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Aging with HIV: newly diagnosed older adults in Italy

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ABSTRACT

The prevalence of HIV/AIDS among people in midlife and late adulthood has been increasing in Western countries over the last decade.

We analyzed data from a prospective, observational multi-centre study on individuals newly diagnosed with HIV between January 2004 and March 2007 in 10 public counselling and testing sites in Latium, Italy. At diagnosis, routine demographic, epidemiological, clinical and laboratory data are recorded, and patients are asked to complete a questionnaire investigating socio-demographic and psycho-behavioural aspects. To analyze the association of individual characteristics with age, we compared older adults (≥ 50 years) with their younger counterpart (18-49 years). To adjust for potential confounding effect of the epidemiological, clinical and behavioral characteristics, to identify factors associated with older age at HIV diagnosis, multivariate logistic regression analysis was performed.

Overall, 1073 individuals were identified, 125 of whom (11.6%.) were aged 50 years or above. The questionnaire was completed by 41% (440/1073). Compared with their younger counterparts, a higher proportion of older patients were males, born in Italy, reported heterosexual or unknown HIV risk exposure, were never tested for HIV before and were in a more advanced stage of HIV infection at diagnosis. In addition, older adults had a lower educational level and were more frequently living with their partners or children. With respect to psycho-behavioural characteristics, older patients were more likely to have paid money for sex and have never used recreational drugs. Interestingly, no differences were found regarding condom use, poor in both age groups.

These findings may have important implications for the management of older adults with HIV, who should be targeted by appropriate public health actions, such as opportunistic screening and easier access to healthcare. Moreover, strategies including information on HIV and prevention of risk behaviours are needed.

INTRODUCTION

Over the last decade, in Western countries, a slow but substantial aging of the AIDS epidemic has been observed (Mack & Ory, 2003; Sasse et al, 2000; Suligoi. et al, 2003), mainly due to a longer survival of persons with HIV/AIDS following the availability of highly active antiretroviral therapy (HAART). On the other hand, an increasing proportion of people in midlife and late adulthood is being observed among newly acquired HIV infections in recent years (Levy et al, 2003; Nogueras et al, 2006). However, only recently studies have addressed the issue of HIV/AIDS among older adults, defined as those aged 50 years or above (Mack & Ory, 2003; Rabkin et al, 2004; Crystal et al, 2003; Anton et al, 2005; Nogueras et al, 2006), and this phenomenon must still be characterized in detail.

New comprehensive surveillance systems of HIV diagnoses (UNAIDS/WHO, 2000) can provide information on the dimensions of the epidemic and on its dynamics; in this context, by using recently developed serological procedures, it is also possible to identify recently acquired HIV-1 infections (Martrò et al, 2005).

Since 2004, a multi-centre study integrating epidemiological, clinical, virological and behavioural data has been conducted in newly-diagnosed HIV-infected adults in Latium, the second region in Italy with regard to the number of cases reported to the national AIDS surveillance system (Balzano et al, 2005). These data will allow to identify the characteristics of individuals who acquire HIV infection in most recent years, to target future risk-reduction strategies and interventions promoting early HIV diagnosis and access to care.

To provide further information on HIV infection in aging population, we reviewed data collected in this study to describe the characteristics of older adults, defined as aged 50 years or above, with newly-diagnosed HIV infection, compared with younger counterparts.

POPULATION AND METHODS

Since January 2004 a prospective, multi-centre observational study on patients newly diagnosed with HIV infection aged 18 years or older has been conducted in 10 public HIV counselling and testing sites of the Latium Region, Italy. These centres account on average for approximately 80% of the total of newly-diagnosed HIV infections reported every year to the Regional HIV Surveillance System. (Brancato et al, 1997; Porta et al, 2004). We included in the present study patients diagnosed up to March 2007.

Individuals presenting at participating centers, following appropriate counseling, were tested for HIV antibodies using a high-sensitivity enzyme-linked immunosorbant assay and, if reactive, by a supplemental confirmatory assay, usually a Western Blot. For those with a confirmed infection, routine demographic, epidemiological, clinical and laboratory data were collected and recorded. All new HIV-positive individuals were asked to enroll in the study, and to give a written informed consent to fill a confidential questionnaire including behavioral data., and to donate a blood sample. The ethics committee of the coordinating centre, the National Institute for Infectious Diseases “L. Spallanzani”, approved the study. All of the information collected during the study were recorded in an electronic database after coding all personal identifiers.

