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Abstract

Background: Screenings for infectious diseases in asymptomatic immigrants currently takes place when receiving new arrivals.

Aims: We describe the frequency of infections in a cohort of newly arrived asymptomatic immigrants in Southern Italy.

Methods: We studied a cohort of 238 Sub-Saharan African and Asian men hosted at a reception centre (CARA) in Foggia between January and December 2015. The tuberculin skin test for diagnosis of latent tuberculosis infection (LTBI) and serology/virology testing for HBV, HCV, HIV were performed.

Results: From this cohort, 205 individuals agreed to be tested for serological/virological markers only, while 82 agreed to be tested for LTBI only; 49 people agreed to have both tests. Among those tested for virological markers, 23/205 (11.2%) were HBsAg positive; 12/23 (52.2%) individuals had chronic active hepatitis; 77/205 (37.6%) individuals had only anti-HBc positivity. HCV infection was present in 8/205 (3.9%) individuals, and chronic HCV infection, was diagnosed in only two people. Only 2/205 (1.0%) individuals presented with anti-HIV and HIV-RNA positivity. We found LTBI in 29.6% of TB-tested individuals.

Conclusions: Asymptomatic immigrants are at increased risk for some infections, mainly HBV and tuberculosis.

Keywords: epidemiology, infectious diseases, LTBI, newly arrived immigrants, Italy

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Introduction

The last 20 years has seen considerable migration from low- and middle-income countries to high-income nations, primarily the United States of America and Western Europe. On 1 January 2016, the number of people living in a European Union (EU) member state who were citizens of nonmember countries was 20.7 million. In Italy this represented about 4 million people or 6.7% of the population (1). This remarkable increase in people whose living conditions are often considerably disadvantaged has sometimes led to problems, not only of a socioeconomic and security nature but also in regard to sanitation and health. In fact, while most tropical diseases are absent or appear sporadically in Italy (2,3), it was observed that the prevalence/incidence of other pathologies such as HBV/HCV/HIV/TB have changed their epidemiology over the years, in accord with the immigration phenomenon. Some infections have been directly imported, in both latent and active forms. Others have been contracted by immigrants because of living conditions/habits, with an increase in some infectious diseases such as HIV (3), TB (4) and viral hepatitis (5,6) and sometimes co-infections (6).

Southern Italy has been, and still is, a major destination for illegal immigration (African, Middle Eastern and Asian) from the North African coast (7). On arrival, the immigrants are hosted in reception centres (CARA), which are distributed in various parts of Italy. Most are young and healthy individuals, but they are often considered a source of certain infectious diseases such as Ebola, SARS etc., occasionally resulting in unjustified prejudice because of their geographic origin, ethnicity, health conditions at the departure point, and the migratory route (8–10). Therefore, the identification and treatment of any imported asymptomatic infections could reduce their incidence/prevalence and modify their outcome. This can have a significant clinical and psychological impact, both for the individual affected and for public health (10).

The health service for immigrants in Italy, particularly for clandestines, is not adequate and most assistance is currently provided by religious or lay volunteer groups. Only recently have hospitals and local health services initiated the creation of outpatient clinics for immigrants, including soliciting the help of cultural workers and interpreters (10). In such a challenging scenario, the team of volunteer doctors participating in this study have been screening immigrants hosted in the CARA in Foggia (Apulia, Southern Italy) for infectious diseases for several years.

The aim of this research, conducted in 2015, was to determine the possible presence of HIV/HBV/HCV/TB infections in a cohort of asymptomatic immigrants who were temporarily guests at the CARA in Foggia, and to measure the burden of latent or active infections which are potentially harmful for the individuals' health and transmissible to the community.

Methods

Participants and tests

Between January and December 2015 we screened 238 asymptomatic immigrants for HIV/HBV/HCV/TB. Before screening, all guests at the CARA (728 persons) were informed about the purpose of the study and invited to participate. Subsequent recruitment was on a voluntary basis; the recruitment of minors was mediated by tutors. The study was reviewed and approved by the general manager and the medical director of the CARA, and written informed consent, provided in 4 languages (English, French, Arabic and Italian), was obtained from each participant. All study procedures conformed with the Helsinki Declaration (1975, amended 2008).

At the time of enrolment, all participants were interviewed using a questionnaire to obtain demographic and clinical information. None of the screened participants reported previous exposure to infectious diseases, nor vaccination for hepatitis B, nor vaccination or anti-tuberculosis prophylaxis. All enlisted participants went through complete clinical tests and, if

necessary, we proceeded with further diagnostic tests and treatment. In addition, we implemented a strategy to prevent any transmission to other immigrants and indigenous populations who lived in close contact with infected persons. Diagnoses of infections were made using standard commercial tests. The health examination performed for all asymptomatic immigrants was based on systematic screening that included serological and virological examination for selected infections: HIV, HBV, HCV virus, and a check for possible latent tuberculosis infection (LTBI) using the tuberculin skin test (TST).

