

Brief Report

Decrease in new diagnosis of HIV/AIDS in the two years period 2019-2020: Impact of COVID-19 pandemic

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Abstract

The emergence SARS-CoV-2 in late 2019 and early 2020 has caused a pandemic of unprecedented proportions. Management of COVID-19 became emergent public health priorities, and the impact on other public health initiatives, such as expanded HIV screening and linkage to care, remain largely unknown. In this Single-Center retrospective observational study, we describe the characteristics and circumstance of the new HIV cases during 2020 compared to 2019. We observed a decrease of HIV diagnosis during this period. Interestingly, median age at HIV diagnosis decreased of one decade and percentage of female patients was higher. In addition, more patients received diagnosis during hospitalization and more AIDS-defining conditions, such as *Pneumocystis pneumonia*, were detected. We express our concern that HIV new diagnoses will increase as a result of people's inability to get tested or treated in this period. More efforts are needed to improve local screening programs both during and after COVID-19 pandemic.

Introduction

The emergence of a novel coronavirus, named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), in late 2019 and early 2020 has caused a pandemic of unprecedented proportions with substantial impacts on population health but also on national economies and human behavior, as result of COVID-19 related mobility restrictions.¹

In late February 2020, Italy was the first western Country hit by the COVID-19 pandemic. The Lombardy region and in particular Brescia Province was highly affected in terms of confirmed cases, hospitalized patients and death both in the first wave (March-May 2020) and in the second one (October-December 2020).^{2,3}

Preparedness for and management of COVID-19 clearly became emergent public health priorities, and the impact on other important public health initiatives, such as expanded HIV screening and linkage to care, remain largely unknown.

Our Infection Diseases Department, that provides HIV services for almost 4000 HIV-infected patients has worked hard to ensure access to HIV treatment and care during COVID-19.⁴ We implanted programs oriented to telemedicine, extending quarterly prescriptions fills to over 90 days, and visits over half yearly in chronic HIV-infected patients with stable disease early on March 2020.⁴

Keeping HIV prevention efforts moving forward during pandemic became difficult. HIV educational and testing in check-point for sexual transmitted diseases including HIV prevention counselling and testing around our Province, fundamentals of prevention, were no longer viable from March to May 2020 (first wave) and progressively opened afterwards.

Here, we present the new HIV diagnosis and describe the characteristics and circumstance of the new HIV cases during 2020 and compared with those of 2019.

Design and Methods

This is a Single-Center retrospective observational study. We selected among all patients with new diagnosis of HIV infection took in care at the Clinic of Department of Infectious and Tropical Diseases University of Brescia and Brescia Spedali Civili Hospital, Northern Italy.

We recorded in an electronic database all the demographical, clinical and viro-immunological data, including information about risk factors for HIV acquisition and the reasons why patients performed the HIV test.

We compared the data of patients received in 2020 with those took in care in 2019 in order to observe any difference caused by COVID-19 pandemic in the access to care.

As this study retrospective and non-pharmacological, informed consent has not been provided since in Italy ethical authorization for these studies is not needed (Italian Guidelines for classification and conduction of observational studies, established by the Italian Drug Agency, "Agenzia Italiana del Farmaco – AIFA" on March 20th, 2008). Moreover, for this study we used the general authorization of the Italian Guarantor for the use of demographical and clinical data of patients who signed Spedali Civili

Significance for public health

Our experience highlights the importance of a resilient healthcare system ready to implement new strategies in order to guarantee the continuum of HIV care even in the context of emergency. Notwithstanding our efforts, we observed a decrease of HIV diagnosis during this period compared to 2019. We express our concern that HIV new diagnoses will increase as a result of people's inability to get tested or treated in this period. Our City, by signing the Paris Declaration on Fast-Track Cities in 2019 made the commitment to accelerate HIV responses to achieve end of AIDS epidemic by 2030. COVID-19 pandemic has slowed down this process around the world and in our city and in order not to lose ground, more efforts are needed to improve local screening programs both during and after COVID-19 pandemic.

General Hospital of Brescia informed consent, at the time of the admission in our outpatient Clinic.

Results

The number of individuals receiving an HIV diagnosis declined by 31.2% during 2020 (from 77 patients with new HIV

diagnosis in 2019 to 53 patients in 2020). Characteristics of patients are showed in Table 1.

During this period, there were shifts in gender, risk group, age, and geographical origin. Although the proportion of HIV diagnoses among men remained predominant during both years, the proportion of all diagnosed HIV infections attributable to females increased from 13% in 2019 to 26.4% in 2020. The percentage of

Table 1. Characteristics of patients with HIV new diagnosis on 2019-2020 followed by Ambulatory of Infectious and Tropical Diseases Department of Spedali Civili of Brescia.

