Risk factors for hepatitis C virus infection in Canadian patients with chronic type C hepatitis

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GY MINUK, WWS WONG, KDE KAITA, BG ROSSER. Risk factors for hepatitis C virus infection in Canadian patients with chronic type C hepatitis. Can J Gastroenterol 1995;9(3):137-140. Previous reports from the United States indicate that as many as 40% of patients with chronic hepatitis C virus (HCV) have no identifiable risk factor for HCV infection. To determine whether the same is true of Canadian patients with chronic HCV the records of 89 anti-HCV positive patients referred to the authors' tertiary care centre for evaluation of liver disease were reviewed. Each patient had been specifically asked about the following risk factors: previous blood transfusions; intravenous drug abuse; homosexual activity; sexual promiscuity (multiple sexual partners or a history of sexually transmitted diseases); tattoos made with nonsterile techniques; and ear piercing using nonsterile techniques. The results of the study revealed that 76 of 89 patients (85%) had at least one risk factor for HCV exposure, 38 (43%) had only one risk factor, 19 (21%) had two, 12 (14%) had three and the remaining three patients (3%) had four. The most common risk factor was a history of intravenous drug abuse (30 of 89 patients, 34%) followed by sexual promiscuity (28, 32%), previous blood transfusions (21, 24%), tattoos (17, 19%), homosexual contacts (seven, 8%) and ear piercing (five, 6%). Contrary to a recent report identifying sexual contact as an independent risk factor for HCV infection, only four cases (5%) were found where sexual promiscuity was identified as the only risk factor. In conclusion, these findings indicate that a possible source of HCV infection can be identified in a large majority of Canadians referred to an urban centre with chronic HCV infection.

Key Words: *Epidemiology, Hepatitis, Hepatitis C, Transfusions, Viral hepatitis*

Facteurs de risque à l'égard de l'infection au virus de l'hépatite C chez les patients canadiens atteints d'hépatite C chronique

RÉSUMÉ : Selon certains rapports produits aux États-Unis, jusqu'à 40 % des patients atteints d'hépatite C chronique ne présentent aucun facteur de risque identifiable à l'égard de l'infection au VHC (virus de l'hépatite C). Pour déterminer s'il en va de même des patients canadiens atteints d'hépatite C chronique, les dossi-

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THE VALUE OF SCREENING FOR anti-hepatitis C virus (HCV) antibody in patients with liver disease who deny risk factors for exposure remains unclear. A previous American study documented that 40% of HCV carriers have no identifiable risk factor for HCV transmission (1). This argues in favour of such testing. However, a recent study (2) from the United States suggests that one-to-one physician/patient interviews can elicit at least one risk factor in over 90% of patients. If this is substantiated, screening for HCV in patients who deny all risk factors is unlikely to be worthwhile. The purpose of the present study was to address this question as it applies to Canadian patients with chronic HCV infections.

PATIENTS AND METHODS

The charts of all patients seen at the Liver Diseases Unit, Health Sciences Centre, Winnipeg, Manitoba, from 1987-93 with a diagnosis of HCV infection were reviewed for accuracy of diagnosis and the patient's responses to a series of standard questions posed by a physician during one-to-one interviews at the initial evaluation. Only patients who were anti-HCV positive by second generation screening and supplemental assays were included in the study. The questions asked with respect to risk factors for HCV transmission included: have you ever received a blood or blood product transfusion?; have you

