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A five year retrospective study on Syphilis in the Sexual Transmitted Disease Centre (STDC) of the teaching Hospital Umberto I in Rome

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Parole chiave: Sifilide, HIV, malattie sessualmente trasmesse, sorveglianza, gravidanza

Abstract

Objectives. A retrospective study describing syphilis epidemiological and clinical features in patients referring to an infectious diseases centre in Rome, Italy.

Methods. Between January 2011 and December 2015 demographic, behavioral and clinical data were collected from all adult patients attending the Sexually Transmitted Diseases Centre of the Teaching Hospital Umberto I in Rome.

Results. Overall 723 patients, 495 males and 228 females, with syphilis infection diagnosis were included. Average age 39.6 ± 13.6 years (median 38) was higher in men than women (41.1 ± 13.6 vs. 36.3 ± 13.1 ; $p < 0.001$). Patients were from Italy (486 or 67.2%), EU (90 or 12.4%), rest of Europe (38 or 5.3%), Americas (46 or 6.4%), Africa (36 or 5.0%) and Asia (27 or 3.7%). One-hundred-twenty-three (17.0%) presented primary syphilis, 43 (5.9%) secondary syphilis, 8 (1.1%) tertiary syphilis, 246 (34.0%) serological syphilis, 80 (11.1%) preceding syphilis, 56 (7.7%) gravidic syphilis and 167 (23.1%) came to the Sexually Transmitted Diseases Centre to control a preceding syphilis treatment. Fifty-six (24.6%) women were diagnosed with syphilis during their pregnancies. Among Chinese female patients, those pregnant represented 87.5%. There were 100 subjects (13.8%) simultaneously HIV+ and 623 (86.2%) HIV- patients. HIV co-infection affected more frequently men (RR 5.30; CI 2.62 – 10.72; $p < 0.001$). In males HIV co-infection affected more frequently homosexuals (RR 11.72; CI 6.72 – 20.45; $p < 0.001$). Overall HIV co-infection affected more frequently foreign patients, specially from the Americas (26.1%), Africa (25.7%) and Asia (22.2%).

Conclusions. A serious problem of “gravidic syphilis” suggests the need for Public Health preventive action. Also an early diagnosis of both syphilis and HIV infection should be reinforced.

Introduction

Syphilis is one of the most common serious sexually transmitted diseases (STD) caused by the bacterium *Treponema pallidum*, and characterized by a multistage course of disease, in which symptomatic and asymptomatic phases occur (1). Worldwide

more than 5 million new cases of syphilis are diagnosed every year, representing a major public health concern (2).

In 2014, according to the European Centers for Disease Control (E-CDC) (3), 24,541 syphilis cases were reported in 29 European Union (EU) and European Economic Area (EEA) member states, with

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a 5.1 per 100,000 population rate and males accounted for a six fold more cases than women. Overall reported rates across Europe vary a lot from < 1 per 100,000 (i.e. Italy) to > 10 per 100,000 as in Malta. The majority of cases were reported in people >25 years, with young people between 15 and 24 years of age accounting for only 13% of cases. Almost two-thirds (63%) of cases with information on transmission were reported in men who have sex with men (MSM) and trends since 2010 show that overall syphilis rates have been increasing, particularly due to MSMs (3).

According to the E-CDC data, although in Italy all physicians are required to report new syphilis cases to the national register, a minority of them respects this obligation (3, 4), and consequently the true number of cases is underestimated. However, syphilis outbreaks among MSMs, especially in HIV-positive patients, have been documented in recent years also in various Italian cities (5-8).

Therefore, we decided to carry out a retrospective study to describe epidemiological and clinical features of syphilis cases in patients referring to an infectious diseases centre in Rome.

Methods

Between January 2011 and December 2015, we examined 723 patients with syphilis acquired by sexual transmission (congenital syphilis cases were not included). All patients were followed by the Sexually Transmitted Diseases (STD) Centre of the Department of Public Health and Infectious Diseases in the 1,100 bed teaching Hospital Umberto I in Rome.

Patients who showed syphilis lesions, or tested positive for syphilis or were suspected of being infected were directed to our STD Centre by general practitioners, gynaecologists, ER physicians and laboratories.

Demographic (gender, age, nationality), behavioral (sex orientation) and clinical (syphilis stage of infection, HIV status, pregnancy) data were collected.

Statistical analyses were performed using Epi-Info (version 2011; CDC, Atlanta, GA). The chi-square test was used to examine differences between groups. Statistical significance was defined as a P value of less than 0.05. Univariate relationship was tested using relative risk (RR) and its 95% confidence interval (CI₉₅).