	2019	2020
Number of patients with HIV new diagnosis	77	53
Sex		
Male (%)	67 (87.0)	39 (73.6)
Female (%)	10 (13.0)	14 (26.4)
Median age (range)	45 (19-70)	36 (21-68)
HIV risk factors (%)		
Eterosex	44 (57.1)	34 (64.1)
Omosex/Bisex	31 (40.3)	16 (30.2)
TD	0 (0)	2 (3.8)
Blood transfusion	1 (1.3)	0 (0)
NA	1 (1.3)	1 (1.9)
Geographic area (%)		
Italy	50 (64.9)	33 (62.3)
East Europe	4 (5.2)	9 (16.9)
Africa	11 (14.3)	8 (15.1)
Central/South America	8 (10.4)	2 (3.8)
Asia	3 (3.9)	0 (0)
West Europe	1 (1.3)	1 (1.9)
Median CD4+ lymphocyte T cell/mm ³ at diagnosis (range)	252.5 (4-1430) ^a	239.5 (3-1612) [^]
Median HIV RNA cp/mL at diagnosis (range)	96638 (45->10000000) ^b	117510,5 (21-10000000) [°]
Patients with AIDS defining conditions (%)	19 (24.7) ^c	16 (30.2) [*]
PCP	4 (5.2) ^d	6 (11.3) [#]
Wasting syndrome	1 (1.3) ^d	5 (9.4) [#]
Esophageal candidiasis	3 (3.9) ^d	2 (3.8) [#]
Tuberculosis	1 (1.3) ^d	2 (3.8) [#]
Kaposi sarcoma	4 (5.2) ^d	2 (3.8) [#]
AIDS dementia-complex	0 (0) ^d	2 (3.8) [#]
Non-Hodgkin lymphoma	2 (2.6) ^d	1 (1.9) [#]
LEMP	1 (1.3) ^d	1 (1.9) [#]
CMV chorioretinitis	3 (3.9) ^d	0 (0) [#]
M. avium mycobacteriosis	2 (2.6) ^d	0 (0) [#]
Disseminated cryptococcosis	1 (1.3) ^d	0 (0) [#]
Neurotoxoplasmosis	1 (1.3) ^d	0 (0) [#]
HIV test execution reasons (%)		
During hospitalization	34 (44)	21 (39.6)
AIDS-defining conditions	19 (24.7)	16 (30.2)
Non HIV-related conditions	15 (19.5)	5 (9.4)
Occasional finding/medical prescription for chronic non-specific symptoms	28 (36,3)	17 (32,1)
Partner HIV test positive	6 (7.8) ^e	7 (13.2) [§]
Pregnancy	3 (3.9)	5 (9.4%)
Blood donor HIV screening	1 (1.3)	0 (0)
SERT HIV screening	0 (0)	2 (3.8) [']
STDs screening	5 (6.5)	1 (1.9) ["]
HIV test performed from January to February (%)	11 (14.3)	12 (22.6)
HIV test performed from March to May (%)	22 (28.6)	10 (18.9)
HIV test performed from June to September (%)	25 (32.5)	15 (28.3)
HIV test performed from October to December (%)	19 (24.7)	16 (30.2)

^aOne patient of 77 with no CD4+ lymphocyte T (cell/mm³) value available at diagnosis; ^b2 patients of 77 with no HIV RNA (cp/mL) value available at diagnosis; ^cPatients can show multiple AIDS-defining conditions; ^dPercentage of total patients with HIV new diagnosis; ^e1 of 6 HIV test positive in pregnant partner; [^]One patient of 53 with no CD4+ lymphocyte T (cell/mm³) value available at diagnosis; [°]One patient of 53 with no HIV RNA (cp/mL) value available at diagnosis; ^{*}Patients can show multiple AIDS-defining conditions; [#]Percentage of total patients with HIV new diagnosis; [§]2 of 7 HIV test positive in pregnant partner. [']HIV test performed on 25th February 2020 and on 19th August 2020; ["]HIV test performed on 30th June 2020.

diagnosed infections attributed to male-to-male sexual contact declined slightly during 2019-20, from 40% to 30% and median age at HIV diagnosis decreased of one decade (45 years old in 2019 and 36 years old in 2020). Interestingly, the proportion of patients with new HIV diagnosis from East Europe accounted for 17% of diagnoses in 2020 (only 5% in 2019).

Diagnosis of HIV new infection made during hospitalization were 11% and 22.6% of patients during 2019 and 2020 respectively. At the time of HIV infection diagnosis, 24.7% of patients during 2019 and 30.2% during 2020 presented with advanced HIV infection defined as presence of at least one AIDS-defining event. Pneumocystis pneumonia was the most frequent AIDS defining-condition in 2020.

Finally, during the first two months of both years, the number of new diagnoses was similar (11 vs 12) and halved during the first COVID-19 wave respect to the same period of 2019 (22 vs 10). In addition, we observed a rise in the rate of new HIV diagnosis in July and November-December, concurrent with the reduction of restrictions following the first and second wave respectively (Figure 1).

