

## Sexual Transmission of HCV

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Although there is evidence that sexual transmission of HCV occurs, this form of transmission is of secondary epidemiological importance when compared to percutaneous forms of transmission [1]. Among the evidence that supports the possibility of sexual transmission of HCV we can list the following:

- 1- Case reports of acute hepatitis C with anti-HCV seroconversion in sexual partners of individuals infected by HCV, excluding mechanisms of nonsexual transmission and with high genomic homology among viral strains infecting sexual partners [2-4].
- 2- Detection of HCV RNA in semen, vaginal secretion and cervical secretion, despite low titles in most cases [5-8].
- 3- Data from the Centers for Disease Control and Prevention demonstrating that, from 1995 to 2000, 18% of the cases of acute HCV infection in the United States occurred in patients reporting sexual contact with an individual infected with HCV in the preceding 6 months or multiple sexual contacts as the only risk factors for acquiring the infection [1].

The risk of acquiring HCV through sexual contact differs among subgroups of individuals: We can distinguish two main risk subgroups:

1. Individuals who have multiple sexual partners or who engage in sexual practices that might lead to mucosal trauma: sex professionals; men who have sex with men (MSM); and patients treated in clinics specializing in the treatment of sexually transmitted diseases (STDs).
2. Stable monogamous heterosexual sexual partners of individuals chronically infected with HCV.

In general, rates of anti-HCV incidence and prevalence are higher in the first subgroup. This may be due to differences in sexual practices among the groups, but also to nonsexual factors (sharing personal objects, tattoos, use of illicit drugs, etc.) [1]. Seroprevalence studies in the United States demonstrated median positive anti-HCV rates in 6% of women who were sex professionals, as well as in 4% of MSM, 4% of clients of STD clinics and 4% of participants in HIV surveillance studies. Studies conducted in other parts of the world have obtained similar results [9-15]. The following risk factors were identified: having had a high number of recent and lifetime sex partners; engaging in unsafe sexual practices; being infected with HIV; and having an STD. This indicates that sexual activity in general is a risk factor for HCV

transmission [1].

However it is essential to mention that the results of some studies contradict these findings. Studying the prevalence and incidence of positivity for anti-HCV antibodies in a cohort of 1085 HIV-positive Canadian MSM, Alary et al. found values of 2.9% and 0.038/100 individuals/year, respectively, both significantly associated with the use of injection drugs. The authors considered sexual transmission of HCV to be rare in this group [16]. In a study conducted in Thailand, Taketa et al. assessed the prevalence of anti-HCV in injection drug users, sex professionals and individuals with STDs. The prevalence was 85%, 2% and 0%, respectively, with a very low or null transmission rate in the last two groups [17]. Marinovich et al. prospectively studied a group of 171 couples discordant for HIV and HCV. The index cases were 152 men and 19 women, whereas the spouses were 152 women and 19 men. Forty-three per cent had engaged in unprotected vaginal and/or anal sex, 15% always used a condom but reported incidents in which the condom broke or slipped off during sexual contact, and 22% had performed unprotected orogenital sex. There was only one case of HIV seroconversion and no cases of HCV seroconversion during the follow-up of 529 individuals/year. There were 31 cases of pregnancy, 2 of them in women infected with HCV. This study suggests that the rate of HCV transmission is low or null among heterosexuals, even when the partner is infected with HIV [18].

For the second subgroup, the best studies are those excluding percutaneous factors of infection and evaluating genotypes and genomic sequence of viral strains in anti-HCV concordant couples. In those studies, the prevalence of HCV was estimated at 2.8-11% in the Asian Southeast, 0-6.3% in Northern Europe and 2.7% in the United States [1].

In one of the first studies to use genotyping and analysis of the sequence of nucleotides of the hypervariable E2 region, Zylberberg et al., studying 24 anti-HCV concordant couples, reduced to 3 couples the possible cases of sexual transmission of HCV. Nevertheless, nonsexual factors could not be ruled out and might have contributed to HCV transmission between couples [19]. In Iran, Hajiani et al. studied the HCV transmission rate for home contacts with no percutaneous risk factors. The rates found were 1.33% for the contacts and 1% for the controls ( $p > 0.06$ ). Only 2 of 59 spouses presented evidence of infection (3.39%). The authors conclude that intrafamily transmission is possible, although not common [20].

In a recent study, McMahon et al. determined that the transmission of HCV in 265 heterosexual couples using drugs in New York City was associated with the use of injection drugs by the couple, although not with the pattern of sexual activity [21]. Along the same lines, Boonyarad et al., studying 160 spouses infected with chronic hepatitis C (106 women

and 54 men, all monogamous, stable heterosexual couples), verified that only 3 individuals (1.88%) tested positive for anti-HCV antibodies and HCV RNA after a mean period of  $23 \pm 5$  years of unprotected sexual exposure. Nevertheless, in those 3 individuals, genotyping and sequence analysis did not clearly identify the same viral strains that infected their respective partners. The authors concluded that sexual transmission of HCV is rare [22].

Finally, Vandelli et al. conducted a large prospective study in which 895 monogamous and stable heterosexual couples were evaluated for 10 years [23]. Among the spouses, the authors identified 3 cases of seroconversion, none of which were attributed to sexual contact with the partner: in one case, the genotypes were different; in the other two, there were discrepancies in the sequence and phylogenetic analysis). Therefore, the authors conclude that the rate of sexual transmission of HCV is very low or even null in these patients. Therefore, it seems unnecessary to recommend condom use in this population. These couples did not practice anal sex, neither sex during menstruation nor used condoms [23].

The risk of sexual transmission of HCV ranges from 0-0.6%/year for heterosexual couples in monogamous, stable relationships to 1%/year to individuals with several sex partners [1]. Therefore, the formal, systematic recommendation of condom use is only necessary for the latter group. Condom use is also justified in HCV-positive individuals presenting concomitant STDs, having sex during menstruation or engaging in sexual practices that can traumatize the mucosal surfaces (anal sex, fisting, etc.) In conclusion, the sharing of objects potentially contaminated with blood, such as razor blades, scissors, nail clippers, cuticle trimmers and tooth brushes, is not recommended [1].

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