The questionnaire contained items investigating the following areas: 1) socio-demographical data including age, marital status, education, employment and income; 2) HIV testing history and medical history, including information on previous HIV tests and other sexually transmitted infections; 3) personal behaviour, including number and characteristics of sex partners, both lifetime and during the preceding year, condom use, drug use by injection and other routes of administration, history of needle sharing; 4) information-motivation-behavioural skills (IMB) model of AIDS preventive behaviour (Fisher et al, 1994); 5) Center for Epidemiological Studies Depression Scale (CES-D), (Radloff, 1977).

In order to measure health attitude, we constructed a new variable using three questions based on the IBM model. The questions regarded the reported awareness of the importance of one's well-being, of seeking medical attention and the capability to comply with medical advice.

To analyze the association of epidemiological, clinical, socioeconomic and psycho-behavioural characteristics with age, we compared the older adults (≥ 50 years) to those aged 18-49 years.

The χ^2 or Fisher exact test were used in univariate analysis. To assess the independent association of each individual characteristics with age, three multivariate logistic regression models were built including variables significant ($p < 0.05$) in the univariate analysis. We built one model with epidemiological data for the whole study population, and two separate models for socioeconomic and psycho-behavioural variables adjusting for gender and area of birth. Given the small sample of older adults and the high number of considered variables, a unique model would not have had enough power to include all of the potentially relevant variables.

As a measure of association, crude (OR) and adjusted odds ratios (MLR-OR) and their 95% confidence intervals (CI) were reported. Statistical analyses were performed using STATA (STATA Statistical Software, 2001, version SE 9).

RESULTS

Overall, 1073 individuals with a newly-diagnosed HIV infection were identified during the study period. Of these, 77.2% (829/1073) were male, almost half (49.4%) were men who reported having sex with men (MSM); the median age was 36 years (range 18-86 years). The majority of patients were born in Italy (72.0%). Among 283 foreign-born individuals, 40% were originally from Central-South America, 30% were from Sub-Saharan Africa, and 15% were from Eastern Europe. Half of the patients (50.2%) reported a previous negative HIV test, which was performed more than five years before the first positive one in 25% of the cases.

A CD4 cell count at HIV diagnosis was available for 976/1073 individuals, with a median value of 366 cells/mmc; 29.5% had a CD4 count lower than 200 cell/mmc.

The proportion of older adults was 11.6% (125/1073): 65.6% belonged to the class 50-59 years, 25.6% to the class 60-69 years and 8.8% to the class ≥ 70 years.

[INSERT TABLE 1]

Table 1 shows clinical and epidemiological characteristics of the study population, according to the age groups. Compared with their younger counterparts, a higher proportion of older HIV-diagnosed adults were males ($p<0.05$), born in Italy ($p<0.001$), reported heterosexual or unknown HIV risk exposure ($p<0.001$), were never tested for HIV before the first positive test ($p<0.001$), and were diagnosed at a more advanced stage of HIV infection ($p<0.001$), as defined by a CD4 cell count <200 cells/mm³ and/or by the occurrence of an AIDS-defining illness within three months of HIV diagnosis. These factors remained significant also in the multivariable analysis model including all these variables.

Socio-economic and psycho-behavioural data

Socio-economic and psycho-behavioural data were available for 440 individuals who agreed to fill out the questionnaire (41%). Between the two age groups no statistically significant difference was found in response rates, that were 46.4% in older individuals and 40.3% in the younger group, respectively. However, compared to those who did not fill out the questionnaire, the 440 individuals who completed the questionnaire were more likely to be males, born in Italy, MSM, to report a previous HIV negative test and another sexually transmitted infection in the past and to have a less advanced HIV infection.

[INSERT TABLE 2]

Age differences in socio-economic characteristics are presented in table 2. Compared with their counterparts, older adults were less educated ($p<0.05$) and more likely to be working/retired ($p<0.05$); had higher incomes (between 1000 and 2000 € monthly, $p<0.05$), and were more likely to live with their partner or children ($p<0.05$). In the multivariate model the socio-economic factors associated with older age were a lower educational level, and living with their partners or children.

[INSERT TABLE 3]

With respect to psycho-behavioural characteristics (Table 3), at multivariate analysis, older adults were more likely to have never used recreational drugs and to have paid money for sex in the last 12 months.

