

Genital Herpes in Women in the Southeast of the Caspian Sea, North of Iran: A Short Communication

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Abstract

Background and Objectives: Genital herpes is a sexually transmitted infection (STI) caused by the herpes simplex viruses (HSV). Some studies have shown a new trend of genital Herpes epidemiology that increasingly emphasizes on HSV-1 as a potential genital pathogen.

Methods: Specimens were collected from 13 women with symptomatic genital ulcers referred to Obstetrics and Gynecology Clinics in the Southeast of the Caspian Sea, North of Iran. HSV rate was determined by PCR assay. