

Seroprevalence and Risk Factors for Hepatitis A Among Montreal Street Youth

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ABSTRACT

Objective: To estimate the prevalence of hepatitis A virus (HAV) antibodies among Montreal street youth.

Method: Anti-HAV antibody testing was performed on blood samples from a hepatitis B and C study conducted among street youth in 1995-96.

Results: Among the 427 youth aged 14 to 25 years, prevalence of HAV antibodies was 4.7% (95% confidence interval [CI]: 2.9%-7.2%). A multivariate logistic regression analysis showed that birth in a country with a high anti-HAV prevalence (Adjusted odds ratio [AOR]: 200.7; 95% CI: 38.1-1058.4), having had sexual partner(s) with history of unspecified hepatitis (AOR: 13.8; 95% CI: 4.2-45.2), and insertive anal penetration (AOR: 5.1; 95% CI: 1.6-16.7) were independently associated with infection.

Conclusion: Based on the relatively low HAV prevalence, the high prevalence of risk factors for infection, and the substantial hepatitis B and C prevalence, vaccination against hepatitis A is now actively promoted among Montreal street youth.

The translation of the Abstract appears at the end of the article.

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In countries with a low incidence of hepatitis A virus infection (HAV), outbreaks regularly occur among injecting drug users (IDUs) and homosexual men.¹ In 1995-96, we conducted a study on the prevalence of hepatitis B and C among street youth in Montreal (hepatitis B: 9.2%; hepatitis C: 12.6%).^{2,3} Towards the end of the study, the Montreal Regional Public Health Department observed an outbreak of hepatitis A among gay men. Given the high proportion of male street youth having had sex with other men (15.5%) and the high proportion of IDUs (45.8%) among these youth,^{2,3} we decided to document the prevalence of hepatitis A among street youth. We conducted a secondary analysis, using blood samples left over from the hepatitis B and C study (youth involved had agreed on the consent form to analysis of leftover specimen).

The methods of this study have been described in detail in a previous publication.² In brief, "street active" participants aged 14 to 25 years were recruited through the ongoing Montreal Street Youth Cohort Study.⁴ Youth were considered "street active" if they had either been without a place to sleep more than once or had regularly used the services of Montreal street youth agencies during the previous year. The cohort study was approved by the Human Subjects (Ethics) Committee, Department of Epidemiology and Biostatistics at McGill University.

All youth completed a 15-minute face-to-face questionnaire on socio-demographic characteristics and lifetime risk factors and gave a blood sample. Anti-HAV antibody testing using Roche Cobas Core anti-HAV EIA (Roche Diagnostics Systems, Mississauga, Ontario, Canada) was conducted on samples from 427 study participants. This competitive test has a cut-off value of 140 mIU/ml.

The overall prevalence of HAV antibodies was 4.7% (20/427) with a 95% confidence interval of 2.9% to 7.2%. The prevalence did not vary significantly with sex (8.8% for women vs 5.1% for men, $p=0.543$), while HAV-seropositive subjects were older than seronegative ones (21.0 vs 19.4 years, $p=0.007$). Among other relevant results, we found that HAV prevalence was not associated with oro-genital intercourse or with injection drug use. The lifetime variables presenting the strongest association with HAV prevalence in uni-

variate analyses were: birth in a country with a high anti-HAV prevalence⁵ (70.0% vs 3.1%, $p < 0.001$); sexual activities with a person with a history of unspecified hepatitis (18.9% vs 3.4%, $p = 0.001$), with a female prostitute (8.8% vs 3.2%, $p = 0.016$), or with an HIV-infected person (17.4% vs 4.1%, $p = 0.020$); having lived with someone (other than a sexual partner) infected with an unspecified hepatitis (13.2% vs 3.1%, $p = 0.002$); and insertive anal penetration (11.1% vs 3.6%, $p = 0.018$).