The rates of condom use were comparable between older and younger individuals (data not shown) and for this reason this variable was not included into the model. Both populations reported an absent or poor condom use (never or sometimes) with occasional partners during either anal, vaginal and oral intercourses. In particular, older adults reported this poor condom use in 70.0%, 58.8%, and 91.7% of anal, vaginal and oral intercourses, respectively.

Finally, no difference was found regarding the depression rate in younger and older individuals (58.9% and 58.0%, respectively).

DISCUSSION

HIV and aging represent a duo with important and peculiar implications in epidemiological, clinical and social contexts, also due to the evolution of HIV disease into a chronic illness. The number of older HIV-infected individuals has been increasing in more recent years, and these persons represent a growing proportion of HIV population. So, future management of persons with HIV should be guided by appropriate care and public health strategies, and psycho-social interventions be based on specific, age-sensitive strategies (Heckman et al, 2002). To provide further information on this topic, we have analyzed characteristics associated with a recent diagnosis of HIV at later stages of the life course, among persons diagnosed in public counselling and testing sites in Italy.

Previous studies suggested that, compared to their younger counterparts, older HIV newly-diagnosed individuals have a different epidemiological and behavioral profile (Grabar et al, 2004; Nogueras et al, 2006; Mack & Ory, 2003; Crystal et al, 2003). In line with those findings, in the present study older adults were found to be less likely to report recreational drug use and more likely to be male and to report heterosexual or unknown risk exposure for the acquisition of HIV. Regarding other aspects of sexual behavior, differences were less clear cut.

Sexual intercourses with occasional partners, and a high number of sexual partners during the 12 months preceding HIV diagnosis were reported more frequently by younger individuals, but the difference did not reach statistical significance. Condom use was very poor, regardless of the type of partner, among both age groups. The infrequent use of condom in commercial sex in particular is of concern, also considering the fact that individuals aged 50 or above reported rather frequently, and significantly more often than younger patients, to have paid for sex in the 12 months prior to the HIV diagnosis.

Older adults diagnosed with HIV, when compared with younger individuals, were found less likely to have previous negative tests for HIV, and more likely to be diagnosed at a later stage of HIV infection, as documented by the lower CD4 cell count and the higher incidence of AIDS-defining illnesses close to HIV diagnosis. This implies that in older patients HAART tends to be started

later, partially compromising its efficacy; moreover, the delayed identification of older individuals with HIV contributes to the continuing spread of the infection. Other studies have found late HIV diagnoses associated with older age (Chadborn et al, 2006; Girardi et al, 2004), suggesting a low perception of HIV-related risks in elderly patients, despite their risky sexual behaviors, but also a low perception among physicians to consider the possibility of HIV infection in these patients, with the risk of confounding HIV-related symptoms with aging-associated conditions (Grabar et al, 2006; Casau, 2005). It is also possible that a lower health attitude in older patients, suggested by our study may contribute to this phenomenon.. Information campaigns targeting older patients and their doctors are needed to ensure timely diagnoses of HIV infection and the linkage to appropriate care. Several studies suggest that stereotypes and lack of information about sexual behavioral patterns in older people (Emlet, 2005; Gott, 2001; Xu et al, 2001) continue to limit them from receiving an adequate test access, making them an invisible at-risk population (Feldman, 1994). It is apparent that more information about HIV prevention and risk reduction should be provided through different and various channels in older persons, in order to promote the skills necessary for the adoption of safe sex practices (Maes & Louis, 2003).

With respect to socio-economic factors, we found an association of age with educational level, employment and living arrangement. These associations can be explained, at least in part, by an “age cohort effect”, and they should be taken into account when planning preventive and educational interventions.

Little is known about older adults mental health needs and their ability to cope with HIV infection (Kalichman et al, 2000; Godkin et al, 2003; Shippy & Karpiak, 2005). Our findings about CES-D scale suggest an high proportion over threshold of reported depressive symptoms with no difference between age groups. However, screening self-report scales such as CES-D, although widely used in HIV epidemiological research, describe the presence of depressive symptoms, not disorders, and they lack diagnostic accuracy. Our data highlight the need to further assess the prevalence of and better characterize psychological and psychiatric disorders in HIV-infected individuals and

particularly in older patients, as this could have important implications for their clinical management.

