

Seroprevalence of anti-delta antibody in chronic hepatitis B virus carriers in Brazil

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INTRODUCTION

In Brazil, the Amazon Basin is endemic for hepatitis D virus (HDV) infection; however, studies in other regions of the country are scarce.

AIMS

The purpose of the present study was to investigate the prevalence and geographic distribution of anti-Delta antibodies in endemic and non-endemic areas of Brazil, to provide a current situational picture of the spread of HDV infection throughout the country.

MATERIALS AND METHODS

Study population: The presence of anti-Delta antibody as a serological marker of previous or current infection with HDV was investigated in 1240 serum samples from chronic hepatitis B carriers from all Brazilian geographical regions encompassing 24 of 26 states and the Federal District. All samples tested positive for HBsAg and had detectable HBV DNA

Determination of anti-Delta in serum: Detection of anti-Delta total antibody in serum samples was performed by using a commercial ELISA assay “ETI-AB-DELTAK-2 (anti-Delta)” (DiaSorin, Turin, Italy) according to the manufacturer’s instructions. Samples positive or undetermined were retested in order to confirm the results.

RESULTS

ELISA assays performed in 1240 HBsAg positive samples detected antibodies against HDV in 40 individuals (3.2%; 55.5% males; mean age of 38.1 ± 13.8 years). Statistical analyses to evaluate the relationship between anti-Delta positivity and gender and viral load did not reveal any significant relationship. The median HBV viral load in HDV-negative individuals was 3.7×10^3 UI/mL, in contrast to the HBV/HDV co-infected individuals which was slightly lower, 2.5×10^3 UI/mL ($p=0.431$) table 1.

	HBV/HDV Coinfection (n=40)	HBV Mono-infection (n=1200)	p-value
Gender*			
male	19	591	p=0.303
female	21	501	
Age*			
0-20	6	18	p<0.0001
21-40	11	339	
41-60	17	349	
>61	1	95	
HBV viral load (UI/mL)*			
Median	2.5×10^3	3.7×10^3	p=0.431
Min	3.7×10^2	9.9	
Max	3.2×10^7	1.0×10^9	
Brazilian regions			
North	28	302	p<0.001
Northeast	3	353	
Central-West	3	119	
Southeast	6	343	
South	0	83	

Table 1. Demographic and virological characteristics of the study population regarding HBV mono-infection or coinfection with HDV and its distribution among Brazilian regions.

*Information from available data

The distribution of anti-Delta differed markedly in the distinct regions of the country, as shown in figure 1.