Table I presents the three factors independently associated with HAV infection in a multivariate logistic regression analysis.

Our data indicated frequent co-infections. Among the 20 cases with anti-HAV antibodies, four tested positive for hepatitis A and B antibodies, two for hepatitis A and C antibodies, and four for all three. The literature suggests that patients with chronic hepatitis B have a high case fatality rate during HAV superinfection; as for co-infection with HAV and hepatitis C virus, the clinical implications are more controversial.⁶ To date, one study⁷ has reported a higher fatality rate among patients with HAV infection superimposed on chronic hepatitis C, but these results have not been reproduced.

Our study showed that hepatitis A seroprevalence was low among street youth, except, as expected, among youth born in HAV-endemic countries.⁵ These results suggest that neither the outbreak in the gay community nor the use of injection drugs played an important role in the epidemiology of hepatitis A among street youth in Montreal at the time of the study. However, in light of the observed high proportion (21.4%) of male subjects reporting insertive anal penetration, the association of this activity with infection suggests a potential for increased HAV incidence. The finding that oro-genital sexual contact was not a significant factor for HAV prevalence is consistent with that of other studies.⁸

Some limitations must be considered when interpreting the results. First, the data were collected in 1995-96. However, we are not aware of any recent epidemiological changes in hepatitis A transmission that would influence the validity of the data. Another potential limitation is the

TABLE I

Factors Associated with HAV Infection in Multivariate Logistic Regression Analysis (n=420)*

Factors	HAV+/Total	Crude Odds Ratios	Adjusted Odds Ratios†	95% Confidence Interval
Birth in a country with high anti-HAV prevalence		71.3	200.7	38.1–1058.4
Yes	7/10			
No	13/410			
Sexual partner(s) with history of unspecified hepatitis		6.6	13.8	4.2–45.2
Yes	7/37			
No	13/383			
Insertive anal penetration‡		3.3	5.1	1.6–16.7
Yes	7/63			
No	13/357			

* 7 subjects excluded due to missing data.

† Adjusted for the three variables in the model.

‡ The women are classified in the "no" category.

generalizability of our results. However, we recruited subjects in all major organizations offering services to street youth and a recent survey of the homeless population has shown that most homeless in Montreal (over 90%) attend community organizations offering services to homeless.⁹ We are thus confident that our results are generalizable to the larger Montreal street youth population.

In conclusion, the relatively low prevalence of HAV combined with the high prevalence of risk factors for infection and the substantial prevalence of hepatitis B and C are indications for vaccination against hepatitis A among Montreal street youth. Based on these results, vaccination of this population is now actively promoted by the Montreal Regional Public Health Department.

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RÉSUMÉ

Objectif : Estimer la prévalence des anticorps contre le virus de l'hépatite A (VHA) chez les jeunes de la rue de Montréal.

Méthode : Dépistage des anticorps anti-VHA sur les échantillons de sang d'une étude sur les hépatites B et C menée chez les jeunes de la rue en 1995-1996.

Résultats : Parmi les 427 jeunes âgés de 14 à 25 ans, la prévalence des anticorps anti-VHA était de 4,7 % (intervalle de confiance [IC] à 95 % : 2,9-7,2 %). D'après une analyse de régression logistique multivariée, la naissance dans un pays à prévalence élevée d'anticorps anti-VHA (Ratio de cotes ajusté [RCA] : 200,7; IC 95 % : 38,1-1058,4), avoir eu un partenaire sexuel avec une histoire d'hépatite non précisée (RCA: 13,8; IC 95 % : 4,2-45,2) et les pénétrations anales actives (RCA: 5,1; IC 95 % : 1,6-16,7) étaient associés de façon indépendante avec l'infection.

Conclusion : La prévalence relativement faible du VHA, la prévalence élevée des facteurs de risque pour l'infection et la prévalence substantielle des hépatites B et C ont amené une promotion active de la vaccination contre l'hépatite A dans cette population.