The newly-diagnosed HIV-infected patients considered in the present analysis are similar, when considering distribution by age, gender and mode of acquisition of HIV, to those reported to other regional HIV surveillance systems in Italy (COA, 2007). However, the questionnaire including socio-economic and psycho-behavioural data was available for only 41% (440/1073) of those eligible for inclusion. No statistically significant difference was found in response rates between the two age groups, while respondents and non respondents significantly differ for some epidemiological and behavioural characteristics, and this may limit the generalizability of our results with regards to these aspects. Moreover, it should be emphasized that recent HIV diagnoses represent a mixture of persons with recent infection and other who may have been infected in the past, but only now are being diagnosed; therefore limited information is available on ongoing behavioral patterns causing the new infections.

In conclusion, our study provides additional information on behavioral patterns of older adults with HIV, on their access to testing and differences and similarities with younger patients.

Further studies specifically focused on older adults with HIV, are clearly needed to better understand the evolution of the aging of the AIDS epidemic, and its impact in different contexts, in order to develop and implement specifically targeted prevention and care activities.

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Table 1 - Epidemiological characteristics of 1073 newly-diagnosed HIV infections according to age at first positive test. Lazio region January 2004-March 2007.

Epidemiological and Clinical Characteristics	Age (in years) at HIV positive test ¹		OR ² (95% CI)	MLR-OR ³ (95% CI)
	18-49	50-86		
	N. (%)	N. (%)		
Total	948 (88.4)	125 (11.6)		
<i>Gender</i>				
Female	225 (23.7)	19 (15.2)	1	1
Male	723 (76.3)	106 (84.8)	1.7 (1.0-2.9)	2.6 (1.5-4.6)
<i>Area of birth</i>				
Italy	661 (69.7)	112 (89.6)	1	1
Others	287 (30.3)	13 (10.4)	0.3 (0.2-0.5)	0.2 (0.1-0.4)
<i>Previous negative test</i>				
Yes	447 (53.1)	31 (28.4)	1	1
No	395 (46.9)	78 (71.6)	2.8 (1.8-4.4)	2.5 (1.6-4.0)
<i>HIV exposure category</i>				
MSM ⁴	467 (51.4)	40 (34.2)	1	1
Heterosexual	333 (36.6)	62 (53.0)	2.2 (1.4-3.3)	2.7 (1.7-4.3)
IDUs ⁵	77 (8.5)	2 (1.7)	0.3 (0.1-1.3)	0.3 (0.1-1.2)
Other/not known	32 (3.5)	13 (11.1)	4.7 (2.3-9.7)	4.6 (2.1-10.0)
<i>Sexually transmitted infection (lifetime)</i>				
Yes	254 (26.8)	22 (17.7)	1	1
No	694 (73.2)	103 (82.4)	1.7 (1.0-2.8)	0.7 (0.4-1.2)
<i>Advanced infection^{4,5}</i>				
No	604 (71.7)	53 (44.9)	1	1
Yes	238 (28.3)	65 (55.1)	3.1 (2.1-4.6)	2.3 (1.5-3.5)

¹ In some items, the sum does not add up to the total because of missing values.

² Crude odds ratios (OR) and their 95% confidence intervals (CI).

³Multivariate logistic regression (MLR) odds ratios (OR) and their 95% confidence intervals (CI). Variables in the model: gender, area of birth, previous negative test, HIV exposure category and sexually transmitted infection.

⁴ Advanced infection are defined as having AIDS diagnosis or CD4 <200.

⁵ Data available for 960 newly-diagnosed HIV infections

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Table 2- Socio-economics characteristics of 440 newly-diagnosed HIV infections according to age at first positive test. Lazio region January 2004-March 2007.

