Histological Alterations in the Hepatic Parenchyma in Infections with the Hepatotrop Virus B

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ABSTRACT This study included 116 cases of liver serologically confirmed biopsies, which were clinico-pathologically assessed. We evaluated the portal and intralobularly inflammatory infiltrate, the injury of segmental bile ducts, the hepatocytic necrosis, fibrosis stage and other additionally histopathological aspects. This results sustain the importance of histopathological evaluation for diagnosis and therapeutic management for the lesions.

KEY WORDS Viral Hepatitis B, liver biopsies, staging

Introduction

B hepatotropic virus is an atypical hepadnavirus, because although it is one of the smallest human pathogens, it causes a more chronic condition than other viruses. The genome of the hepatitis virus B, consisting of 3,200 base pairs, was initially sequenced in 1979 (10), but the function of some of the encoded proteins is still unclear. As hepatitis C and HIV, hepatitis B mutates at a high rate and as the disease progresses, new viral species evolve and lead to the formation of new types of disease (4).

Material and method

In our study we included 116 cases of liver biopsies, all serologically confirmed. The liver fragments were fixed in formalin, paraffin-embedded, then sectioned at 5 microms. Sections were marked using standard (Hematoxylin-eosin) and special (Gordon Szekely) stainings.

Results and discussions

In the group of patients selected, age ranged between 18 and 62 years (mean = 40.58 years) and the was a predominance of the female population (F: B=2.41:1). The age group with most cases ranged between 31 to 40 years - 35 cases.

Table 1: Distribution of cases according to age and gender

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Masculin</th>
<th>Feminin</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-20</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>21-30</td>
<td>15</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>31-40</td>
<td>22</td>
<td>13</td>
<td>35</td>
</tr>
<tr>
<td>41-50</td>
<td>23</td>
<td>6</td>
<td>29</td>
</tr>
<tr>
<td>51-60</td>
<td>15</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>61-70</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>82</td>
<td>34</td>
<td>116</td>
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</tbody>
</table>

Although by definition, chronic hepatitis is characterized by the presence of necroinflammatory lesion lasting over 6 months, in practice the limit between acute and chronic forms is more difficult to distinguish, because acute viral hepatitis B may occasionally be prolonged and some forms of chronic hepatitis develop insidiously, without the presence of a clinically apparent acute onset (3).

In the cases included in the study most portal tracts showed variat amounts of lymphoplasmocytic infiltrate. Although its arrangement in aggregates and follicles is more common in chronic hepatitis C (9), it was found in our group of patients with chronic hepatitis B in 17 cases. Inflammatory infiltrate was most commonly located in the portal tracts, but also intralobularly, arranged in small foci, in spots, often around altered hepatocytes or in the form of intrasinusoidal rows. Quantification of the inflammatory infiltrate revealed the following results: grade 1 - 43 cases (mild inflammation), grade 2 - 37 cases (moderate inflammation), grade 3 - 25 cases (moderate-marked inflammation), grade 4 - 10 cases (marked inflammation).

The injury of segmental bile ducts characterized by vacuolation, necrosis and and the presence of lymphocytic inflammatory infiltrate was identified in 5 cases. In normal liver, few bile ducts are identified in the portal tracts, while in chronic hepatobiliary infections these structures are frequently modified (1).

Hepatocytic necrosis was present under several aspects:
- focal or spotty affecting a cell or a small group of cells - one or less per 10x objective - 12...
cases, 2-4 foci per 10x objective - 96 cases; 5-10 2-4 foci per 10x objective – 7 cases
- confluent necrosis with large areas of necrosis present and connective tissue containing inflammatory cells including macrophages and cellular debris - 6 cases

The notion of "piecemeal necrosis" was used to describe the disappearance of hepatocytes located at the boundary between liver parenchyma and connective structures (5). These areas of necrosis showed infiltration with numerous lymphocytes and other inflammatory cells and deletion of the lobular limiting plates and irregular outline of the parenchyma-mesenchyme interface. It was quantified in our study using the following scale:
- Mild (focal, few portal tracts) - 32 cases
- Mild / moderate (focal, most portal tracts), 51 cases
- Moderate (continuous <50% of tracts or septa), 18 cases
- Sever (continuously> 50% of tracts or septa) - 11 cases

Fibrosis stage was assessed by the following criteria: pericellular fibrosis (focal or extensive) - 3 cases, pericellular fibrosis (focal or extensive) plus portal fibrosis - 11 cases, fibrosis of the bridges (thin porto-portal bridges) - 48 cases and fibrosis in thick porto-portal and portocentral bridges - 21 cases.

Out of the spectrum of changes identified, one is considered relatively specific: the presence of "ground-glass" hepatocytes. However, their etiology is heterogeneous and although most commonly caused by HBsAg, these hepatocytes could appear due to the presence of other diseases such as cyanamide treatment of alcoholism, Lafora disease (6) and epilepsy, type IV monoclonal glycogenosis (8). This histologically feature, characterized by the presence of partial or total changes of the cytoplasms which becomes fine granular, pale, often separated by a halo membrane, was shown in our study in 92 cases.

Although steatosis is a feature commonly found in chronic hepatitis C (2), it is also described in B virus infections. According to the study of Minakari et al. (7) the steatosis found in chronic hepatitis B is due rather to metabolic host factors than viral factors. In our cases, steatosis
was characterized by the accumulation of lipid droplets in hepatocytes. The quantification of steatosis have taken into account the fatty invasion in the liver parenchyma as follows:
- Absent (40 cases)
- Mild (0-30% of hepatocytes) (26 cases)
- Moderate (30-60% of hepatocytes) (31 cases)
- Severe (> 60% of hepatocytes) (19 cases)

**Figure 5: Severe steatosis, HE stain, 100x**

**Conclusions**

Patients with chronic hepatitis B have different histological patterns. Most had mild inflammation and more than half had features suggestive for the etiologic diagnosis. Identification and clinical follow up of patients with hepatitis B virus infection is important because this disease has an increased risk of hepatocellular carcinoma development, even at young age.

**References**

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