Results

Overall 723 patients, 495 (68.5%) males and 228 (31.5%) females, with a syphilis infection diagnosis were screened during the study period. The average age was 39.6 ± 13.6 years (median 38). Mean age in men was higher than in women (41.1 ± 13.6 vs. 36.3 ± 13.1 ; $p < 0.001$). Considering age distribution, over 2/3 patients were within 18-45 years old range.

According to the nationality 486 (67.2%) were from Italy, 90 (12.4%) from EU, 38 (5.3 %) from the rest of Europe, 46 (6.4%) from the Americas, 36 (5.0%) from Africa and 27 (3.7%) from Asia. The 77 (10.6%) patients from Romania represented the second national group after the Italians. Nationality distribution in relation to gender is reported in Table 1. Among Italians, males outnumbered females by four-fold, whereas for EU and rest of Europe patients there was a predominance of women, respectively 76.7% vs. 60.5%.

According to the stage of infection and serological status, 123 (17.0%) patients presented primary syphilis, 43 (5.9%) secondary syphilis, 8 (1.1%) tertiary syphilis, 246 (34.0%) serological syphilis, 80 (11.1%) preceding syphilis, 56 (7.7%) gravidic syphilis and 167 (23.1%) patients attended the STD Centre in order to control a preceding syphilis treatment.

It was impressive that, among women, 56 (24.6%) were diagnosed syphilis during their pregnancy: 18 (18.6%) were Italians, whereas Romanians represented the second most frequent nationality (14 patients). Results highlighted that, among Chinese and Romanian female patients referring to the STD Centre, those pregnant represented, respectively, 87.5% and 21.5%. Nationality distribution of pregnant women is reported in Table 1.

Overall there were 100 (13.8%) HIV positive and 623 (86.2%) HIV negative patients. HIV co-infection affected more frequently men (18.59%) than women (3.51%) (RR 5.30; CI 2.62 – 10.72; $p < 0.001$). Among the latter, five pregnant women showed a HIV co-infection.

Considering male population, HIV co-infection affected 13.8% of patients, and more frequently homosexuals (46.7%) than heterosexuals (4.0%) (RR 11.72; CI 6.72 – 20.45; $p < 0.001$). Furthermore HIV co-infection affected more frequently foreign patients from the Americas (26.1%), Africa (25.7%), Asia (22.2%) and even less the Italians (13.4%), EU (6.7%) and the rest of Europe (5.4%) citizen.

Discussion

Males outnumbered by over two-fold females throughout all the study period: 69% (2011), 64% (2012), 63% (2013), 70% (2014), 76% (2015). Age distribution analysis confirmed a shift towards older age, particularly in the population of Italians (4).

Two-thirds of all patients were Italians, the remainder being foreign immigrants. Among the former, males represented >80%, whereas among the latter, specially EU and rest of Europe, females were more numerous (Table 1). In these specific subgroups, female patients fell prevalently in the age-group 18-30, suggesting a possible association with prostitution.

The reported number of syphilis cases and their staging underlined some relevant epidemiological aspects. First, we reported a high number of “gravidic syphilis” cases who accounted for about 25% of all female patients. Notably the percentage was higher for foreigners (29%) but also Italian women accounted for almost 20%.

Because of vertical transmission, pregnant women who are infected by syphilis can transmit their infection to the baby during pregnancy or at birth, resulting in “congenital syphilis”. Therefore, in 2012, the World Health Organization (WHO) experts recommended that the term “mother to child transmission (MCT) of syphilis” should be used in place of “congenital syphilis”, in order to increase awareness of the full spectrum of adverse outcomes including still-birth, neonatal deaths, premature and low weight infants, as well as deformities at birth (7-9). The percentage of pregnant women with syphilis among the chinese community (70%) was striking, and suggests the need for Public Health enquiry and prevention action.

Also relevant was the number of HIV positive patients during the five year study. Syphilis has been always closely associated with HIV infection, as syphilitic genital ulcers are densely infiltrated with lymphocytes (the primary target cells of HIV infection) and so provide a portal of entry for HIV acquisition. Additionally, in patients with HIV, clinical manifestations of syphilis or response to recommended therapy could be different as a result of the effect of HIV on host immunity. Remarkably, in 2014 about 40% of all people diagnosed with early syphilis in USA were infected with HIV (2). Also the occurrence of syphilis cases in well-known HIV seropositive persons highlights the risk that the increased survival due to Highly active antiretroviral therapy (HAART) can increase risky sex behaviours which might facilitate future HIV spread (4, 10).

