Particular matters of viral hepatitis in to Amazon

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Particular matters of viral hepatitis in the Amazon

- Historical and geographical particularities:
  - Particular matters for the Amazon Region

- Population with unique characteristic:
  - Distribution and concentration

- Viral particular aspects

- Clinical presentation

- Treatment difficulties
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- Geographical particularities:
  - Largest forest region and hydrographic basin of the world
  - Northern hemisphere in South America
  - 42% to Brazilian national territory
  - Guyana, Venezuela, Colombia, Ecuador, Peru and Bolivia
  - 6 million km²
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- Historical particularities:
  - Amazon biodiversity created 6 million years ago
  - Result of climate changes, interactions between species and geological factors
  - Elevation of mountains and creation of Andes mountains
  - Amazon River was created 40 thousand years
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- **Historical particularities:**
  - Between 20,000 and 12,000 bc - first human groups from Asia arrived to South America
  - 7,000 and 6,000 years ago → climatic and environmental changes
  - 5,000 years ago → second phase of human settlement - new socio-cultural practices

**RAINFOREST CULTURE**
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- **Historical particularities:**
  - **Third phase occupation** → European settlement
  - Legendary and mythical “El Dorado”
  - Francisco Orellana → called region Amazon
  - Extractive action behind “gold from forest”
  - Contact Spanish/Portuguese with Natives Indians
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Historical particularities:

- Portuguese colonization → Forte do Presépio
- Slave for Amerindians - miscigenation
- Rise to population “CABOCLA”
- Second half 18th century → arrival of blacks brought from Africa as slaves
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- **Historical particulars:**
  - 19th century → systematic occupation
  - “Conquest” territories of Amapa, Roraima and Acre
  - Industrial Revolution – vulcanization of Rubber
  - New immigration waves of Europeans
  - Arrival of Northeast rubber soldiers
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Population with unique characteristic:

- Distribution and concentration Legal Amazon
- Extension → 5,109,812 km² - 60% national territory
- 21,056,532 inhabitants - 12.4% national population
- 4.14 hab/km² - lowest population density in the country
6 million km²

60% territory

21 million hab.

4.14 hab/km²

12.4% population

Six countries

Amerindians

Northeast people

Afro-Americans

Europeans

“Caboclos”

4.14 hab/km²

60% territory
### Table I. Social-demographic characteristics of the Amazon Region States

<table>
<thead>
<tr>
<th>STATE</th>
<th>Area (km²)</th>
<th>Population (inhab/km²)</th>
<th>Density (inhab/km²)</th>
<th>Nº of physician (10.000 inhab)</th>
<th>Nº of beds (1.000 inhab)</th>
<th>illiteracy (% inhab)</th>
<th>HDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acre</td>
<td>153.149</td>
<td>527.937</td>
<td>3.45</td>
<td>4.77</td>
<td>2.8</td>
<td>17.71</td>
<td>0.75</td>
</tr>
<tr>
<td>Amazonas</td>
<td>1.577.820</td>
<td>2.580.860</td>
<td>1.63</td>
<td>6.52</td>
<td>1.8</td>
<td>9.33</td>
<td>0.78</td>
</tr>
<tr>
<td>Amapá</td>
<td>173.453</td>
<td>439.781</td>
<td>3.06</td>
<td>6.54</td>
<td>1.8</td>
<td>12.98</td>
<td>0.79</td>
</tr>
<tr>
<td>Pará</td>
<td>1.247.690</td>
<td>7.969.654</td>
<td>6.07</td>
<td>6.70</td>
<td>2.3</td>
<td>11.23</td>
<td>0.65</td>
</tr>
<tr>
<td>Rondônia</td>
<td>238.512</td>
<td>1.296.856</td>
<td>5.44</td>
<td>4.82</td>
<td>2.6</td>
<td>7.58</td>
<td>0.82</td>
</tr>
<tr>
<td>Roraima</td>
<td>225.116</td>
<td>266.922</td>
<td>1.18</td>
<td>8.69</td>
<td>3.0</td>
<td>7.21</td>
<td>0.82</td>
</tr>
<tr>
<td>Tocantins</td>
<td>278.420</td>
<td>1.134.895</td>
<td>4.07</td>
<td>5.37</td>
<td>2.6</td>
<td>21.18</td>
<td>0.59</td>
</tr>
</tbody>
</table>

