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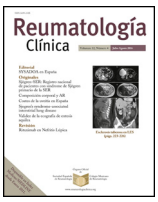

Brief Report

# Are RA patients from a non-endemic HCV population screened for HCV? A cross-sectional analysis of three different settings

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ABSTRACT

*Introduction:* In Mexico, other risk factors are associated with hepatitis C virus (HCV): prior heroin users, living alone, widower, and northern region residence. Rheumatoid arthritis (RA) patients are considered immunosuppressed and HCV testing is recommended before treatment. The aim of the study was to describe the characteristics of HCV testing in RA patients in three different medical care settings in a non-endemic area.
*Methods:* A retrospective observational study was performed using medical records from 960 RA patients describing the indications for HCV testing.
*Results:* The test was performed in 28.6% and the HCV overall frequency was 0.36%. Population characteristics were not associated with an increased risk of HCV infection; therefore, anti-HCV positivity was low. The main reason for testing was before starting biological agents.
*Conclusion:* Due to the low pre-test probability, testing for HCV infection should be personalized; i.e., according to disease prevalence in a particular geographical location and the individual risk factors.



## ¿Debe de realizarse un tamizaje de VHC en pacientes con artritis reumatoide pertenecientes a un área no-endémica? Estudio transversal en tres diferentes sistemas de salud

*Palabras clave:*
Virus de hepatitis C
Artritis reumatoide
Prueba de laboratorio
Factores de riesgo

RESUMEN

*Introducción:* En México, se han descrito factores de riesgo para virus de hepatitis C (VHC), además de los conocidos como: consumo de heroína, individuos que viven solos, ser viudo y residencia en el norte del país. Los pacientes con artritis reumatoide (AR) son considerados inmunodeprimidos y se recomienda realizar pruebas de VHC antes del inicio del tratamiento. El objetivo fue describir las características de pacientes con AR a quienes se realizaron pruebas de VHC.
*Material y métodos:* Estudio observacional, retrospectivo de 960 registros médicos donde se describieron las indicaciones para las prueba de VHC.
*Resultados:* La prueba se realizó en el 28.6% y la frecuencia global de VHC fue de 0.36%. Las características de la población no se asociaron con un mayor riesgo de infección, por lo tanto la presencia de anti-VHC fue baja. La principal razón para realizar la prueba fue el inicio de tratamiento biológico.
*Conclusión:* Debido a la baja probabilidad pre-test, las pruebas para el VHC deben ser personalizadas, es decir, según la prevalencia de la enfermedad de acuerdo a la zona geográfica y los factores de riesgo individuales.



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## Introduction

The global prevalence of hepatitis C virus (HCV) is 2.35%, and 160 million individuals are chronically infected.[1] Seroprevalence of HCV antibodies in Mexican population is 1.4% (95% CI 1.1–1.6%); this is equivalent to 700,000 infected adults (95% CI 568,000–830,000).[2] The risk factors for HCV infection are injection drug use, reception of blood products prior to 1992, reception of clotting factor concentrates before 1987, long-term hemodialysis, needle-stick injuries among healthcare workers, and patient-to-patient transmission resulting from poor infection control practices. Other risk factors include having been born to an HCV-infected mother, having been incarcerated, and having received a tattoo in an unregulated setting.[3] Risk factors for HCV infection in Mexican population in addition to those mentioned are prior heroin users [OR = 9.8, 95% CI (2.1–41.4)], living alone [OR = 2.6, 95% CI (1.1–5.9)], being a widower [OR = 2.2, 95% CI (1.1–4.3)] and northern region residence [OR = 1.9, 95% CI (1.1–3.2)].[2] HCV testing is recommended in select populations based on demographics, prior exposure, high-risk behaviors, and medical conditions.[3]

The risk of infection in RA depends in three different situations: RA itself as a chronic disorder with immunological dysfunctions, immunocompromising comorbidities, and the use of potent immunomodulatory drugs.[4] International[5] and Mexican rheumatoid arthritis (RA) guidelines recommend testing for hepatitis B and C in high-risk patients (level of evidence: 4; grade of recommendation: D) before the use of non-biologic and biologic disease-modifying anti-rheumatic drugs (DMARDs).[6] Although patients with a higher risk profile for HCV have been defined by the Mexican National Health Survey[2] and the Centers for Disease Control and Prevention, RA patients are not in this epidemiological group. Therefore, implementation of the recommendations for HCV testing in this population has not been clearly accomplished. The aim of the study is to describe the characteristics of HCV testing in patients with RA in three different medical care settings in a non-endemic area.

