

USING THE METAVIR SCORE FOR EVALUATING THE NECROTIC INFLAMMATORY ACTIVITY AND PREDICTING FIBROSIS IN CHRONIC VIRAL HEPATITIS

Daina Cristian

University of Oradea, Faculty of Medicine and Pharmacy, mail: cristi_daina@yahoo.co.uk

Abstract

The study is based on analysis of a number of 140 puncture liver biopsies from patients diagnosed with viral hepatitis, carried out in Oradea County Clinical Hospital between October 2008 and August 2009. The dimensions and the components of the port space have been evaluated on the fragment of liver biopsy; separately, the necrotic inflammatory index and the fibrosis have also been evaluated. Depending on the value of the necrotic inflammatory index, hepatitis was considered minimally active (score Metavir A1F1-A1F2), moderately active (A2 Metavir score was 3 or F2 or 3) and severely active (A3 Metavir score F3 or 4). This examination is essential for diagnosis, choice of treatment, estimative prognosis, and clinical pursuit of these pathologies.

Key words: Metavir score, hepatitis, puncture biopsy, necrotic inflammatory index, fibrosis.

INTRODUCTION

The hepatic biopsy is an important aspect in the evaluation of patients suffering from hepatic disorders, being considered the most specific means of analysis for assessing the nature and the severity of the disease. Nowadays, in cases of chronic hepatitis, four different scores are being used, of which three are quite simple: Scheuer, Ludwig and the Metavir system, and one is more complex: the Ischak score. All these systems establish scores, based upon the inflammatory activity (degree) and the fibroses (stage), with divisions between these two components. The significance of these scores is very important since it allows the classification of necrotic inflammatory activities and the degree of fibrosis. Thus, the result of these marking systems makes possible the classification of cases in terms of the inflammatory activity, the identification of specific therapies, the estimation of prognosis and of the clinical evolution.

Aims: The purpose of this paper is to use the Metavir score in analyzing the necrotic inflammatory activity and the fibrosis, as well as the evaluation of chronic viral hepatitis severity at the patients considered for this study.

MATERIAL AND METHOD

The study is based on the analysis of a number of 140 puncture liver biopsies from patients diagnosed with viral hepatitis, and has been carried out in Oradea County Clinical Hospital between October 2008 and August 2009. The percutaneous hepatic biopsy puncture was performed in the

section of gastroenterology. For the histological evaluation of the importance and the evolution of hepatic modifications, a histopathological evaluation was needed for the materials obtained through puncture liver biopsies, which were representative, including 3-5 port spaces. The dimensions and the components of the port space have also been considered: at normal patients, these present a venula, 1-2 arterioles and 1-2 bile ducts (the periductal infiltration and the necrosis of the biliary epithelium indicate a primary biliary cirrhosis); the necrotic-inflammatory index and the fibrosis have been evaluated separately. Depending on the value of the necrotic inflammatory index, hepatitis was considered minimally active (score Metavir A1F1-A1F2), moderately active (A2 Metavir score was 3 or F2 or 3) and severely active (A3 Metavir score F3 or 4).

RESULTS AND DISCUSSIONS

The distribution in terms of gender is shown in fig1.

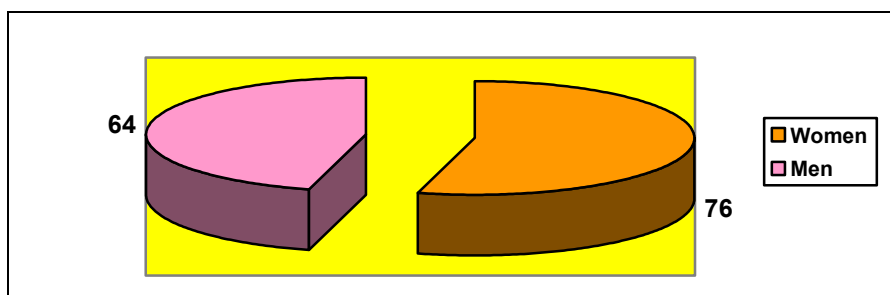


Fig 1. The gender distribution of subjects

The distribution of subjects in terms of age is represented in fig 2:

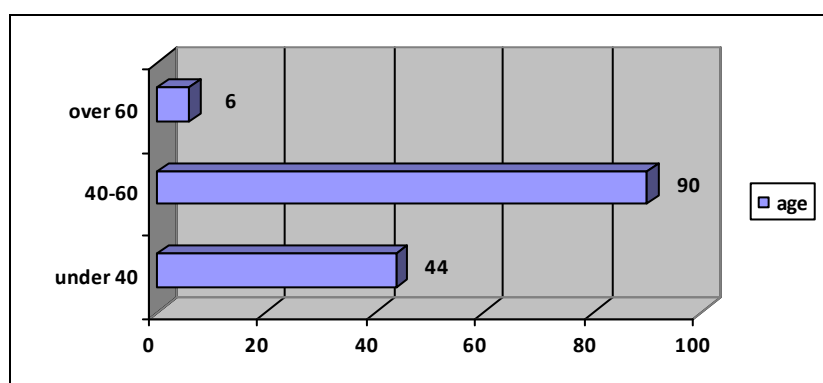


Fig. 2. The distribution of subjects in terms of age groups

The great majority of patients are aged between 41 and 60 years old (64,28% from the total number of cases). It is worth pointing out that 31,42% of subjects were under 40 and 4,28% were over 60.

In terms of their environment (rural/urban), the distribution of subjects is represented in fig 3.

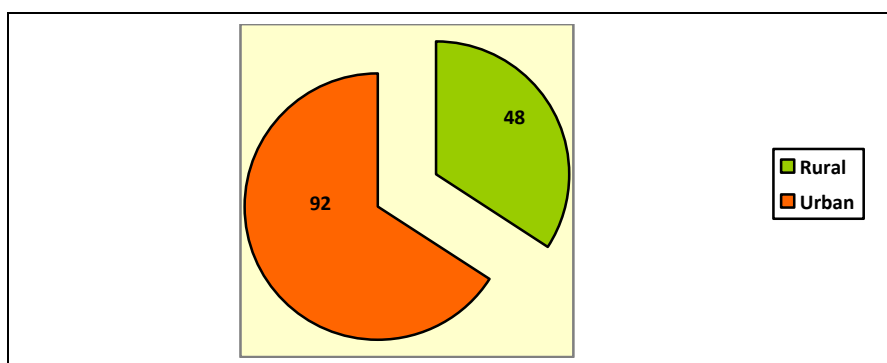


Fig. 3. The distribution of subjects in terms of environment

The rural/urban ratio is of 12/23, the number of patients coming from urban environments being two times larger than the number of patients coming from rural backgrounds. This situation can be explained by the better addressability of patients in urban areas to specialized doctors, as well as the level of education for health of the population, which is more developed in urban areas.

The Metavir Score has been applied at all patients. This score has been initiated in France by the Metavir Study Group and includes: activity (A), including the periportal necrosis and the lobular necrosis as values of inflammations marked from 0 to 4, where 0 represents little or absent activity and 4 represents a very intense activity; fibrosis (F) is marked separately, in relation to its degree, from 0 to 4. By combining activity and fibrosis one can obtain the severity degree of chronic hepatitis.

The vertical section of the following table presents the intensity of lesions, through a semi-quantitative evaluation, from A0 to A3 for activity and F0-F3 for fibrosis.

Table 1.

The analysis of the Metavir score in chronic viral hepatitis

Degree	Metavir Score	
	A (no. of cases)	F(no. of cases)
0	2	12
1	53	28
2	82	72
3	3	27
4	0	1

According to data in table I, it appears that 1,42% of subjects presented no activity, 37,85% presented minimum activity, 58,57% presented important activity and 2,41% demonstrated severe activity.

