

RELATIONSHIP BETWEEN HEPATITIS B AND C VIRUS PREVALENCE AND RISK FACTORS

Roxana POPESCU*, Doina VERDES*, Laura GOTIA**, Emila NICOARA***, Nicoleta FILIMON****, Gabriela MUTIU*****, Florin BOGDAN*****

* University of Medicine and Pharmacy "Victor Babes", Department of Cellular and Molecular Biology, Timisoara, Romania

** University of Medicine and Pharmacy "Victor Babes", Physiology, Timisoara, Romania

*** University of Medicine and Pharmacy "Victor Babes", Infectious Disease, Timisoara, Romania

**** Western University of Timisoara, Faculty of Chemistry – Biology – Geography, Department of Biology, Timisoara, Romania,

***** University of Oradea, Faculty of Medicine and Pharmacy, Department of Microbiology, Oradea, Romania

Corresponding author: Roxana Popescu, Department of Cellular and Molecular Biology, University of Medicine and Pharmacy "Victor Babes", 2 Eftimie Murgu, 300041 Timisoara, Romania, Tel.: 0040723649886, e-mail: popescurxn@yahoo.com

Abstract: Hepatitis C virus (HCV) and hepatitis B virus (HBV) are major causes for liver disease worldwide and potential causes for substantial morbidity and mortality in the future. The aim of this study was to assess the prevalence of hepatitis C and B virus infection and to identify the associated risk factors of viral hepatitis. In our experiments we use as materials 107 patients, 48 men and 59 women, aged from 7 to 67 years old. The maximum incidence of HBV and HCV hepatitis was observed at patients aged between 40 to 60 and especially at people in urban areas. The number of cases with HCV was twice higher at men than at women, while for HVB the incidence was higher for men than for women. Risk factors for transmission of HCV and HBV were medical procedure in the high-risk group, while vertical or sexual transmission belongs to the low-risk patient group. In conclusion, this study demonstrates that the prevalence of HBV and HCV infection is high, thus asepsis and antisepsis measures should be strictly followed.

Keywords: hepatitis C virus, hepatitis B virus, prevalence, risk factors

INTRODUCTION

Hepatitis C virus (HCV) infection is one of main public health problems in the world. The presence of C virus is estimated by OMS epidemiologists at about 300 million people out of whom one million are in our country [22]. HCV is the main cause of parenterally transmitted non-A, non-B hepatitis. The main feature is the steadily persistent evolution, silent from clinical point of view, having obvious tendency towards becoming chronic or malign. According to the data provided by a study made in Europe, in 22 countries, about its impact, the number of people who die because of C hepatitis is twice as great as the number of people who die of HIV/ AIDS. Sum all, C hepatitis is responsible for 35% of cirrhosis cases and for 32% of hepatic cancer cases [14]. These data would account for the reason why infection caused by HCV has become in Romania, but also all over Europe the main cause for chronic liver disease and a major indication for transplant. The main transmission way for HCV is parenterally and involves healthy blood coming into contact with infected blood [6]. HBV is the etiological agent of hepatitis B. According to OMS data, approximately two billion people are infected with VBH, out of who 350 million are chronic carriers who face a high – risk death due to cirrhosis or hepatic cancer, diseases responsible for about 500000 - 1 million deaths per year [21]. HBV is transmitted in the same way as HIV: by contact with blood or body fluids of an infected person, including perinatal, sexual contact, child-to-child transmission, unsafe injections, and transfusions; however, HBV is 50 to 100 times more infectious than HIV and 10 times more infectious than HCV [1, 5].

The introduction and the use of the new methods of detecting hepatic viruses has made it possible to analyze the characteristic features of the newly -

discovered cases and the epidemiologic changes, thus allowing the improvement of the measures to combat the disease. At the same time, the way by which the viral contamination occurs, influences the development, the evolution and the prognostic of infection in different manners [3]. The complexity and uncertainty related to the geographic distribution of HBV and HBC infection is influenced by associated risk factors and the cofactors that accelerate its progression. The present study has as its main purpose to identify the associated risk factors: age, sex, ways of contamination with HVB and HVC, smoking, alcohol, and lifestyle.

MATERIALS AND METHODS

We carried out a retrospective study in which was included both patients admitted in the Infectious Diseases Clinic of the Victor Babes Clinic Hospital Timisoara, between 2000-2005, as well the patients diagnosed by the Pathological Anatomy Service at the Infectious Diseases Hospital Craiova, between 2000-2003. Altogether we studied 107 cases, 48 men and 59 women, aged between 7 and 67. All cases were investigated from histopathological and/ or serological points of view, thus being diagnosed with HVB, respectively HCV. With a view to assess possible risk factors for HBV and HVC infection transmission, the patients were questioned about blood transfusion histories, surgical and endoscopic procedures, dialysis, use of endovenous illicit drugs, acupuncture treatment, use of alcohol or tobacco. The data of interest referring to parameters taken into consideration by us- such as the contamination way, the living environment, smoking, alcohol consumption - were selected and introduced in the computer in Microsoft Excel data tables and afterwards processed into statistics.

