Prevalence of hepatitis B and C virus infection in barbers in the Sivas region of Turkey

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Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections are among the most devastating health problems in the world, including Turkey. The route of transmission of HBV and HCV is mainly parenteral, a small number of epidemiological studies demonstrating that perinatal, sexual, household and occupational transmission occurs. Contact of a patient’s blood or bodily fluids with non-intact skin is another mode of HBV and HCV transmission. Barbers in Turkey may often be exposed accidentally to the blood and bodily fluids of their customers. The aim of this study was to determine the prevalence of HBV and HCV infection in barbers. We conducted a study to determine the prevalence of antibodies against HBV and HCV among 176 barbers and 180 control subjects in the Sivas region of Turkey. The prevalence of HBV and HCV was found to be higher in barbers (39.8 and 2.8%, respectively) than in a comparison group (28.3 and 1.1%, respectively). No significant relationship was found with the duration of occupation. Among the seropositive subjects, it was found that most had been exposed to needle pricks or scissor cuts. Our data suggest that both HBV and HCV infections may constitute occupational hazards for barbers. The sources of infection could be not only such personal risk factors as ‘sharps’ injuries and scissor cuts, but may also include other unknown factors.

Key words: Hepatitis B virus; hepatitis C virus; prevalence; barbers.

Introduction

Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections are among the most devastating health problems in the world, including Turkey. Moreover, fully effective treatments for the diseases caused by these agents have not yet been reported.

The clinical features of acute hepatitis B and C are not distinct from each other. More than 50% of cases of hepatitis B and 75% of hepatitis C cases are subclinical, and may go unnoticed [1,2]. Thus, infected people do not usually become aware that they have had acute hepatitis infection.

The fact that hepatitis may be asymptomatic contributes to its transmission. Transmission can be through bodily secretions, such as saliva, urine and sweat, along with blood and blood products [3,4]. Barbers while shaving, and coiffeurs (beauticians, hairdressers) while cutting hair, pedicuring and manicuring, may often be exposed accidentally to the blood and bodily fluids of their customers.

The objective of our study was to determine whether barbers form a risk group in terms of their role of acquiring HBV and HCV.

Subjects and methods

Of the 400 barbers officially registered with the local chambers of trade in the Sivas region, 176 were included in the study from November to December 1996. All the subjects were selected randomly, using random number tables. Their age range and duration of employment were 28 ± 13 and 13 ± 7 years, respectively.

The subjects involved in this study were not vaccinated against HBV. All were questioned regarding factors such as previous blood transfusion, intravenous drug use, jaundice, surgery, tattooing, accidental needle pricks,
scissor cuts and tooth pulling. Subjects who had experienced jaundice prior to starting the profession or had impaired immune function (as a result of malignant disease and/or steroid treatment) were excluded.

The comparison group was composed of 180 of the 2350 (7.65%) tradesmen officially registered with the local chambers of trade, not thought to carry any occupational risk to hepatitis B and C, who were selected randomly, using random number tables. These comprised 42 of 340 grocers (12.35%), 30 of 590 furniture sellers (5.08%), 24 of 120 stationers (20%) and 84 of 1300 clothes-shop keepers (6.46%). Their mean age was 25 ± 9 years.

All subjects gave informed consent. Blood samples were collected from the subjects. Sera obtained from the individuals included in the study were stored at −40°C until they were analysed for the markers of hepatitis virus infection.

HBV infection markers included surface antigen (HBsAg), surface antibody (anti-HBs) and core antibody (anti-HBc). Each was measured using a commercial enzyme-linked immunosorbent assay (ELISA Test System; Sorin-Biomedica, Saluggia, Italy). Antibodies to HCV were tested using a second-generation ELISA (Sorin-Biomedica). Samples that were positive in the ELISA test were also analysed for HCV RNA by reverse transcription and a nested polymerase chain reaction. The presence of a band 251 bp long was considered a positive result [5, 6]. Subjects with a positive test for at least one serological marker for HBV and a positive HCV RNA test for HCV infection were considered seropositive.

χ² analysis and Fisher’s exact test were used for comparison of categorical variables. The odds ratio and its 95% confidence interval (CI) were calculated using logistic regression with adjustment for age. Differences with \( P < 0.05 \) were considered significant.

### Results

HBV and HCV infection markers were found in both the barbers and the comparison group (Table 1). While there was no significant difference between groups with regard to HBsAg, anti-HBs, anti-HBc or HCV seropositivity, the overall seropositivity of HBV in the barbers was significantly higher than the comparison group (\( P < 0.05 \)).

No association was demonstrated between the duration of employment and the prevalence of seropositivity for hepatitis infection (Tables 2 and 3). However, when the duration of employment was categorized as ≤5 years and >5 years, the prevalence of HBV positivity did differ between groups, the non-adjusted odds ratio being 1.1 (95% CI = 1.07–1.16; \( P = 0.17 \)) and the odds ratio adjusted for age being 6.85 (95% CI = 1.06–12.3; \( P = 0.04 \)).