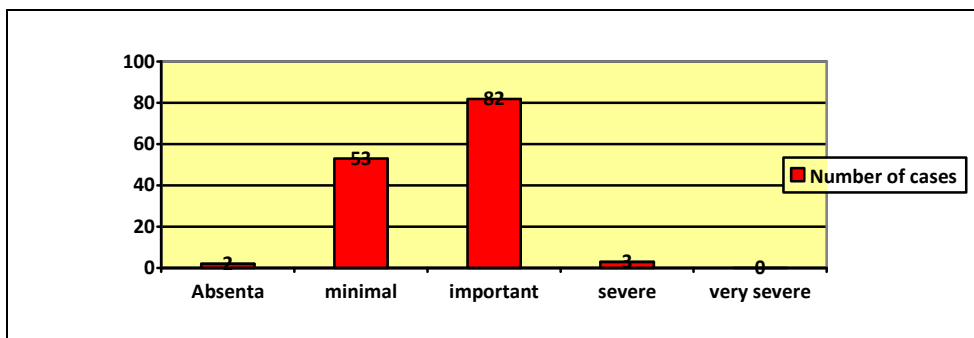


Fig. 4. The distribution of subjects in terms of the necrotic-inflammatory activity

Fibrosis has been absent in 12 cases; portal and periportal fibrosis without septa at 28 cases and 72 cases with rare septa. Portal and periportal fibrosis with numerous septa has been identifies at 27 subjects and 1 was diagnosed with cirrhosis.

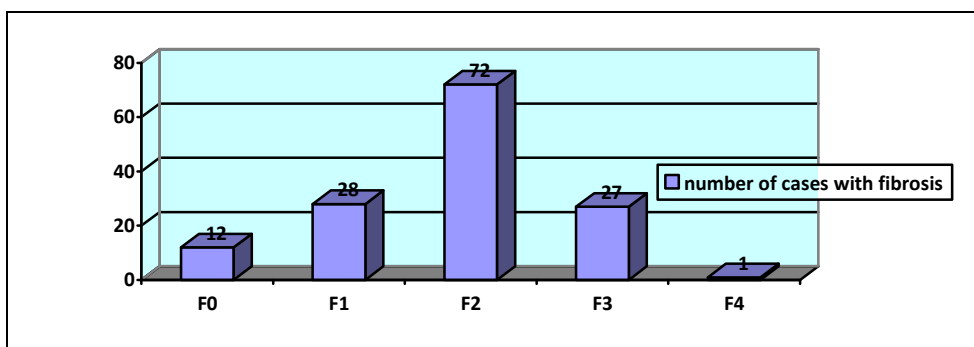


Fig. 5. The distribution of subjects in terms of the fibrosis degree

Corroborating the activity with the degree of fibrosis in each case in particular, we have obtained the following results:

Table 2

The distribution of subjects in terms of the fibrosis degree

Activity degree	A0		A1			A2			A3	
Fibrosis degree	F0	F1	F0	F1	F2	F1	F2	F3	F3	F4
No. of cases	0	2	12	21	20	5	52	25	2	1

Taking into account the degree of cellular activity one can identify 2 cases of inactive chronic hepatitis with a minimum degree of fibrosis, present only in portal and periportal spaces.

37,85% of subjects presented slight necrotic-inflammatory activity, inflammation only in some port spaces, piecemeal necrosis absent or simply a focal alteration of the periportal plaque with absent fibrosis or portal without septa or with rare septa. These have been associated with minimum active chronic hepatitis, which correspond to the A1F1 A2F2 Metavir score.