*HDI = Human Development Index, according to the United Nations (UN)*

Fonte: Hepatotropic Viruses in the Brazilian Amazonia - Raymundo Paraná et al, 2012
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- **Viral particular aspects:**
  - Hepatitis B virus → epidemiologic and virological particularities
  - Hepatitis C virus → genotyping particularities
  - Hepatitis Delta virus → clinical aspects particularities
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Viral particular aspects:

- Hepatitis B virus → epidemiologic particularities

**HEPATOLOGY**

Intrafamilial prevalence of hepatitis B virus in Western Brazilian Amazon region: Epidemiologic and biomolecular study

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- **HBV epidemiologic particularities:**
  - Intrafamilial transmission of HBV
  - Possibly associated with presence of HBV carrier
  - Shared use of toothbrushes
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- **Viral particular aspects:**

  - **Hepatitis B virus → virological particularities**

*Prevalência de genótipos e de mutantes pré-core A-1896 do vírus da hepatite B e suas implicações na hepatite crônica, em uma população da Amazônia oriental*

Prevalence of hepatitis B virus genotypes and the occurrence of precore mutation A-1896 and to correlate them with the clinical presentation of chronic hepatitis, in a population group of the Eastern Amazon region

Simone Regina Souza da Silva Conde¹, Lizomar de Jesus Pereira Móia¹, Maria Silvia Brito Barbosa¹, Ivonete do Socorro Abarecado Amaral¹, Esther Castello Branco de Mello Miranda¹, Manoel do Carmo Pereira Soares², Elizabete Maria de Figueiredo Brito², Olgaíze do Socorro Costa Souza², Marialva Tereza de Araújo³, Sâmia Demachki³, João Renato Pinho Rebello³, Michele Gomes Soares Mesquita³, Denis Alberto Bertollini⁴ e Ricardo Ishak³
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- **HBV virological particularities:**
  - Population group of Eastern Amazon region of Brazil
  - Genotype A was the most commonly found – 89.1%

![Table 3 - Distribution of HBV genotypes in groups A, B, and C.](image)
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- Viral particular aspects:
  - Hepatitis B virus → virological particularities

![Research article](http://www.virologyj.com/content/7/1/315)
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HBV virological particularities:

- Population group of Western Amazon region of Brazil
  - A (37.1%), D (42.8%), F (20.0%)
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- Viral particular aspects:
  - Hepatitis C virus → epidemiologic particularities
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- **HCV epidemiological particularities:**
  - Prevalence of HCV infection (molecular biology) → 2.5% in some areas of Acre state
  - Probably associated with parenteral non-secure injection
  - High transmission is not recent
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- **Viral particular aspects:**
  - Hepatitis C virus → genotyping particularities
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HCV Epidemiologic particularities:

- Genotype 1b - most prevalent (50%)
- Genotype 1a (27.2%)
- Genotype 2b (13.6%) and 3a (9.0%)
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- **Viral particular aspects:**

- Hepatitis D virus → clinical presentation particularities

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**Clinic and laboratory analysis of patients with hepatitis delta in Amazon region, Brazil**

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- Man (65%), age less than 35 age (56%), Amerindians (21%)
- Risk factor household contact (50%)
- Dental treatment (43%)
- Birthplace Amazon Region (87%)
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- Majority patients has chronic hepatitis with hepatocellular injury
- Portal hypertension and/or low blood cells count
- Leukopenia (36.7%), thrombocytopenia (36.7%) and anemia (23.4%)
- Hypersplenism secondary signals
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CONCLUSION:

- Exist particular matters for Amazon Region
- Population with unique characteristic
- Exist some viral particular aspects
- Clinical presentation
- Treatment difficulties