

Are homosexual males a risk group for hepatitis A infection in intermediate endemicity areas?

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SUMMARY

The purpose of this study was to examine the prevalence of antibody against hepatitis A (anti-HAV) in a population of homosexual men compared with that of heterosexual men in an area of intermediate HAV endemicity (Madrid, Spain). A total of 148 patients were recruited in a Sexually Transmitted Diseases Clinic: 74 homosexuals (mean age of 28 ± 5 years) and 74 heterosexuals (29 ± 5 years). The prevalence of anti-HAV antibody was 47% and 43% for homo- and heterosexuals, respectively. Among the factors evaluated (age, sexual orientation and practices, travel to high HAV endemicity areas) oral–anal contact was significantly associated with a higher prevalence of anti-HAV antibody (odds ratio, 2·8; 95% confidence interval, 1·1–7·4; $P = 0\cdot03$). These results indicated that in an area of intermediate endemicity young homosexual men are not at increased risk of having acquired hepatitis A infection than heterosexuals. Oral–anal contact is an independent risk factor that influences the presence of anti-HAV antibody, regardless of sexual orientation.

INTRODUCTION

Transmission of hepatitis A virus (HAV) among homosexual males has been reported in different western countries since 1980, including outbreaks in several cities of Europe, North America and Australia [1–7]. Since the work performed by Corey and Holmes [1] it is well recognized that oral–anal sexual contact predisposes to HAV infection. The duration of sexual activity [8], and the number of lifetime sexual partners [9] are factors that have been associated with high prevalence of anti-HAV antibody in homosexuals.

Data on the seroprevalence of anti-HAV among Spanish homosexual men is scarce. A study published in 1984 showed no difference between homosexual men and the general population in anti-HAV seroprevalence [10]. The prevalence of anti-HAV antibody

has dramatically changed in Spain in the last 15 years, resulting in a growing proportion of susceptible young adults [12]. We report the results of a seroprevalence study performed in a Sexually Transmitted Diseases (STD) clinic, the aim of which was to determine whether HAV infection is more prevalent in homosexual than in heterosexual men, and to identify risk factors for HAV infection.

METHODS

The study population was male patients attending a STD clinic in Madrid, Spain. Subjects were between 20 and 40 years old, and gave their written informed consent to participate and comply with the protocol procedures. Those known to be anti-HIV positive and attending the STD clinic for follow up of anti-HIV status, those who had been previously vaccinated against HAV, and those who had received immuno-

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globulin in the previous year, were excluded from the study. Self-classification of sexual orientation was obtained by questionnaire with one of the members of the investigating team available to provide explanation if required. This questionnaire also included questions on demography, sexual practices, history of acute hepatitis and travel to high HAV endemicity areas (Africa, Asia and South-America) [11]. A sample of 10 ml of blood was collected for determination of the presence of anti-HAV antibody. Patients were informed of the results of their tests for anti-HAV antibody according to routine clinic practice.

Laboratory methods

Antibodies against HAV were measured at the STD clinic laboratory using a commercial ELISA test (HAVAB, Abbott Laboratories, Chicago, IL). Sample size calculation was based on the following assumption: the seroprevalence of anti-HAV antibody in the control group (heterosexual males) would be similar (50%) to that of the general population in the same range of age [12] and the study should be able to detect a 20% difference in prevalence between groups (homosexual and heterosexual). Accepting type I and II errors of 0.05 and 0.2, respectively, a sample size of 74 subjects per group (total of 148 subjects) was needed (one-sided test) [13].

Statistical analysis

The mean age at enrolment was compared between groups by Student's *t* test. Prevalence (and the corresponding 95% confident intervals (CI)) assessed by the presence of anti-HAV antibody of the study population as a whole and stratified by sexual orientation and by age group (20–30 and 31–40 years) were calculated. Association between seroprevalence of anti-HAV antibody and sexual orientation (homosexual or heterosexual), age, number of lifetime partners, oral–anal sexual contact and previous history of travel to high HAV endemicity areas were evaluated by two-tailed χ^2 or Fisher's exact test, as appropriate.

To assess the influence of the potential risk factors on the seroprevalence of hepatitis A, a multiple logistic regression analysis was performed using age, sexual orientation, number of lifetime partners and oral–anal contact as discriminating variables for the presence of anti-HAV antibody. Stepwise entry

procedures were used with conservative entry and removal criteria (*F* test, $P < 0.15$ and $P > 0.10$, respectively). Odds ratios (OR) were derived from the regression coefficients with 95% Wald confidence intervals. SAS 6.08 (SAS Institute, Cary, NC) statistical package was used for all analyses.

RESULTS

Between March and June 1994, a total of 148 men were included in this study: 74 homosexuals (mean age: 28 ± 5 years) and 74 heterosexual men (29 ± 5 years old). Eighty-four percent of homosexuals had reported a history of oral–anal contact, compared with 8% of heterosexuals (Table 1). Only 13% of homosexuals and 12% of heterosexuals recalled having a previous history of acute hepatitis. About 30% of subjects in both groups had travelled to areas of high endemicity of hepatitis A.

