The impact of liver disease: a leading cause of hospital admissions in people living with HIV

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INTRODUCTION

The introduction of combined antiretroviral treatment (cART) has reduced HIV associated morbidity and mortality¹ as opportunistic infections rates have declined². Yet the mortality rates remain three to fifteen times higher in patients living with HIV than those observed in the general population³⁻⁴, since non infectious co-morbidities (NICM) are becoming more apparent as the population starts to age⁵⁻⁸. This has been demonstrated in
studies of premature age-related comorbidities and higher hospitalisation rates amongst patients living with HIV compared to the general population. The future impact of NICMs on patient care and service provision is still unfolding and information on current trends may be helpful in planning future services. The aim of this study is to describe the clinical characteristics and demographics of inpatient admissions in a net of Italian hospitals that provide dedicated HIV care.

PATIENTS AND METHODS

Four infectious disease Units (Sanremo, Galliera, San Martino, La Spezia) in Liguria, Italy, collectively known as the Analisi-Costi-Terapia-Antivirale network (ACTeA), were involved in the study. These centres were chosen due to their mutual interest and national universal health care systems.

Liguria accounts for about 700,000 inhabitants with 3,000 HIV patients attending one of the collective services. All hospital medical admissions of patients living with HIV from 1st January to 31st December 2012 were reviewed in this study. Surgical, paediatrics, obstetrics and gynaecological admissions were not included.

The ACTeA prospectively collected patient data via “The Ligurian HIV Clinical Network” online, an online platform for collaborative studies in the field of HIV in Northwest Italy.

All centres coded admissions according the International Statistical Classification of Diseases (ICD) 9, and all Units have been standardised to allow comparison with the Z score formula. Only the principal clinical condition for hospitalisation was recorded by the lead clinical physician in the ACTeA or from the information recorded on discharge summaries. All data were anonymised and stored securely. Data categories collected for each patient are reported in Table 1.

For standardisation, viral loads below 50 copies/ml was included into the category of viral suppression according to Italian guidelines.

Data regarding cART were based on information from the last patient contact before the admission or on admission and were classified as: newly started (<6 months), stable (>6 months), poor adherence (if the adherence was below 80%, or clinicians had noted in the medical records or self-suspended), and failing regimen (if the patients required a switch of treatment).

For the opportunistic infections definition the following index diseases were used: Cytomegalovirus infection, Toxoplasma gondii encephalitis, Pneumocystis jirovecii pneumonia (PCP), pulmonary tuberculosis (TB), disseminated TB and TB lymphadenopathy, Mycobacterium avium complex (MAC) disease, Cryptococcus spp. infection, recurrent pneumonia (>2 episodes in one year). IC D categories that reached a 3% threshold of total admissions were reviewed. Within each category, conditions that constituted 50% of the total ICD are discussed.

Fisher’s exact or Pearson chi square test were used to compare categorical variables, while Mann-Whitney U test was used for continuous variables. Distribution of admission rate by country was estimated by negative binomial regression and the likelihood ratio test.

All analyses were performed with SPSS software (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY, USA: IBM Corp) and STATA (StataCorp. 2009. Stata Statistical Software: Release 11. College Station, TX, USA: StataCorp LP).

RESULTS

A total of 257 admissions for 205 patients were identified (Table 2). The rate of patient admissions per 100 years was 6.12. The average number of admissions per patient throughout the one year period was 1.3, with a range of 1-7 admissions; 61.5% (n=126/215) of patients were coinfected with Hepatitis C. The percentage of admissions with a CD4 count above 200 cells/μl was 68.1% (n=175). In 86.4% (n=222) of all admissions, the patient was on cART, in 62.6% (n=161) of admissions the most recent viral load was under 50 copies/ml. Among the patients on active cART (n=222): 73% (n=162) were on treatment for more than 6 months and 1.8% (n=4) had started cART less than 6 months prior to admission. Poor adherence was observed in 22% (n=49), a failing regimen was reported in 1.8% (n=4); self-suspension before admission occurred in 1.4% (n=3). The median viral load in non-suppressed patients (all patients on and off cART with VL RNA>50 copies/ml) was 4.36 log copies/ml.

Mortality rate of patients admitted during the study was 10.2% (n=21/205), a breakdown of discharge destinations is reported in Table 3.
In our study, the majority of patients who were admitted had a viral load below 50 copies/ml and 68.3% of admissions had a CD4 count above 200 cells/µl. This is related to the number of patients on cART at admission (86.4%), with more than 50% of patients on cART for more than six months. Moreover, it suggests that the majority of admissions would not be AIDS-related, but due to other comorbidities. Chronic HCV was the leading cause of admission secondary to infection. This is consistent with the mode of HIV transmission in our cohort, as 64.4% were intravenous drug users. The complications of HCV, including cirrhosis and hepatocellular carcinoma were the most common cause of admissions (31%) and mortality (11.9%) in our cohort. The HCV data is in line with a well-established epidemiological scenario. The prevalence of HCV coinfected patients in the IT cohort is very close to the 45% reported by the Italian Cohort of Patients Naïve from Antiretrovirals (ICONA) in 2002. Of importance, opportunistic infections are no longer the most common cause of admission secondary to infections and this crucial point is a clear sign of a changed epidemiology.

Pneumonia is associated with impaired immune status in HIV patients and recurrent pneumonias are considered an AIDS-defining event. However, the aging HIV population is experiencing increased prevalence of chronic obstructive lung disease, with infection often being considered a trigger for exacerbations that might not simply be related to the immune system, but also to older patient demographic. Acute pyelonephritis are often related to sexual activity, especially among men having sex with men. This feature is deeply related to a changing pattern of HIV transmission in Italy. Cardiovascular diseases are due to a well known-feature characterized by high prevalence of comorbidities and of major cardiovascular risk factors, so it is crucial to keep maximum attention to reduce the modifiable elements. The most frequently observed neoplasms (HCC, larynx and lung cancer) were not AIDS-defining cancers. This result is well aligned with the epidemiological picture drawn by Yaniket et al, where the development of cancer is related with the time on cART. This data reflects the increased cancer risk with aging.

The rate of patient admissions per 100 years observed in our study (6) is lower than that observed in a similar study in Canada (21) in 2003, but this may be related to the improvements due to cART and HIV disease progression control. Duration of admission was longer than that reported by the European Community for the Italian general population (8 days). However, with the complications of HCV coinfection rates in IT and the recognised impact on mortality, it is likely that the focus of care during these admissions is on severely unwell patients and end-of-life care, that would require a longer hospitalisation admission (average hospital stay 16 days). However, this could be improved with better community palliative care facilities, available in other European countries.

Future studies should consider identifying the number of new and follow-up diagnoses and cases for each patient admission, which may help to detect conditions that require further support or management in the community. Finally, these data do not reflect the whole national picture, only a local population, and therefore information regarding ethnicity groups and female patients is limited.

Overall, the patterns of these cohorts can help to iden-
CONFLICT OF INTERESTS:
The Authors declare that they have no conflict of interests.

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