In recent years syphilis incidence increased dramatically in Western Europe and the

Table 1 - Characteristics of patients diagnosed with syphilis

Nationality	Total n° of patients	Male patients		Female patients		Pregnant women with syphilis	
		n°	%	n°	%	n°	%
Italy	486	389	80.0%	97	20.0%	18/97	18.6%
EU	90	21	23.3%	69	76.7%	16/69	23.2%
(Romania)	(77)	(12)	(15.6%)	(65)	(84.4%)	(14/65)	(21.5%)
Rest of Europe	38	15	39.5%	23	60.5%	7/23	30.4%
America	46	31	67.4%	15	32.6%	3/10	30.0%
Africa	36	24	66.7%	12	33.3%	4/12	33.3%
Asia	27	15	55.6%	12	44.4%	8/12	66.6%
(China)	(10)	(2)	(20.0%)	(8)	(80.0%)	(7/8)	(87.5%)
Total	723	495	68.5%	228	31.5%	56/228	24.6%

Americas and has disproportionately affected MSMs and has been closely linked with HIV infection. Similarly the results from our survey showed a strong association between syphilis, male homosexuality and HIV.

Conclusions

The results of our study revealed a serious problem of “gravidic syphilis”, suggesting the need for Public Health enquiry and prevention action for “mother to child transmission of syphilis”.

Also it is important to improve HIV prevention campaigns to make people more aware of sexually transmitted diseases, to reinforce the importance of early diagnosis and treatment both of syphilis and HIV infections, and to minimize the risk of transmission of these two STDs.

Conflict of interests

The authors declare that there is no actual or potential conflict of interest in relation to this article.

Author's contributions

SP and CC equally contributed to the manuscript. SP, CC, PG and GBO conceived the study, analysed the data and contributed to the writing. DS, MN, ES collected the data. All authors read and approved the final manuscript.

Riassunto

Studio retrospettivo di 5 anni sulla sifilide in un Centro per le malattie Sessualmente Trasmesse del Policlinico Umberto I di Roma

Obiettivi. È stato condotto uno studio retrospettivo su aspetti epidemiologici e clinici della sifilide in pazienti afferenti ad un centro di malattie infettive di Roma, Italia.

Metodi. Dal Gennaio 2011 al Dicembre 2015 sono stati raccolti i dati demografici, comportamentali e clinici nei pazienti adulti afferenti al centro per le malattie sessualmente trasmesse del Policlinico Umberto I di Roma.

Risultati. In totale sono stati inclusi 723 pazienti, 495 maschi e 228 femmine, con diagnosi d'infezione sifilitica. L'età media è stata di 39.6 ± 13.6 anni (mediana 38) più elevata negli uomini rispetto alle donne (41.1 ± 13.6 vs. 36.3 ± 13.1 ; $p < 0.001$). La provenienza dei pazienti è risultata in ordine da: Italia 486 (67.2%), UE 90 (12.4%), resto d'Europa 38 (5.3%), America 46 (6.4%), Africa 36 (5.0%) ed Asia 27 (3.7%). Riguardo alla stadiazione della malattia, 123 (17.0%) presentavano sifilide primaria, 43 (5.9%) sifilide secondaria, 8 (1.1%) sifilide terziaria, 246 (34.0%) sifilide sierologica, 80 (11.1%) sifilide precedente, 56 (7.7%) sifilide gravidica e 167 (23.1%) si sono presentati per il controllo di un precedente trattamento contro la sifilide. In 56 (24.6%) donne è stata diagnosticata sifilide in corso di gravidanza. Tra le donne cinesi le pazienti con diagnosi di sifilide in corso di gravidanza erano 87.5%. Sono stati registrati 100 (13.8%) pazienti HIV+ e 623 (86.2%) HIV-. La coinfezione con HIV ha riguardato più frequentemente gli uomini rispetto alle donne (RR 5.30; CI 2.62 – 10.72;

$p < 0.001$). Nei pazienti maschi la co-infezione HIV ha interessato maggiormente gli omosessuali (RR 11.72; CI 6.72 – 20.45; $p < 0.001$). In generale la co-infezione HIV ha riguardato più frequentemente i pazienti stranieri rispetto agli italiani, specialmente da America (26.1%), Africa (25.7%) ed Asia (22.2%).

Conclusioni. È stato rilevato un serio problema di “sifilide gravidica” che suggerisce la necessità di un’azione di prevenzione di Sanità Pubblica. Inoltre la diagnosi precoce per HIV e sifilide dovrebbe essere rafforzata.

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