ers de 89 patients séropositifs à l'égard de l'anticorps anti-VHC ont été adressés au centre de soins tertiaires où travaille l'auteur pour une évaluation de leur maladie hépatique. Chaque patient avait été interrogé spécifiquement au sujet des facteurs de risques suivants : antécédents de transfusion sanguine, consommation de drogues intraveineuses, activités homosexuelles, promiscuité sexuelle (partenaires sexuels multiples ou antécédents de maladies transmises sexuellement), tatouage au moyen de techniques non stériles et perçage d'oreilles au moyen de techniques non stériles. Les résultats de l'étude ont révélé que 76 patients sur 89 (85 %) présentaient au moins un facteur de risque d'exposition au VHC, 38 (43 %) ne présentaient qu'un seul facteur de risque, 19 (21 %) en avaient deux, 12 (14 %) en avaient trois et les trois derniers patients (3 %) en avaient quatre. Le facteur de risque le plus fréquent était la prise de drogues intraveineuses (30 patient sur 89, 34 %), suivi de promiscuité sexuelle (28, 32 %), transfusion sanguine (21, 24 %), tatouage (17, 19 %), contacts homosexuels (7, 8 %) et perçage d'oreilles (5, 6 %). Contrairement à un rapport récent selon lequel le contact sexuel constituait un facteur de risque indépendant à l'égard de l'infection au VHC, quatre cas seulement (5 %) se sont révélés liés à une promiscuité sexuelle comme seul facteur de risque. En conclusion, ces résultats indiquent qu'une source possible d'infection au VHC peut être identifiée chez une forte majorité de Canadiens adressés dans un centre urbain pour infection chronique au VHC.

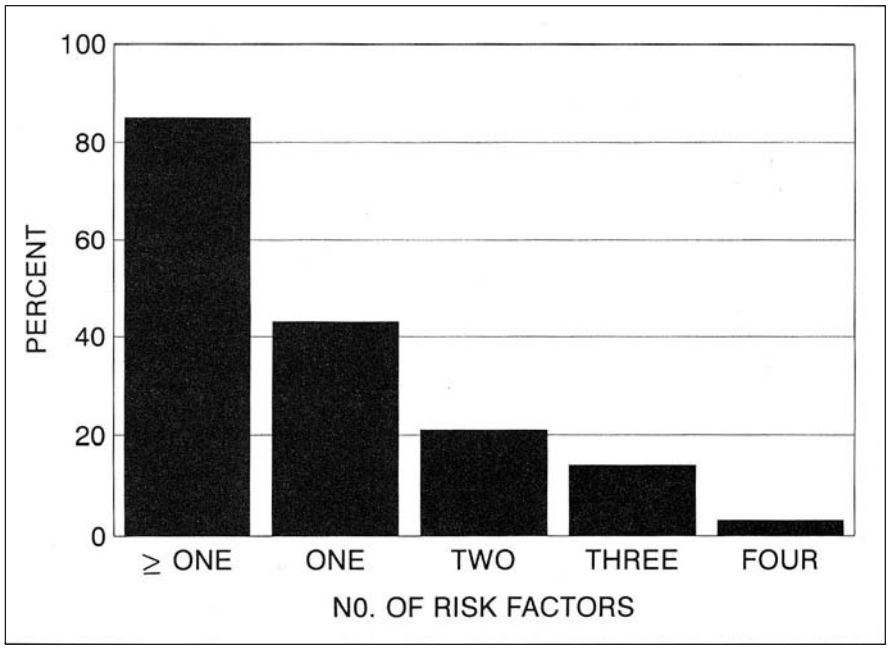

Figure 1) *Percentage of patients with risk factors for hepatitis C virus infection (n=89)*

ever used nonprescribed 'street' drugs that require needles for administration?; is your sexual preference heterosexual, homosexual or bisexual?; have you ever had a sexually transmitted disease or have you had more than five sexual partners during the course of one year?; if you have/had tattoos, were they created by someone without a licence for tattooing?; and if your ears are pierced, were they pierced by someone without a licence to pierce ears?

Eighty-nine patients responded to all questions and were serologically confirmed as anti-HCV positive. Twenty-nine patients had been referred for evaluation because of a positive anti-HCV result detected during screening by the Red Cross for blood donation. The remaining 60 patients were primarily referred for liver enzyme abnormalities associated with symptoms (fatigue, malaise, abdominal discomfort, etc) or enzyme abnormalities detected incidentally in the absence of symptoms.

RESULTS

The mean ± SD age of the 89 patients was 44.2±13.5 years (range 22 to 77). Fifty-six of the patients (63%) were male. As shown in Figure 1, 76 patients (85%) had at least one risk factor for HCV infection, 38 (43%) had only one risk factor, 19 (21%) had two, 12 (14%) had three and the remaining three patients (3%) had four. The most common risk factor was a history of intravenous drug abuse (30 of 89 patients, 34%) followed by sexual promiscuity (28, 32%), previous blood transfusions (21, 24%), tattoos by nonlicensed individuals (17, 19%), homosexual contacts (seven, 8%) and ears pierced by nonlicensed individuals (five, 6%) (Figure 2). The following risk factors were the sole risk factor for HCV infection in the 89 cases: blood transfusions (23 patients, 26%), nonsterile ear piercing (five, 6%), parenteral drugs (four, 5%), sexual promiscuity (four, 5%) and homosexual contacts (two, 2%). Being tattooed using nonsterile techniques was not an independent risk factor in any case (Figure 3).

DISCUSSION

The results of this study indicate that one-to-one interviews between Canadian patients with chronic HCV hepatitis and their physician will provide at least one potential risk factor for HCV exposure in approximately nine of 10 cases. These results are in contrast to previously published reports from the United States in which 40% of cases have no apparent source for HCV infection (1). They are, however, consistent with a recent Canadian report by Scully and colleagues (3) wherein 52 of 63 patients (83%) had at least one identifiable risk factor for HCV infection. The findings are also consistent with unpublished data from Dallas where risk factors for HCV exposure were found in 82 of 86 chronic HCV carriers (95%) with "careful interviewing" and "direct one-to-one questioning".

The epidemiology of HCV infections in North America has changed as a re-

sult of various medical and lifestyle interventions such as screening Red Cross blood donors for serological evidence of HCV, sterile needle programs and safe sex practices. These changes have resulted in corresponding changes to the prevalence of risk factors for HCV transmission. Thus, in 1982, the most common causes of HCV transmission were a history of blood transfusions (15%) and parenteral drug abuse (15%). Fewer than 10% of cases were ascribed to sexual/intimate contact and 50% had no identifiable source (4). In 1988, however, previous blood transfusions were incriminated in only 5% of cases and parenteral drugs in 45% (5). Sexual or intimate contact was thought to be the cause of infection in 10% and no known source could be identified in 40%. In the study by Scully et al (3), which was published in 1993, parenteral drugs were most common at 43% followed by previous blood transfusions at 33% and unknown at 17%. Although anti-HCV testing was performed in the sexual partners of index cases (and found absent), a history of sexual promiscuity was not assessed in that study. In the present study, parenteral drugs were the most common suspected source (34%) but sexual promiscuity was almost as common at 32%. Previous blood transfusions were the third most common risk factor at 25%.

Of interest, sexual promiscuity was an independent risk factor in only four of 89 cases (5%). The question of whether HCV can be transmitted by sexual or intimate contact remains unresolved (6). While previous studies failed to identify an increased incidence of HCV transmission among high risk heterosexual and homosexual populations (7,8), a recent report from Japan (9) revealed that 27% of sexual partners with no risk factors for HCV exposure other than marriage to a chronic HCV carrier tested positive for anti-HCV. The results of our study suggest that regardless of whether HCV infection is actually transmitted by this route, enquiries into a patient's sexual history serve to identify an appreciable number of cases wherein some high risk activity is responsible for HCV infection.