The prevalence of anti-HAV antibody was 35 of 74 homosexual men (47%; 95% CI, 37–59%) and 32 of 74 heterosexual men (43%; 95% CI, 32–54%). The overall prevalence was 46% (95% CI, 37–53%).

Twenty-one out of 45 subjects (58%; 95% CI, 44–72%) that reported history of travel to high HAV endemicity areas were anti-HAV antibody positive, compared with 42 of 102 subjects that had not visited these areas (41%; 95% CI, 32–50%). This difference was not statistically significant ($P = 0.07$).

Anti-HAV antibody prevalence was not related to age (Table 1). The number of lifetime sexual partners is not associated with the anti-HAV prevalence ($P = 0.81$). However, irrespective of sexual preference, oral–anal sexual contact is significantly associated ($\chi^2 = 3.9$, $P = 0.04$) with a higher seroprevalence of hepatitis A.

Results obtained in the logistic regression analysis confirmed that oral–anal contact was the only independent factor that influenced the presence of anti-HAV antibody (odds ratio, 2.81; 95% CI 1.06–7.44; $P = 0.03$).

DISCUSSION

In countries with a low overall prevalence of anti-HAV antibody, surveys have demonstrated higher prevalence of anti-HAV among homosexual males [1, 2, 4, 8]. Recent studies have attributed this to the increased use of oral–anal contact as an alternative to anal intercourse in trying to reduce HIV transmission

Table 1. Number of lifetime sexual partners and frequency of oral-anal contacts according to sexual orientation. Prevalence of anti-HAV antibody of the study population stratified by sexual orientation and distributed by subgroups of age, number of lifetime partners and by oral-anal contact

| | Sexual orientation | | | | | |
|-----------------------------------------------|--------------------|---------------|---------------|--------------|----------|---------------|
| | Homosexuals | Heterosexuals | | | | |
| No. of lifetime sexual partners | | | | | | |
| Mean | 189.5 | 21.1 | | | | |
| Standard Deviation | 812.6 | 28.8 | | | | |
| Median | 50 | 10 | | | | |
| Frequency of oral-anal contacts: <i>n</i> (%) | | | | | | |
| Never | 12 (16.2) | 67 (91.7) | | | | |
| Once | 6 (8.0) | 1 (1.4) | | | | |
| Less than once every 6 months | 26 (35.1) | 3 (4.2) | | | | |
| At least once a month | 30 (40.5) | 2 (2.8) | | | | |
| | Prevalence | | | | | |
| | Homosexuals | | Heterosexuals | | Total | |
| | <i>n</i> | Prevalence† | <i>n</i> | Prevalence | <i>n</i> | Prevalence |
| Subgroups of age (years) | | | | | | |
| 20-30 | 47 | 46.8 (32-60) | 47 | 40.4 (26-54) | 94 | 43.6 (33-53) |
| 31-40 | 27 | 48.1 (30-66) | 27 | 51.8 (33-69) | 54 | 50.0 (37-63) |
| Number of partners | | | | | | |
| ≤ 5 partners | 4 | 25.0 (1-80) | 24 | 45.8 (20-65) | 28 | 42.8 (24-60) |
| > 5 partners | 70 | 50.0 (39-61) | 50 | 42.0 (35-65) | 120 | 46.6 (37-54) |
| Oral-anal contact | | | | | | |
| Yes | 62 | 54.8 (39-69) | 6 | 66.6 (22-95) | 68 | 54.4* (42-66) |
| No | 12 | 41.6 (18-81) | 67 | 37.3 (26-48) | 79 | 38.0* (28-48) |

n, Number of subjects; * $P = 0.04$, $\chi^2 = 3.9$. † Prevalence is given as percentage of anti-HAV positive subjects and, in parentheses, the 95% confidence interval.

[4, 7]. As a consequence the use of vaccine against HAV should be considered for the control or prevention of outbreaks among homosexual men [5, 14].

This study shows similar level of prevalence (*c.* 46%) of anti-HAV antibody amongst young homosexual and heterosexual men attending an STD clinic, and the prevalence in these groups is similar to that recently found in the general population in Spain [12]. This suggests that in areas where HAV is still moderately endemic, homosexual orientation is not an independent risk factor for the presence of anti-HAV antibody. A similar finding was also described in Belgium in 1984 where homosexual men had an anti-HAV prevalence rate (43%) similar to that of the general population [15]. This study, however, also shows that oral-anal contact was an independent risk factor for HAV infection, and not only among homosexual men as previously described [1]. Young male adults that reported oral-anal contact are almost

three times more likely to be anti-HAV positive than subjects that never reported this sexual practice. This factor, however, has only a modest influence over the seroprevalence of anti-HAV antibody in populations of intermediate endemicity areas of hepatitis A.

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