

## A Syphilis Co-Infection Study in Human Papilloma Virus Patients Attended in the Sexually Transmitted Infection Ambulatory Clinic, Santa Casa de Misericórdia Hospital, Rio de Janeiro, Brazil

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Despite the prevalence of syphilis worldwide, little is known about its manifestations when associated with other Sexually Transmitted Infections (STI), specifically the Human Papilloma Virus (HPV). Current epidemiological studies show that there is a high incidence of both diseases in ambulatory clinics all over Brazil. This study aims to estimate the incidence of syphilis - HPV co-infections, among patients from the STI ambulatory clinic at the Santa Casa da Misericórdia Hospital, Rio de Janeiro, Brazil. Two-hundred and seven patients were seen in the clinic between March and December 2005, of which 113 (54.6%) sought care for an HPV infection. Blood samples were taken from all patients to check syphilis serology using the flocculation and the non-treponemic test or VDRL (Venereal Disease Research Laboratory) and the TPHA (Treponema Pallidum Hemagglutination Assay) treponemic and confirmatory method. Of the 207 patients, 113 (54.6%) consulted referring to HPV as their primary complaint, and of these, 18 (15.9%) also presented with positive syphilis serology, demonstrating a high incidence of co-infection. The average age of the patients varied between 20 and 25 years, 203 (98.1%) were male and 4 (1.9%) were female. The predominance of the male sex in this sample confirms the profile usually treated in STI clinics across the country, and the age range is that of typically high sexually activity. **Conclusion:** The results demonstrated the need for a differentiated examination of all STD patients.

**Key-Words:** Co-infection, syphilis, HPV, STD.

As part of the evolution of the human species the possibility arose of separating the pleasure derived from sexual activity from the reproductive objectives, which brings out the social and psychological aspects of sexuality. It became commonplace to engage in sexual relations only for the physical pleasure.

In addition to the organic symptomatology Sexually Transmitted Disease (STD) have always invoked a strong emotional element. Until recently, the STI's were called "venereal diseases" after the priests in the temples of Venus that exercised prostitution as a form of ceremony to the goddess of love. With the emergence of HIV, the STI's have regained focus in societies across the world.

The change in the denomination of "venereal disease" to "sexually transmitted infection" was provoked by two motives. First, justified by the possibility of including other infections often transmitted via sexual relations (moniliasis, for example); the change also removed some the negativity historically associated with the ancient name [1]. Meanwhile, only recently have the STI's been considered a significant cause of morbidity [2].

Syphilis is one the oldest and most studied STI's in the history of humanity, its origin frequently discussed in documentaries and paleontology studies. The origins of syphilis are not known, but it is possible Hippocrates of ancient Greece documented it in its tertiary form. It was recognized in the Greek city of Metapontum in approximately 600 BCE and in Pompey archeological evidence of syphilis was discovered on the teeth of children of mothers with syphilis.

Two schools of thought exist on the origin of syphilis. One argues that it is an American disease brought back to Europe by Columbus or one of his successors. The other claims that it is an ancient disease from the Old World that underwent mutations that made it more virulent in the XVI century. Other historians believe that the *Treponema pallidum* caused diseases like pinta and yaws in medieval Europe (afflictions that were erroneously classified as leprosy), and that the bacteria underwent a mutation in the XVI century converting it to the *T. pallidum* that causes syphilis. It is true that syphilis emerged in the XVI century and that the Europeans, exhibiting no resistance to it, died in considerable numbers and presenting with abrupt and florid symptoms completely different that those observed today. As a result of the endemicity of the disease, both the parasite and the human being adapted to each other and today's more moderate syphilis evolved [3].

Human papilloma virus, often called HPV, represents a STI that has become a relevant health problem since the 1980s [4]. Martius, a roman historian, first described the classic condyloma in the first century of the Christian era. While Greeks and Romans both described the disease in the Middle Ages, the references are imprecise. The papilloma viruses exist

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in all parts of the world, including affecting the most remote populations like the indigenous people of the Amazon, where three new sub types were recently discovered. With help from modern genetics, it has been proven that these new subtypes are as old as or older than the *Homo sapiens* [5]. Worldwide, approximately 400,000 new cases of HPV are diagnosed each year. Americans are usually infected with HPV via sexual transmission and studies estimate that 75% of fertile women and men were infected with the virus at some point in their lives. In Brazil, studies using PCR found different rates of prevalence in various populations. Associations between different STI's are frequent, but there are few statistics on the prevalence and incidence of co-infections. This study aims to demonstrate the relevance of the co-infection between the STI's most common in the STI ambulatory clinics in the country, HPV and syphilis.

**Material and Methods**

**Characteristics of the Region**

The Santa Casa da Misericórdia Hospital is situated in downtown Rio de Janeiro and is one of the oldest health care institutions in Brazil, founded in 1582 by father José de Anchieta. Today, patients from every neighborhood of the city as well as those from surrounding towns are attended daily in this historic hospital.