Statistical analysis

Categorical data are presented as absolute numbers and proportions. Continuous variables were summarized as mean and standard deviation (SD), and categorical variables as absolute and relative frequencies. Differences in the mean values for continuous variables (age, HBV genotypes) were evaluated by the Student t-test for independent samples. The Chi-squared test was applied to compare categorical variables (ethnicity, HIV/HCV antibodies, HBV markers and TST positivity); P

Results

Demographic characteristics

One hundred and thirty-two (132) of the 238 participants enrolled in the study (55.5%) came from Sub-Saharan African countries (54.2% from East Africa, 35.9% from West Africa, 10.8% from Central Africa) and 106 (44.5%) were from Asia, mainly from the Indian subcontinent and Pakistan. The mean age was 25.1 (SD 5.7; range 13–40) years. All of the participants were men since the population of the CARA was exclusively male. Subjects had been in Italy for a mean period of 36 days (range 7–118 days) (Table 1). Among the study population, 205/238 immigrants (86.1%; 111 Africans, 94 Asians) agreed to be tested only for serological/virological markers (HBsAg/anti-HBc, anti-HCV, anti-HIV) and 82 individuals agreed to be tested for TB (TST). Only 49 participants agreed to have both tests (Table 2).

HBV infection

Among the individuals we tested, 23/205 (11.2%) were HBsAg positive: 17/23 (73.9%) Africans and 6/23 (26.1%) Asians (P = 0.03); 16 patients were anti-HBe positive while 7 (2 of whom were Asians) presented with HBV-wildtype (HBsAg/HBeAg positive). Chronic active HBV (CHB) infection, with HBV-DNA detectable using real-time polymerase chain reaction testing, was present in 12/23 (10 Africans and 2 Asians, P = 0.03; 52.2%) HBsAg positive individuals (mean level 1 374 231 copies/mL, range 74 651–13 875 247). Nine CHB patients presented e-minus mutant virus and 3 had HBV-wildtype virus. Genotype distribution among all CHB/HBV-DNA positive patients was: 5/12 genotype E (51.7%), 3/12 genotype A (25.0%), 2/12 genotype D (16.7%), 1/12 genotype B (8.3%), and 1/12 genotype C (8.3%). Genotypes E, A and D were associated with the African subgroup while genotypes C and B were associated with the Asian subgroup.

A significant statistical difference was observed between genotype E and the other genotypes (P = 0.02); the difference in prevalence between genotypes A, B, C and D (P = 0.08) was modest. We found 77 individuals (37.6%) had anti-HBc positivity (OBI), a bio-marker of previous HBV infection. The prevalence among sub-Saharan Africans was 66.2% (51/77), compared with 33.8% (26/77) among Asians (P = 0.03). All participants denied having previous HBV vaccinations in their country of origin. Five out of 77 participants (with slight hypertransaminasaemia) had HBV-BNA positivity with a low viral load (mean level 1275 copies/mL, range 471–5743); genotyping was not performed.

HCV infection

Infection with HCV was present in 8/205 individuals (3.9%): 3/8 (37.5%) were Africans and 5/8 (62.5%) were Asians (P = 0.02). Chronic HCV infection, with the presence of HCV-RNA detectable by real-time polymerase chain reaction testing, was diagnosed in only 3 Asian patients; HCV genotyping was performed in these individuals: 2 presented with genotype 1a and 1 with genotype 3.

HIV infection

Only 2/205 (1.0%) individuals presented anti-HIV antibodies, and subsequently we were able to detect HIV-RNA; 1 was African and the other was Asian. The HIV-positive immigrants were not aware of their serologic status before their arrival or, at least, they did not acknowledge sero-positivity for HIV. Neither of the 2 patients showed an AIDS-defining disease or other clinical symptoms at the time of screening; only 1 patient developed pulmonary active tuberculosis during the first month of follow-up.

Viral co-infections

Five patients (3 Africans and 2 Asians) showed HBV-HCV co-infection: in 4 cases HBV infection was prevalent, while in 1 case HCV virus infection prevailed. Co-infection for HIV-HBV-HCV was present only in the HIV-positive African participant.

Latent tuberculosis infection

Only 82/238 (34.5%) individuals in the study population agreed to undergo the tuberculin test (56/82, 76.7% Africans and 24/82, 29.3% Asians) (P = 0.02). Among patients tested with TST, 11 (8 Africans and 3 Asians) did not return for the control. The TST was positive (> 10 mm) in 21 (29.6%) of the remaining 71 individuals. The prevalence of LTBI was significantly greater among Africans (71.4%; 15/21) than among Asians (28.6%; 6/21) (P = 0.02). One of the TST-positive subjects was also HIV-positive. None of the patients who were TST-positive

presented radiological or microbiological signs of active pulmonary tuberculosis. All data are described in Table 2 .

Discussion

The ever-increasing presence of immigrants fosters feelings of fear in the native Italian population; fear that they may introduce new and unfamiliar diseases such as SARS, MERS, Ebola, dengue, etc., or pathologies which are no longer present or have almost been eradicated from the country (11). Many of these infections may be asymptomatic for long periods and manifest themselves later in life as active diseases. This means that the incidence of certain illness may increase in host countries despite autochthonous cases declining (12).

Infection with HBV is prevalent in immigrants, particularly in people coming from Sub-Saharan African areas with a high rate of infection (> 8%). This figure is most likely a result of the lack of or incomplete prophylactic vaccination in the country of origin and risky sexual behaviour (13–15). In our study we evaluated the prevalence, the typology of HBV-infection and the degree of disease, based on genotype. Our findings (HBsAg positive rate: 11.2%) reflect the current prevalent migratory flow to our geographic area, which is mostly represented by people coming from Sub-Saharan Africa. In contrast, HBV infection is rarely observed in Asian immigrants (16–18). These data, showing the differences in infection rates due to ethnicity, highlight the epidemiological pattern of the prevalence of HBV based on country of origin (13,19–21). Among our participants, more than half had CHB, indication of a previous infection, with a clear majority from Sub-Saharan Africa (10/12 patients). The prevalence of HBV infection was similar in African children (