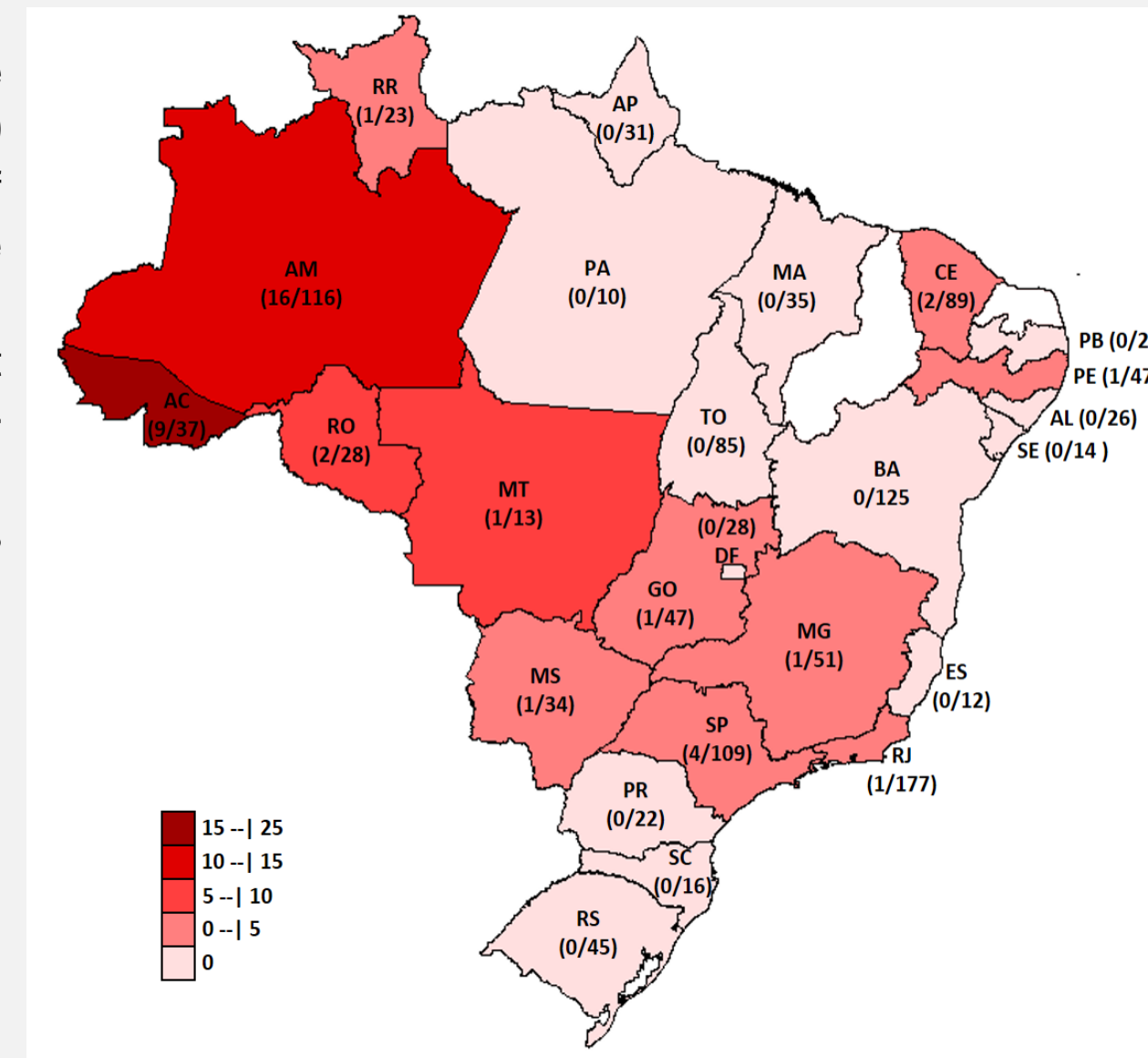


Figure 1. Seroprevalence of anti-Delta-positive samples among chronic hepatitis B carriers according to locality. The number of positive samples and total amount tested in each State are shown in parenthesis. State abbreviations: North region – AC, Acre; AM, Amazonas; AP, Amapá; PA, Pará; RO, Rondônia; RR, Roraima; and TO, Tocantins. Northeast region – AL, Alagoas; BA, Bahia; CE, Ceará; MA, Maranhão; PB, Paraíba; PE, Pernambuco; and SE, Sergipe. Central-West region – DF, Federal District; GO, Goiás; MT, Mato Grosso; and MS, Mato Grosso do Sul. Southeast region – ES, Espírito Santo; MG, Minas Gerais; RJ, Rio de Janeiro; and SP, São Paulo. South region – PR, Paraná; SC, Santa Catarina; and RS, Rio Grande do Sul. Two States (Rio Grande do Norte and Piauí) had no samples available and are represented in blank on the map.

The highest prevalence was observed in the North region (28/330; 8.5%), followed by Central West (3/122; 2.5%), Southeast (6/349; 1.7%) and Northeast (3/356; 0.8%). Anti-Delta antibodies were detected in all but one (South) Brazilian region.

Anti-Delta antibodies were detected in 12 Brazilian states, but more than 60% of the positive cases were observed in two states, Amazonas and Acre located in the western portion of the Amazon region, where the prevalence were 13.8% and 24.3%, respectively.

CONCLUSIONS

The overall HDV prevalence of 3.2% emphasizes that HDV is far from being a disease under control in Brazil, even with the availability of the efficient vaccine against HBV in the national immunization schedule.

Despite the low HDV prevalence in non-endemic regions, this infection persists as a major concern in two states (Acre and Amazonas) in the north of the country, indicating that a continuous epidemiological surveillance program should be implemented in all Brazilian regions. The results obtained in this study could guide strategic measures to control this disease, such as enhancing immunization coverage against HBV, and increase public awareness to reduce the risk of HBV and HDV transmission.

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