Differences in exposure to various risk factors were also considered between HBV-positive and -negative barbers. Scissor cuts/needle pricks appeared to confer three times more risk for the acquisition of HBV infection. However, this factor was found to be a less important risk factor for HCV-positive barbers with an odds ratio of 0.2 (Table 4). Analysis for other risk factors for exposure (surgery, jaundice, dental work, hospitalization) was not possible due to the limited numbers.

### Discussion

The prevalence of HBV and HCV infections varies from country to country, and even from one region to another, based on environmental factors and host characteristics.
The prevalence of HBV and HCV has been widely investigated in many occupational groups, but few data are available on the prevalence in barbers. Therefore, we believe that our study fills a gap.

Our study shows that 8.5% of our group are HBsAg carriers and that there is a total 39.8% HBV seropositivity. In a seroepidemiological study carried out in Turkey, an average 4–5% of the population were found to be HBsAg carriers, whereas 33% were HBV positive [8]. On the other hand, HCV seropositivity in our study was found to be 2.8%, which is not significantly different to the comparison group. However, the prevalence of HCV infection was only 0.8% in a countrywide study within the normal population of Turkey [9].

In a similar seroepidemiological study conducted among barbers in Huanshi, China, She et al. [10] found that HBV seropositivity was elevated compared with the comparison group, although this was based on only one hepatitis infection marker (86.1 versus 61.7%). Also, Mele et al. [11] reported that the act of shaving in barbers was associated with the parenteral transmission of both types of hepatitis to barbers. However, Sagliocca et al. [12] did not find any association between hepatitis B and shaving in barbers as a risk factor. We could not compare the prevalence of hepatitis markers other than those reported in these studies as we were not able to find any other published papers.

Here, we report that approximately one-third of the barbers (39.8%) were found to be HBV positive, presumably some at least infected during the course of their employment. However, HCV seropositivity did not exhibit a significant difference compared with the comparison group (2.8 versus 1.1%). Barbers seemed to be at particular risk during the first 5 years in the job, the odds ratio for HBV seropositivity being significantly raised when adjusted for age for this group. This was possibly due to the lack of experience in the initial years of the profession.

Epidemiological surveys on HCV infections indicate that the transmission route is mainly parenteral. However, in 40% of the cases, the transmission route is not known. In this study, it seems likely that the route of transmission was direct contact with the blood or bodily fluids of an infected person and/or contaminated instruments or other articles (permucosal transmission) [1]. A study on HCV infection risk factors conducted by Soresi et al. [13] indicated no clear mode of transmission for HCV infection. They demonstrated potentially important sources of transmission as visits to barbers and 'non-conventional causes' within the family, such as the sharing of razor blades, toothbrushes, scissors, etc. Schmidt [14] emphasized the importance of public awareness/sensitivity to HCV transmission routes and warned especially against the potential dangers of HCV transmission during visits to barbers in less developed countries.

As can be seen in Table 4, the odds ratios for possible risk factors for individual exposure are all rather low (except for barbers cutting themselves or accidental needle pricks). Very few barbers (two of our group) were aware of the physical signs of hepatitis, such as jaundice. This might be because many cases of hepatitis and the carrier state are largely asymptomatic. Asymptomatic carriage, however, brings a high risk of primary liver cancer and chronic active hepatitis, which frequently progresses to cirrhosis, resulting in death [1]. If these facts are considered, our results suggest that this risk is important among the population of barbers.

Table 4. Potential risk evaluation for acquisition of HBV and HCV infection in barbers with a history of probable risk factor (scissor cuts/needle pricks) exposure

<table>
<thead>
<tr>
<th>Risk factor positive</th>
<th>Risk factor negative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>65</td>
<td>70</td>
</tr>
<tr>
<td>Negative</td>
<td>87</td>
<td>106</td>
</tr>
<tr>
<td>HCV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
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<td>5</td>
</tr>
<tr>
<td>Negative</td>
<td>149</td>
<td>171</td>
</tr>
<tr>
<td>Total</td>
<td>152</td>
<td>176</td>
</tr>
</tbody>
</table>

OR = odds ratio; CI = confidence interval.

Column percentage.

Row percentage.

*P < 0.05 by χ²; **P > 0.05 by Fisher’s exact test.

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*P < 0.05 by χ²; **P > 0.05 by Fisher’s exact test.
force in Turkey. Although the subjects in this study claimed that they were knowledgeable about protecting themselves against hepatitis, 152 of 176 barbers had been exposed to needle pricks, which might have been a route of transmission for the hepatitis viruses.

As a last remark, hepatitis B and C are fairly prevalent infectious diseases among barbers in Turkey. Nevertheless, further studies are needed to investigate their prevalence, and also to see if there are occupational risk factors for barbers in different countries.

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References