RESULTS

There were altogether 107 cases of patients with HCV under study and they grouped into two lots: lot A, made of 74 cases of HCV and lot B made of 33 cases of HBV (Fig. 1). Following the distribution according to age of the HVC cases, we noticed that the lot was made of 50 women and 24 men aged between 30 and 67, the mean age of patients was 54, 79 (SD=10.58)

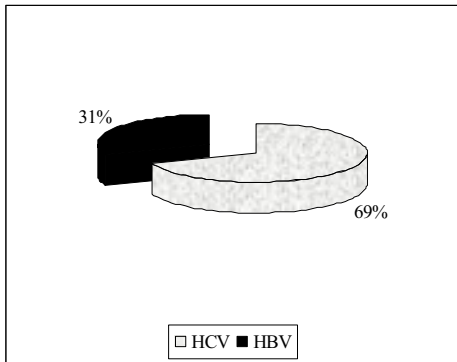


Figure 1. Prevalence of hepatitis B and C virus.

number at men than at women, with all the other age groups, the number of chronic HVC was twice as much at women than at men (Fig. 2).

Lot B included 9 women and 24 men aged between 7 and 59, the mean age of HBV patients was 38, 81 (SD=14, 89) years. Following the distribution of the cases according to age groups, we noticed a higher incidence of HVB at group ages between 40 and 50 (n=11) and between 50 and 60 (12 cases). A relatively smaller number was noticed at the age group between 30 and 40 (n=6) and at those below 30 (n=7). We did

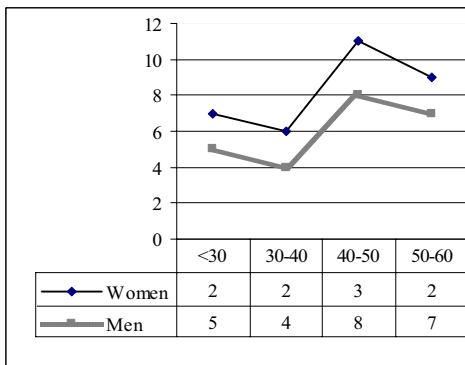


Figure 3. Age and gender specific prevalence of HBV.

We tried to determine the possible ways of transmitting the disease for lot A and for lot B. From the records available, we could notice that for most cases there had been, in personal history, medical-surgical procedures: injection treatments (n=51), surgery (n=77), transfusions (16) and dialysis (n=8); for a very small number of the cases the transmission of the disease was through sex (n=4) or there was vertical or intrafamilial transmission (n=3) (Fig. 5). Following the related risk factors such as: alcohol consumption, smoking habits, toxic living or working conditions, we noticed that alcohol as a risk factor was only noticed in a very small number of cases with HCV (n=12) and with HBV (n=11). Smoking was associated

years. We also noticed an increase in the number of people developing the disease with ages between 50 and 60 (n= 32). A relatively small number of cases was noticed at patients aged between 40 and 50 (n=16), at those aged more than 60 (14 cases) and at those with ages between 30 and 40. We didn't notice any case at the group of age below 30 years. Following the distribution according to sex, with the exception of the age group between 30-40 where we noticed a greater

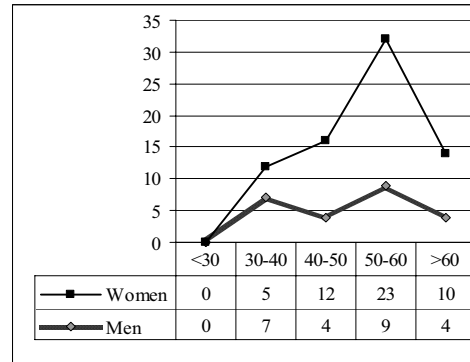


Figure 2. Age and gender specific prevalence of HCV.

not notice any case belonging to the age group after 60. As far as the sex distribution is concerned, we noticed a 2 to 3 higher incidence at men than at women (Fig. 3).

Out of all 107 cases under study, 22, 42% (n=24) lived in rural areas and 77, 57% (n=83) lived in urban areas. Related to the two lots taken into consideration, the cases were distributed as follows: in lot A, 17, 56% (n=13) of the cases lived in rural areas and 82, 43% (n=61) lived in urban areas; in lot B, 33, 33% (n=11) of the cases lived in rural areas while 66, 66% (n=22) lived in urban areas (Fig. 4).