The Dermatology Institute carries the name of its founder, Rubem David Azulay, and houses one of the few referral centers for STI's in the state of Rio de Janeiro.

**Inclusion Criteria**

All patients with a clinical diagnosis for HPV examined in the STI ambulatory clinic of the Santa Casa da Misericórdia Hospital in Rio de Janeiro, at least 13 years old and sexually active, from March to December, 2005 were offered the exam to test for an associated syphilis infection. The STI's were diagnosed using the syndromic approach, a technique introduced by the Ministry of Health (MH) in the 1990s, in which the treatment for STI's is based on clinical signs and flow charts [6]. Informed consent was requested from all patients as stated in the terms of the study, and when the patient was younger than 18 the consent was signed by the patient's guardian. The data was analyzed with regard to the age and sex of the patients.

**Collection of Samples**

The samples for the study were collected during the patient's visit and were sent to the Oswaldo Cruz Institute (Oswaldo Cruz Foundation) through a partnership with the Enterobacteria Laboratory.

**Laboratory Analysis of the Samples**

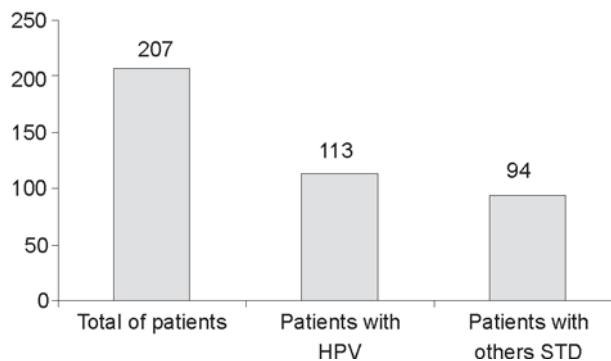
The samples were processed in the Enterobacteria Laboratory using the VDRL (Venereal Disease Research Laboratory) kit from Biomeri  x Laboratory, a non-treponemic method involving sterilized antigenic suspension to detect

syphilis via flocculation. While this test is simple and fast offering high sensitivity, it analyzes the serum, which requires centrifugation to separate the two sanguine components. The reading should be done using an optical microscope with a 10x objective. The TPHA (*Treponema Pallidum* Hemagglutination Assay) also from the Biomeri  x Laboratory is a confirmatory treponemic method that involves red blood cells treated against the presence of the treponema in the sample and a hemagglutination reaction on the slide; it is simple to perform, is read visually and its accuracy similar to that of the immunofluorescence technique except in primary syphilis (chancre present) in which its sensitivity and specificity do not surpass 89%.

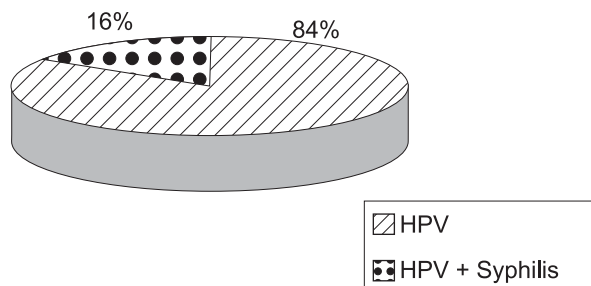
**Results**

One-hundred and thirteen (54.6%) of the 207 patients examined to the clinic between March and December, 2005 came for treatment of an HPV infection, and of those, 18 (15.9%) patients were diagnosed with syphilis (Figure 1), demonstrating a strong correlation between the two diseases (Figure 2). In respect to the sex of the patients, 203 (98.1%) of all patients were male and 4 (1.9%) were female. The average age varied between 20 and 25 years.

**Figure 1.** Total of patients taken care of in the period of March, December of 2005.



**Figure 2.** Total of patients co-infection.



### Discussion

According to the World Health Organization (WHO), the global incidence of curable STI's is 333 million cases per year. The Brazilian National AIDS/STD Program relates the increase in STI's in many countries with the lack of access to effective and reliable health services. Possible demographic reasons include the high percentage of sexually active young adults, urban migration, socio-cultural changes, increases in prostitution, multiple sexual partners and the increasing prevalence of resistance to antibiotics. In a study of Brazilians between 15 and 54 years old, more than 90% referred to being sexually active in their lifetime, and 81% in the last year. Among young Brazilian males between 17 and 21, 80% referred to being sexually active. Between 2001 and 2004, they had been notified 78,870 STI cases were reported to the Secretariat of Health of the state of Rio De Janeiro [7].

### Conclusion

The information collected in this study is consistent with the national statistics, demonstrating that despite the accessible and abundant sources of information, adolescents have their first sexual experience younger and without adequate sexual education. The predominance of the male sex

in the STI clinic was expected by the researchers and the sample was considered "the tip of the iceberg" of all STI's, as described by several authors: the patient only seeks the health care when the disease presents symptoms.

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