



## ORIGINAL ARTICLE

## Comorbidity, concomitant medication, use of resources and healthcare costs associated with chronic hepatitis C virus carriers in Spain<sup>☆</sup>

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### KEYWORDS

Chronic hepatitis C;  
Comorbidity;  
Medications;  
Use of resources;  
Healthcare costs

### Abstract

**Objectives:** To assess the comorbidity, concomitant medications, healthcare resource use and healthcare costs of chronic hepatitis C virus patients in the Spanish population.

**Patients and methods:** Retrospective, observational, non-interventional study. Patients included were  $\geq 18$  years of age who accessed medical care between 2010 and 2013. Patients were divided into 2 groups based on the presence or absence of liver cirrhosis. The follow-up period was 12 months. Main assessment criteria included general comorbidity level (determined by the resource utilisation band score) and prevalence of specific comorbidities, concomitant medications, healthcare resource use and healthcare costs. Statistical analysis was performed using regression models and ANCOVA,  $p < .05$ .

**Results:** One thousand fifty-five patients were enrolled, the mean age was 57.9 years and 55.5% were male. A percentage of 43.5 of patients had a moderate level of comorbidity according to the resource utilisation band score. The mean time from diagnosis was 18.1 years and 7.5% of the patients died during the follow-up period. The most common comorbidities were dyslipidaemia (40.3%), hypertension (40.1%) and generalised pain (38.1%). Cirrhosis was associated with cardiovascular events (OR 3.8), organ failures (OR 2.2), alcoholism (OR 2.1), diabetes (OR 1.2) and age (OR 1.2);  $p < .05$ . The most commonly used medications were anti-infectives (67.8%) and nervous system medications (66.8%). The mean total cost per patient was €3198 (71.5% healthcare costs, 28.5% indirect/non-healthcare costs). In the corrected model, the total costs per patient-year were €2211 for those without cirrhosis and €7641 for patients with cirrhosis;  $p < .001$ .

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*Conclusions:* Chronic hepatitis C virus patients are associated with a high level of comorbidity and the use of concomitant medications, especially in patients with liver cirrhosis. Chronic hepatitis C virus infection represents a substantial economic burden on the Spanish National Health System.

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## PALABRAS CLAVE

Hepatitis C crónica;  
Comorbilidad;  
Medicamentos;  
Uso de recursos;  
Costes sanitarios

## Comorbilidad, medicación concomitante, uso de recursos y costes sanitarios asociados a los pacientes portadores del virus de la hepatitis C crónica en España

### Resumen

*Objetivos:* Evaluar la comorbilidad, los medicamentos concomitantes, el uso de los recursos y los costes sanitarios asociados a los pacientes portadores del virus de la hepatitis C crónica en población española.

*Pacientes y métodos:* Estudio retrospectivo, observacional, no intervencionista. Se incluyeron pacientes  $\geq 18$  años, que demandaron atención durante los años 2010-2013. Se dividieron en 2 grupos en función de la presencia/ausencia de cirrosis hepática. El período de seguimiento fue de 12 meses. Las principales mediciones fueron: comorbilidad general (banda de utilización de recursos) y específica, medicamentos concomitantes, uso de recursos y costes sanitarios. El análisis estadístico fue realizado utilizando modelos de regresión y ANCOVA,  $p < 0,05$ .

*Resultados:* Se seleccionaron 1.055 pacientes con una edad media de 57,9 años, y el 55,5% eran varones. El 43,5% de los pacientes presentaron un grado de comorbilidad moderado (banda de utilización de recursos). El tiempo medio desde el diagnóstico fue de 18,1 años y el 7,5% de los pacientes fallecieron durante el período de seguimiento. Las comorbilidades más frecuentes fueron: dislipidemia (40,3%), hipertensión (40,1%) y dolor generalizado (38,1%). La cirrosis se asoció con los eventos cardiovasculares (OR 3,8), los fallos orgánicos (OR 2,2), el alcoholismo (OR 2,1), la diabetes (OR 1,2) y la edad (OR 1,2);  $p < 0,05$ . Los medicamentos más utilizados fueron antiinfecciosos (67,8%) y fármacos para el sistema nervioso (66,8%). El coste total medio por paciente fue de 3.198 € (71,5% costes sanitarios, 28,5% costes indirectos/no sanitarios). En el modelo corregido, el coste total por paciente-año fue de 2.211 € sin cirrosis y de 7.641 € con cirrosis;  $p < 0,001$ .

*Conclusiones:* Los pacientes con virus de la hepatitis C crónica se asocian a una elevada comorbilidad y uso de medicación concomitante, especialmente en los sujetos con cirrosis hepática. La infección por virus de la hepatitis C crónica supone una importante carga económica para el Sistema Nacional de Salud.

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## Introduction

Hepatitis C is a liver disease caused by the hepatitis C virus.<sup>1</sup> The virus is transmitted parenterally, with its main routes of infection being blood transfusion products and the shared use of needles for intravenous drug use.<sup>1,2</sup> It is a global health problem that affects more than 170 million people worldwide. The prevalence in Europe varies according to country and ranges between 2% and 3% of the overall population.<sup>2-4</sup>

Following the natural course of the disease, it is known that 60–90% of infected patients will develop chronic hepatitis C (CHC) and 20% of these will develop cirrhosis.<sup>1,3</sup> The decompensation of cirrhosis can cause liver failure or hepatocellular carcinoma (3–5% at 5 years). Therefore, early detection and treatment are very important for its prevention.<sup>1,2,5-7</sup> It has been estimated that CHC is

responsible for approximately one million deaths per year worldwide.<sup>3</sup>

The objective of current therapy for CHC is to achieve a sustained viral response, defined as the absence of hepatitis C virus (HCV)-RNA in serum 12 weeks after stopping treatment.<sup>8</sup> The standard procedure for patients with CHC is rapidly changing; until recently, treatment was based on interferon and ribavirin, with a 50% cure rate, although it sometimes caused frequent adverse reactions. In recent years, new and innovative direct-acting antiviral medications have been developed, which are much more effective and safe and better tolerated than former treatments, allowing oral administration. Treatment with oral direct-acting antivirals can cure most patients infected with HCV. Therefore, the new therapeutic arsenal available against this disease forces us to identify those patients most likely to benefit from the best therapeutic strategy available.<sup>8-10</sup>

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