Socio-economic Characteristics	Age at HIV positive test ¹		OR ² (95% CI)	MLR-OR ³ (95% CI)
	18-49	50-86		
	N. (%)	N. (%)		
<i>Total</i>	382 (86.2)	58 (13.2)		
<i>Years of education</i>				
≥ 14	106 (27.9)	10 (17.2)	1	1
9-13	174 (45.8)	27 (46.6)	1.6 (0.8-3.5)	1.7 (0.7-3.9)
6-8	85 (22.4)	14 (24.1)	1.7 (0.7-4.1)	1.9 (0.7-5.0)
≤ 5	15 (3.9)	7 (12.1)	5.0 (1.6-15.0)	7.0 (1.8-26.8)
<i>Current employment</i>				
Unemployed	97 (25.5)	7 (12.3)	1	1
Employed & retired	284 (74.5)	50 (87.7)	2.4 (1.1-5.6)	1.9 (0.7-4.9)
<i>Monthly income category</i>				
0-1000	167 (46.9)	15 (29.4)	1	
1000-1999	144 (40.4)	29 (56.9)	2.2 (1.1-4.3)	1.4 (0.6-2.9)
> 2000	45 (12.7)	7 (13.7)	1.7 (0.7-4.5)	1.2 (0.4-3.4)
<i>Living arrangement (last 6 months)</i>				
With relatives	100 (26.4)	5 (8.6)	1	1
Lives alone	78 (20.6)	11 (19.0)	2.8 (0.9-8.5)	2.7 (0.8-8.4)
With partner or children	128 (33.8)	40 (69.0)	6.3 (2.4-16.4)	6.2 (2.3-16.9)
Other	73 (19.2)	2 (3.4)	0.5 (0.1-2.9)	0.6 (0.1-3.4)

¹ In some items, the sum does not add up to the total because of missing values.

² Crude odds ratios (OR) and their 95% confidence intervals (CI).

³ Multivariate logistic regression (MLR) odds ratios (OR) and their 95% confidence intervals (CI). Variables in the model: gender, area of birth, years of education, current employment, monthly income category, and living arrangement.

Table 3- Psycho-behavioural characteristics of 440 newly-diagnosed HIV infections according to age at first positive test. Lazio region January 2004-March 2007.

Psycho-behavioural Characteristics	Age at HIV positive test ¹		OR ² (95% CI)	MLR-OR ³ (95% CI)
	18-49	50-86		
	N. (%)	N. (%)		
<i>Total</i>	382 (86.2)	58 (13.2)		
<i>Sexual preferences</i>				
MSM	200 (53.5)	18 (32.7)	1	1
Heterosexual	174 (46.5)	37 (67.3)	2.3 (1.3-4.3)	2.1 (0.9-4.7)
<i>Having steady partner (last 12 months)</i>				
No	157 (41.2)	14 (24.1)	1	1
Yes	224 (58.8)	44 (75.9)	2.2 (1.2-4.1)	1.5 (0.7-3.2)
<i>Sexual partner number (last 12 months)</i>				
>5	123 (32.6)	9 (15.8)	1	1
2-5	110 (29.0)	17 (29.8)	2.1 (0.9-4.9)	1.0 (0.4-2.6)
0-1	145 (38.4)	31 (54.4)	2.9 (1.3-6.4)	0.8 (0.2-3.9)
<i>Having casual sexual intercourse (last 12 months)</i>				
Yes	241 (67.5)	26 (52.0)	1	1
No	116 (32.5)	24 (48.0)	1.9 (1.0-3.5)	2.5 (0.6-9.8)
<i>Having paid money for sex (last 12 months)</i>				
No	314 (87.9)	38 (77.5)	1	1
Yes	43 (12.1)	11 (22.5)	2.1 (1.0-4.4)	2.6 (1.0-6.8)
<i>Drug use (lifetime)</i>				
Yes	178 (46.6)	10 (17.2)	1	1
No	204 (53.4)	48 (82.8)	4.2 (2.0-8.5)	4.9 (2.2-11.1)
<i>Alcohol use frequency (last 12 months)</i>				
Sometimes	114 (30.3)	8 (14.0)	1	1
Never	209 (55.6)	38 (66.7)	2.6 (1.2-5.7)	1.6 (0.7-4.0)
Ever	53 (14.1)	11 (19.3)	2.9 (1.1-7.8)	1.9 (0.6-5.3)

Psycho-behavioural Characteristics	Age at HIV positive test ¹		OR ² (95% CI)	MLR-OR ³ (95% CI)
	18-49	50-86		
	N. (%)	N. (%)		
<i>Health attitude</i>				
High	185 (58.1)	23 (44.2)	1	1
Low	129 (41.1)	29 (55.8)	1.8 (1.0-3.3)	1.7 (0.9-3.4)

¹ In some items, the sum does not add up to the total because of missing values.

² Crude odds ratios (OR) and their 95% confidence intervals (CI).

³ Multivariate logistic regression (MLR) odds ratios (OR) and their 95% confidence intervals (CI). Variables in the model: gender, area of birth, sexual preferences, steady partner, sexual partner last 12 months, casual sexual intercourse, paying money for sex, drug use lifetime, alcohol use frequency last 12 months, health attitude.