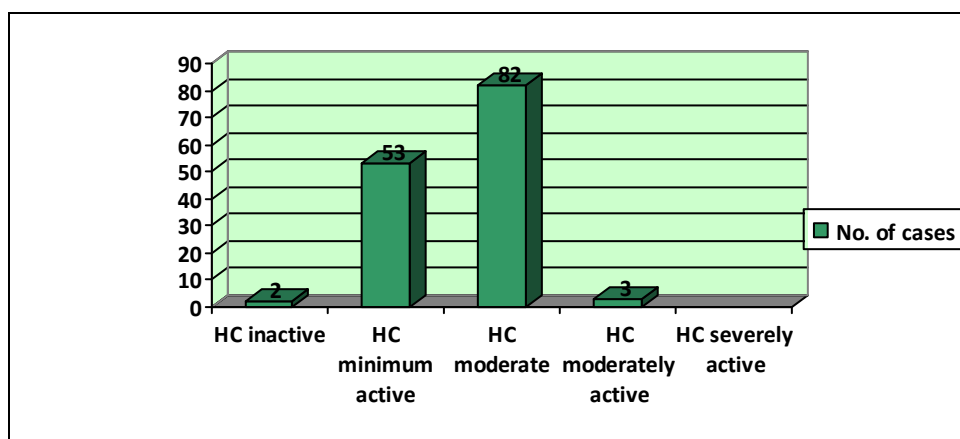


Fig. 6. The distribution of subjects in terms of disease severity

At 58,57% of subjects the necrotic inflammatory activity has been more intense, piecemeal necrosis appears around all port spaces or present a diffuse alteration of the portal plaque; portal fibrosis also present rare or numerous septa, these being considered moderately active chronic hepatitis. The METAVIR score has been A2 or A3, F2 or F3.

The three cases characterized by piecemeal necrosis around all port spaces and more necrotic-inflammatory centers, or diffuse alteration of the periportal plaque in all port spaces, with numerous septa and /or cirrhoses have been considered severely active chronic hepatitis. The METAVIR score has been A3F3, A3F4.

CONCLUSIONS

- the hepatic biopsy has been used as major diagnosis instrument in evaluating the patients suffering from chronic hepatitis, since it is the most direct way of visualizing necrotic-inflammatory hepatic processes and of fibrosis;
- by means of histology and the METAVIR score, an exact classification of the hepatic illness severity (inflammatory activity) and of fibrosis has been obtained. With the help of the METAVIR score, the severity of the hepatic disease has been determined, as well as the progress of fibrosis;

- the accuracy of the METAVIR score is determined to a high degree by the adequacy of the samples;
- the METAVIR system allowed a classification of cases in terms of their aggressiveness, the estimation of prognosis and the indication of therapeutic offers;
- the METAVIR system, being simple and easy to be put into practice, has been very appropriate for determining the chronic hepatitis type for each case in particular.

REFERENCES

1. ANDERSON RN, B.L. SMITH, 2003, "Deaths: leading causes for 2001". National vital statistics reports: from the Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System 52 (9): 1–85.
2. BRENNER, D.; R.A. RIPPE, 2003, "Pathogenesis of Hepatic Fibrosis". in Tadataka Yamada. Textbook of Gastroenterology. 2 (4th ed.). Lippincott Williams & Wilkins. ISBN 978-0781728614.
3. COSBY RL, B. YEE, R.W. SCHRIER, 1989, "New classification with prognostic value in cirrhotic patients". Mineral and electrolyte metabolism 15 (5): 261–6.
4. GOODMAN Z ,2002, Histopathology of hepatitis B virus infection. In: Lai CL, Locarnini S, eds: Hepatitis B Virus. International Medical Press, London; pp. 131-143.
5. HALFON P, M. MUNTEANU, T. POYARDd, 2008, "FibroTest-ActiTest as a non-invasive marker of liver fibrosis". Gastroenterol Clin Biol 32 (6): 22-39. PMID 18973844
6. MILLS, STACEY E., 2007, Histology for Pathologists, 3rd ed. Lippincott Williams and Wilkins, Philadelphia.
7. SCHIFF, EUGENE R., SORRELL, MICHAEL F., MADDREY, WILLISC. 2007, Schiff's Diseases of the Liver, 10th Edition Lippincott Williams & Wilkins, Philadelphia.
8. THIERRY P., V. RATZIU, B. YVES, T. DOMINIQUE, M. JOSEPH, 2005, Progression of fibrosis. In: Howard C.Thomas,Stanley Lemon and Arie J. Zuckerman, eds: Viral hepatitis .Blackwell publishing Ltd Oxford UK, pp. 511-516.
9. THUNG SN, F. SCHAFFNER ,1994, Liver biopsy. In: MacSween RNM, Anthony PP, Scheuer PJ, Burt AP, Portmann BC, eds. Pathology of the Liver. 3rd ed. London: Churchill Livingstone.
10. ZAKIM D, TD BOYER, 2003, Hepatology: a Textbook of Liver Disease, 4th ed. Philadelphia: Saunders