## Methods

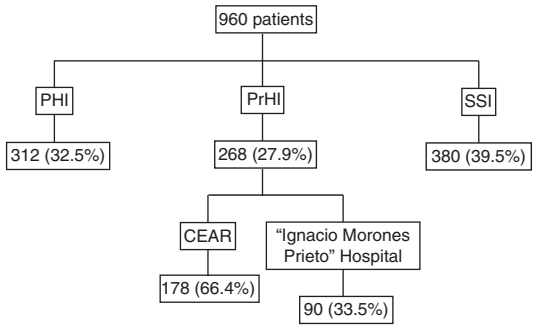
We performed a retrospective study based on clinical medical records. RA patients who fulfilled the American College of Rheumatology (ACR) 1987 and/or the ACR/European League Against Rheumatism (EULAR) 2010 classification criteria were included.[7,8] The patients were from three different health systems from Mexico: Popular Health Insurance at the UANL University Hospital, PHI; the Mexican Social Security Institute for private sector workers (Instituto Mexicano del Seguro Social, IMSS), SSI; and Private health insurance at the Arthritis and Rheumatism Specialist Center (Centro de Especialistas en Artritis y Reumatismo CEAR) and Hospital Central "Dr. Ignacio Morones Prieto", PrHI.

We describe the indications for HCV testing and its overall prevalence. This study was approved by the local Institutional Review Board with registration no. RE-13010.

We performed a descriptive analysis using the following variables: age, gender, time since RA diagnosis, treatment, risk factors for HCV, hepatitis B virus (HBV) and HIV, including: tattoo, marital status, prior blood transfusion and prior illicit drug. Also, we evaluated liver function tests and HCV result by ELISA. In addition, we determined the main reasons for HCV testing. Results were reported as mean and standard deviation for continuous variables and percentages for categorical variables.

## Results

A total of 960 patients were evaluated; 312 (32.5%) were from PHI, 380 (39.5%) from SSI, and 268 (27.9%) from the PrHI. Eight hundred eighty-five (92%) and mean age was 51.6 years (SD 12.99). The mean time since RA diagnosis to testing was 9.8 years (SD 8.2). Rheumatoid factor was positive in 554 (67.6%) of 819 patients and anti-cyclic citrullinated peptide (anti-CCP) antibody in 239 (69.8%) of 342 patients. Two hundred and seventy-three (28.4%) patients were using biologic agents for RA treatment and the rest were on synthetic DMARDs. The mean value for transaminases was normal. Alanine transaminase (ALT) had a mean of 29 IU/L (SD 12.8) and aspartate transaminase (AST) a mean of 25 IU/L (SD 10.7).




| n (%) | PHI, 312 (32.5) | PrHI, 268 (27.9) | SSI, 380 (39.5) | Total |
|---|---|---|---|---|
| HCV testing* | 4 (1.49) | 268 (100) | 3 (0.79) | 275* |
| Positive | 0 (0) | 0 (0) | 1 (0.26) | 1 |

PHI: Popular Health Insurance, PrHI: Private health insurance, SSI: Social Security Institute, CEAR: Centro de Especialistas en Artritis y Reumatismo

*Global HCV testing performed in 275/960 patients

**Fig. 1.** Patients distribution according to medical care setting.

The HCV testing was performed in 28.6% (275/960). HCV testing was as follows: PHI 4/312 patients (1.49%), SSI 3/380 (0.79%) patients, and PrHI 268/268 (100%) patients (Fig. 1). The main reasons for HCV testing at PHI and SSI are detailed in Table 1. The only reason for requesting HCV testing at PrHI was prior to the beginning of biological therapy. The overall frequency of HCV was 0.36% (1/275).

## Discussion

We found that only 28.6% of patients were screened for HCV and this depended on the medical care setting, and not necessarily represent the adherence to clinical practice guidelines. It is well known that the main reasons for requesting HCV testing are the following: before starting biological agents, as a differential diagnosis in patients with acute polyarthritis, the presence abnormal liver function tests, and/or belonging to HCV high risk groups (previous use of illicit drugs, transfusions before 1965, etc.).

In the PrHI, the main reason for HCV testing was the starting of biological agents for RA treatment (surpassing the other risk factors), as stated in international recommendations.[5]

In PHI and SSI we observed different reasons for testing, such as differential diagnosis, abnormal liver function tests, and the beginning of biologic treatment. Since most patients already had confirmed and established RA, additional testing for differential diagnosis without HCV risk factors was not made.

Previously, Valdespino et al. described the risk factors associated with a high HCV prevalence in Mexico. The area where the study was conducted is associated with a higher prevalence compared to other areas of the country [OR 1.9, 95% CI (1.1–3.2)]. The age [50–59 years-old, OR 1.3, 95% CI (0.8–2.1)] and gender [OR 1.1, 95% CI (0.8–1.5)] of our patients were not associated with an increased risk of HCV infection according to prior study.[2]

We emphasized that HCV infection frequency is low in our RA patients living in northern Mexico. We observed that the only risk