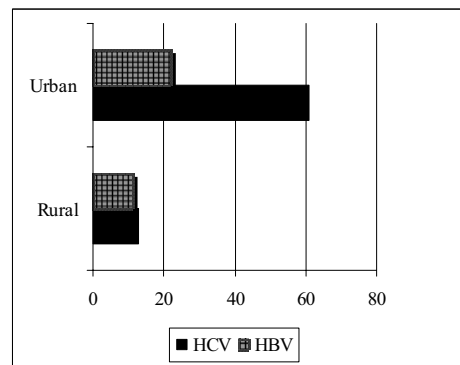


Figure 4. Distribution of the patients in rural or urban area.

with 32 cases in lot A and 20 in lot B, while the toxic working environment accounted for 7 cases in lot A and 4 in lot B (Fig. 6).

DISCUSSIONS

The maximum incidence of chronic HVC was at people aged between 50 and 60, but between 40 and 60 for lot B. The age of the patients is a very important factor, the severity of hepatic lesions being higher with age. With the exception of the group of age 30- 40, the number of cases with chronic HVC was twice as high at women than at men, while for HBV the incidence was higher for men than for women. Similar data could

also be found in medical reference literature, as Bronowicki and coauthors signaled a peak of chronic viral hepatitis at about the age of 60 for both sexes, also pointing out to a small number of cases at the age group between 25 and 45 [4]. Although for most cases under study there had been medico-surgical procedures, it was difficult to document the exact date of the beginning and the exact way of contamination

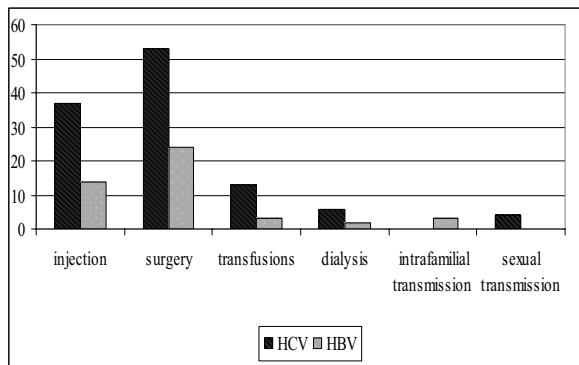


Figure 5. Distribution of HCV and HBV contamination.

situation of intravenous use of drugs [7, 12, 13]. Nosocomial or iatrogenic contamination is difficult to assess because the existence in the patient's history of some invasive medical or surgical procedures does not certify the iatrogenic way of virus infection [2]. Bronowicki demonstrated the role of dialysis, of the digestive endoscopy and of the biopsy [3]. Following some research which grouped 9 studies altogether, it was estimated that the role of the working environment exposure in transmitting the viruses varies between 2.1% and 10% depending on the viraemia of the source subject [11]. The sexual transmitting of the virus is relatively small [23], and the one on vertical way is estimated at 5% in the absence of HIV coinfection; also the risk of transmitting the disease decreases in the case of caesarean section as compared to regular child birth when the membrane gets broken [8,17].

By comparing the distribution of the cases in the two lots according to the lifestyle, we noticed that, while most cases in lot A have an urban distribution, in lot B the distribution is 2:1 for the urban area. Similar results were recorded in medical reference literature, explicable through the existence in the urban areas of a greater number of people exposed to risk factors (intravenous drug administration, blood donation, work-related risk, etc.) [18].

Related alcohol consumption in high quantities is a major risk factor for hepatic lesions. Experimentally, it was proved that alcohol increases virus replication, causing hepatic death, iron loading in hepatocytes and diminishes the immune response [16, 17, 19]. The aggravating role of tobacco use upon the progression of the hepatic lesions and of the fibrosis has been also proved by many a study [9, 15, 20].

Since most cases showed procedures that involve using medical instruments in their history, sterilization of the medical equipment, screening for the blood-borne viruses in transfusion, and education of medical workers are required to prevent the transmission of HCV and HBV.

for these patients. The data in the medical reference literature suggests that the transmission of HVB and HVC occurs predominantly in parenterally way, by contact with the infected blood; blood transfusions were initially acknowledged as a main source of contamination in the 90's [10]. Some studies carried out in France emphasized a prevalence which varies between 40% and 73% depending on region, in the

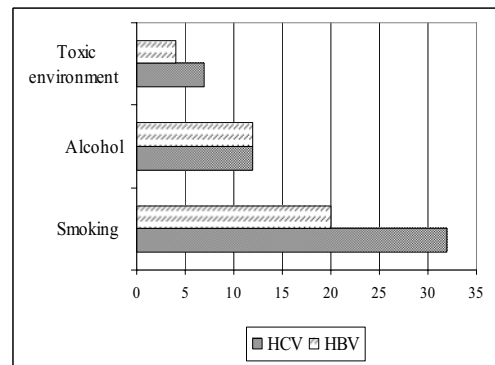


Figure 6. Associated risk factors in HCV and HBV infection.

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