (1999–2012).



**Figure 2** – Box plot of the prevalence of Delta hepatitis in Rondônia (1999–2012).

transmission happens mostly among 5 to 12 years-old and young adults by familial contact or sexual intercourse. Some factors favor transmission among indigenous, including their habits, genetics and contact with other indigenous groups<sup>(17)</sup>.

HBV vaccine is an important prophylactic measure against HDV, and became mandatory in Brazil in 2000. In our study, 84% of patients infected had not taken any dose of the vaccine. There are some reasons that lead people not to take vaccines such as: fear of side effects, lack of information and time unavailability<sup>(18)</sup>.

The main routes of transmission were sexual intercourse and parenteral. We also found, in this study, sexual intercourse as the most common means of infection and, among risk factors, patients had been more frequently exposed to dental and surgical treatments.

In general, 5.3% of women infected were pregnant. In a study about Delta hepatitis markers in Lábrea, Amazonas, Braga *et al*<sup>(16)</sup> reported high prevalence among 6 to 12 years-old, and found that infection took place mostly by vertical means or by familial contact. Vertical transmission may be related to the high infectivity of the virus during pregnancy, with serological signs and viral replication favoring vertical transmission of HBV and concomitantly of HDV<sup>(19)</sup>.

In this study, most individuals were in the chronic phase of the disease, being strong candidates to hepatic cirrhosis and hepatocellular carcinoma.

The North region of the country held most cases of Delta hepatitis, where it is still endemic. Rondônia has an average prevalence of 10.6 cases/year, but this number could be even larger due to under-reporting among river-side and countryside populations.

## CONCLUSION

The population affected by the virus is mainly composed of men in the sexually active age group, where the main route of transmission is sexual intercourse. Low adherence to vaccination was observed, even though this is an effective prophylactic method. Therefore, the public health authorities should give more attention to the whole picture involving the disease, creating awareness policies and giving information about routes of transmission and prevention.

**Table 2** – Social and clinical data of patients with Delta hepatitis in Rondônia (1999–2012).

Variables	n	%	Ignored data*
Age group			0
0–9	2	1.3	
10–19	9	6	
20–39	76	51	
40–59	57	38.2	
>60	5	3.3	
Ethnicity			32
Pardo	72	61.1	
Caucasian	22	18.8	
Black	11	9.4	
Indigenous	8	6.8	
Asian	4	3.4	
HBV vaccine			0
Complete	13	8.7	
Incomplete	11	7.3	
Not taken	125	84	
Exposure to risk factors			0
Dental treatment	41	27.5	
Surgical procedure	31	20.8	
Three or more partners	22	14.7	
Tattoo/piercing	9	6.1	
Blood transfusion	5	3.3	
Work-related accident	2	1.2	
Hemodialysis	2	1.2	
Inhalable illicit drugs	1	0.6	
Acupuncture	1	0.6	
Main route of transmission			78
Sexual	51	71.8	
Hemodialysis	9	12.7	
Surgical procedure	8	11.3	
Intimate contact	1	1.4	
Vertical	1	1.4	
Blood transfusion	1	1.4	
Work-related accident	0	0	
Use of injectable drug	0	0	
Clinical presentation			27
Acute	5	4.1	
<b>Chronic</b>	<b>117</b>	<b>95.9</b>	

HBV: hepatitis B virus.

\*Data unavailable in the system because the notification form was not filled. Source: Sistema de Informação de Agravos de Notificação (Sinan) NET and Sinan W.

## Conflict of interests

The authors report no conflict of interests.

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