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Original article

Trends in hospital admissions, re-admissions, and in-hospital mortality among HIV-infected patients between 1993 and 2013: Impact of hepatitis C co-infection

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ABSTRACT

Background: New patterns in epidemiological characteristics of people living with HIV infection (PLWH) and the introduction of Highly Active Antiretroviral Therapy (HAART) have changed the profile of hospital admissions in this population. The aim of this study was to evaluate trends in hospital admissions, re-admissions, and mortality rates in HIV patients and to analyze the role of HCV co-infection.
Methods: A retrospective cohort study conducted on all hospital admissions of HIV patients between 1993 and 2013. The study time was divided in two periods (1993–2002 and 2003–2013) to be compared by conducting a comparative cross-sectional analysis.
Results: A total of 22,901 patient-years were included in the analysis, with 6917 hospital admissions, corresponding to 1937 subjects (75% male, mean age 36 ± 11 years, 37% HIV/HCV co-infected patients). The median length of hospital stay was 8 days (5–16), and the 30-day hospital re-admission rate was 20.1%. A significant decrease in hospital admissions related with infectious and psychiatric diseases was observed in the last period (2003–2013), but there was an increase in those related with malignancies, cardiovascular, gastrointestinal, and chronic respiratory diseases. In-hospital mortality remained high (6.8% in the first period vs. 6.3% in the second one), with a progressive increase of non-AIDS-defining illness deaths (37.9% vs. 68.3%, $P < .001$). The admission rate significantly dropped after 1996 (4.9% yearly), but it was less pronounced in HCV co-infected patients (1.7% yearly).
Conclusions: Hospital admissions due to infectious and psychiatric disorders have decreased, with a significant increase in non-AIDS-defining malignancies, cardiovascular, and chronic respiratory diseases. In-hospital mortality is currently still high, but mainly because of non-AIDS-defining illnesses. HCV co-infection increased the hospital stay and re-admissions during the study period.

Tendencia de las hospitalizaciones, reingresos y mortalidad intrahospitalaria en los pacientes infectados por VIH entre 1993-2013: impacto de la coinfección por el virus de la hepatitis C

Palabras clave:
VIH/sida
Coinfección VIH/VHC

RESUMEN

Introducción: Los cambios en las características epidemiológicas de los pacientes con infección por el VIH, y la introducción del tratamiento antirretroviral de alta eficacia, han modificado el perfil de las

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Hospitalización
Reingreso

hospitalizaciones en esta población. El objetivo del estudio fue evaluar las tendencias en hospitalización, reingreso y mortalidad en pacientes VIH, y analizar el papel de la coinfección por el VHC.
Métodos: Estudio de cohortes retrospectivo, que incluyó todas las hospitalizaciones de pacientes VIH entre 1993-2013. El estudio fue dividido en 2 periodos (1993-2002 y 2003-2013) para ser comparados mediante un análisis transversal.
Resultados: Se analizaron 22.901 pacientes/años, que presentaron 6.917 hospitalizaciones que correspondieron a 1.937 pacientes (75% varones, edad media 36 ± 11 años, 37% coinfectados VIH/VHC). La mediana de estancia hospitalaria fue de 8 días (5-16), y la tasa de reingreso a los 30 días del 20,1%. Se observó un descenso significativo en el segundo periodo (2003-2013) de las hospitalizaciones motivadas por enfermedades infecciosas y trastornos psiquiátricos, y un incremento de aquellas relacionadas con neoplasias, enfermedad cardiovascular, gastrointestinal y enfermedades respiratorias crónicas. La mortalidad intrahospitalaria permanece elevada (6,8% en el primer periodo vs. 6,3% en el segundo), con un aumento progresivo de las muertes por enfermedades no definitorias de sida (37,9 vs. 68,3%; p < 0,001). La tasa de hospitalización disminuyó de manera significativa después de 1996 (4,9% anual), pero este descenso fue menos acusado en los pacientes coinfectados VIH/VHC (1,7% anual).
Conclusiones: Las hospitalizaciones motivadas por enfermedades infecciosas y trastornos psiquiátricos han descendido; por el contrario, se observó un aumento significativo de aquellas relacionadas con neoplasias no definitorias de sida, enfermedad cardiovascular y enfermedades respiratorias crónicas. La mortalidad intrahospitalaria permanece a día de hoy elevada, pero a expensas fundamentalmente de enfermedades no definitorias de sida. La coinfección VIH/VHC incrementó los días de hospitalización y los reingresos durante el periodo de estudio.

Background

Since the introduction of Highly Active Antiretroviral Therapy (HAART) in 1996, the profile of people living with HIV infection (PLWH) has changed significantly; with an appreciable decline of mortality related to AIDS-defining diseases and an improvement in life expectancy. However, the incidence of other comorbidities, mainly cardiovascular diseases and non-AIDS tumors has increased, due to the longer life expectancy, aging and persistent inflammation related to the HIV-infection, even in a context of long-term suppression of viremia.[1–5]

From a public health perspective, it is important to understand trends and characteristics of hospitalizations, re-admissions and mortality rates among PLWH. However, there are few available data among too heterogeneous study populations in different socioeconomic contexts and Health Care systems. In the general population, 30-days readmission rates are increasingly becoming a benchmark for hospital quality of care and costs, also for PLWH.[6]

The causes of hospitalizations have been changing in the HAART era. AIDS defining illnesses are less represented nowadays, but patients are older with more comorbidities. Therefore, the reasons for hospitalizations incidence, mortality and readmission rates might be changing.[6–10]

Chronic hepatitis C virus (HCV) coinfection is common in PLWH (30–50% according to different series).[11] It is estimated that at least 30% of patients with HCV develop cirrhosis and around 1–4% of these will develop hepatocellular carcinoma. The risk of progression of liver disease is 2–6 times higher in HIV/HCV coinfected than in HCV mono-infected patients, which involves a high-related morbidity and mortality.[12–16] However, the risk of hepatic decompensation and progression of liver fibrosis is drastically reduced with treatment and cure of HCV infection.[17,18]

In this context, the aim of this study was to analyze trends in hospitalization, re-admission and mortality rates in PLWH followed in a reference hospital in Northwest Spain in the last 20 years. Moreover, the impact of HCV coinfection in the dynamic of all these parameters was also evaluated.

Methods

The Complexo Hospitalario Universitario de A Coruña (CHUAC) is a 1422-bed, full service, 24 h ICU availability, tertiary acute university care hospital, serving in the Northwest of Spain. The influence population in 2013 was 547,776 citizens, and that year reported 40,869 admissions (21% scheduled). The HIV and Hepatitis Viral Unit offers outpatient and inpatient medical care to all PLWH in this reference area, attending more than 1400 PLWH by HIV-trained doctors. PLWH are not attended in other hospitals in this area.

Data collection

All hospital admissions of HIV-infected patients at CHUAC between 1993 and 2013 were obtained through the Hospital-coding Department. Hospitalization reasons were collected following the International Classification of Diseases, Ninth Revision (ICD-9). Several steps were taken in assigning each hospitalization to a single diagnostic category. To determine the reliably ICD-9 code the first listed referring to neither HIV (042, V08, 795.71, V01.79) nor chronic hepatitis C (070.44, 070.54, 070.70, 070.71) nor oral candidiasis (120.0) was defined as the primary code for hospitalization. These codes represent comorbidities that are not, by themselves, sufficient to justify hospitalization. Recurrent bacterial pneumonia was defined as a bacterial pneumonia admission occurring within >30 but <365 days of a previous such admission. Hospitalizations whose first ICD-9 code was chemotherapeutic treatment were assigned to the first code based on the type of cancer. Clinical Classification Software (CCS), developed by the Agency for Healthcare Research and Quality[19] was used to assign primary ICD-9 code into one of 18 first-level categories. Finally, using a method similar to one it has previously employed,[7] CCS classification was modified and categories were pooled together at major syndromes for further analysis.

Epidemiological and clinical data related to hospitalizations and mortality were recorded. HIV/HCV coinfection was considered if