Discussion and Conclusions

In this report, we attended in our Center a decrease in new HIV diagnosis in 2020 compared to 2019. This important decrease was observed particularly during the two waves of COVID-19 pandemic. Previously some have suggested that we could witness a decline in the incidence of infectious bacterial STIs, such as syphilis, chlamydia or gonorrhea, as well as blood-borne viruses due to reduced opportunities to have sex and, for some, reduced use of recreational drugs to enhance sexual activity ('chemsex' and 'slamsex') during periods of lockdown.^{5,6} Despite the scarcity of scientific publications or surveillance reports, anecdotal reports of large reductions in the number of both new sexually transmitted diseases (STI) and HIV diagnoses have also been reported in the

UK, presenting what sexual health advocates have called a 'once in a lifetime opportunity' for reducing STI/HIV transmission.⁷ However, there is contrasting results and an enormous multinational survey, conducted through an on-line social networking application which gathered responses from over 10 000 MSM across 20 countries, described an association between most stringent government responses to COVID-19 with decreased access to HIV testing, prevention and treatment services.^{8,9}

Local health departments as well as providers, including HIV providers, are on the front lines of both the HIV and COVID-19 response and addressing both epidemics simultaneously creates new challenges.

In fact, some clinical conditions related to both HIV and COVID-19 maybe intertwined. For instance, clinical and radiological picture of interstitial pneumonia could be referred to Pneumocystis pneumonia as well as COVID-19^{10,11} and perhaps, thank to this, we observed an increase in PCP diagnosis in 2020. However, the total number of patients diagnosed during hospitalization slightly decrease in 2020 compared to 2019; as a matter of fact, in particular during the first pandemic wave, patients with symptoms not clearly related to COVID-19 did not often consider access to hospital care necessary. Lastly, also general medicine was focused on COVID-19 and therefore general practitioners and territorial medicine did not considered HIV testing and access to treatment as a priority.

Maintaining high levels of routine HIV screening is crucial, but some community-based organizations and health clinics have ceased to offer in-person evaluations and HIV screening in our area, at least during the first wave (March to May), becoming very difficult to be tested for HIV during the COVID-19 pandemic.

We found an important decrease accounting of about 10 years also in the median age at HIV diagnosis, displaying that people took in care in 2020 will treated with antiretrovirals for several decades. A special effort needs to be made to keep those patients in care, since the persistence of COVID-19 pandemic can increase the risk of being lost to follow up and eventually re-engaged in

New HIV diagnosis 2019-2020 years

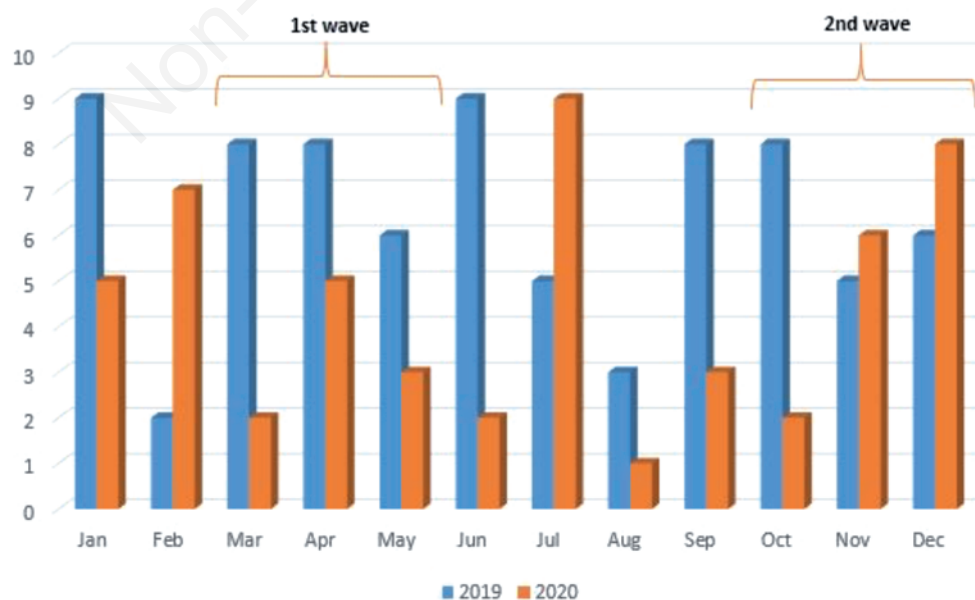


Figure 1. Number of HIV new cases month by month.

care when pandemic ended. It has been previously demonstrated by our group that people re-engaged in care often presenting with lower CD4+ T-cell count and with AIDS-defining conditions.¹²

During the last years there has been significant progress in reducing the number of new HIV diagnoses, and the goal of eliminating new HIV transmission is closer than ever. Our City, by signing the Paris Declaration on Fast-Track Cities in 2019 made the commitment to accelerate HIV responses to achieve end of AIDS epidemic by 2030. COVID-19 pandemic has slowed down this process around the world and in our city and in order not to lose ground, it is important to maintain HIV screening and linkage to care, even in the face of the several waves of COVID-19 pandemic.^{13,14}

In conclusion, we express our concern that STI rates and HIV new diagnoses will increase coming soon as a result of people's inability to get tested or treated in this period. More efforts are needed to scale up locally the screening programs for STI and HIV both during and after COVID-19 pandemic.

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