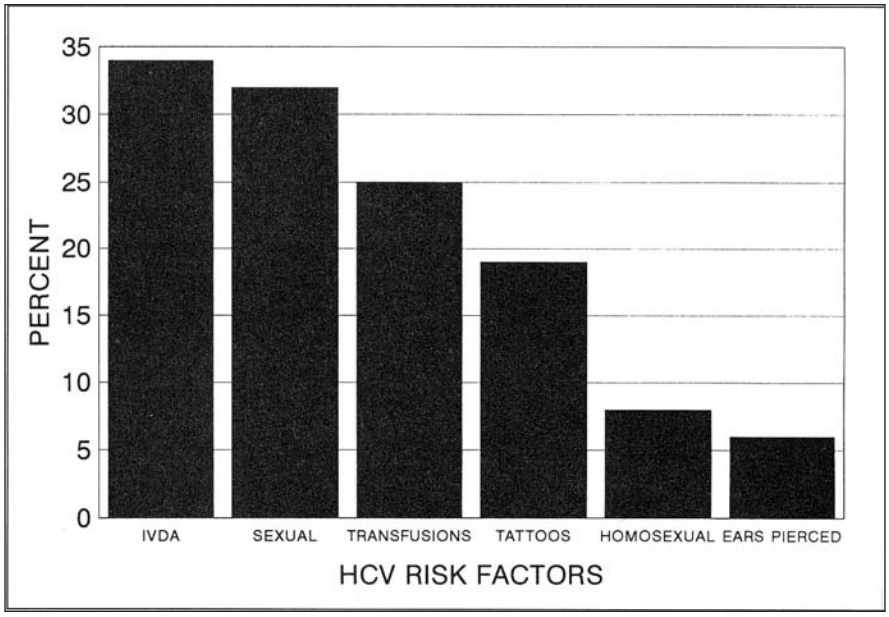

Figure 2) *Most common risk factors for hepatitis C virus (HCV) infection (n=89). IVDA Intravenous drug abuse*

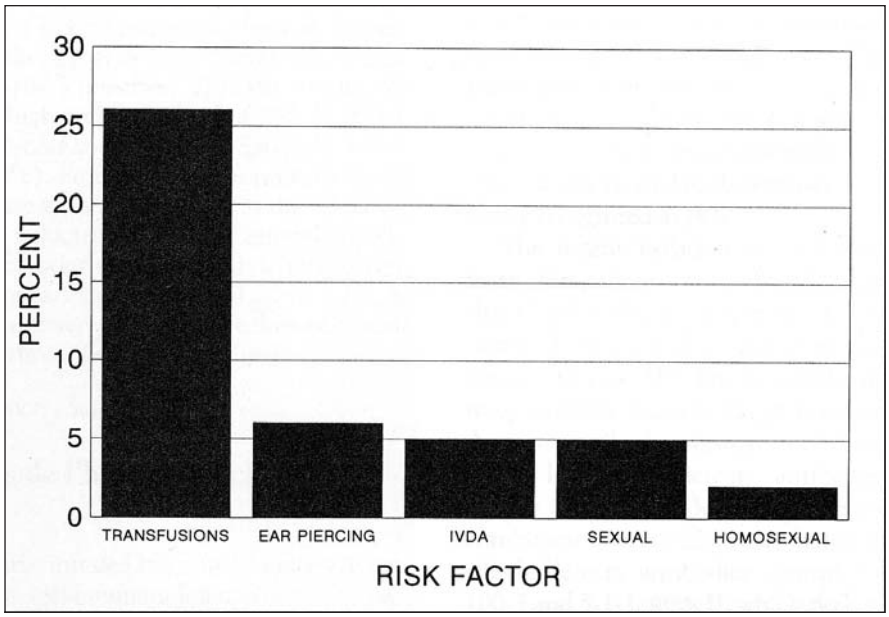

Figure 3) *Sole risk factor for hepatitis C virus infection (n=89). IVDA Intravenous drug abuse*

It is important to note that although our study documents at least one risk factor to be present in 85% of patients with chronic HCV infections, it does not address whether anti-HCV screening is justified in all high risk groups. Data from Chaudhary and Mo (10) suggest that such screening is justified when considering multitransfused individuals and parenteral drug abusers where 54% and 43% are anti-HCV positive, respectively. However, similar data have yet to be generated in other high risk groups, such as the sexually promiscuous, and those who have been tattooed or had their ears pierced using nonsterile techniques.

CONCLUSIONS

Our findings support the position that anti-HCV testing need not be obtained in referred patients who deny all

possible risk factors for HCV transmission during careful one-to-one interviews with a physician.

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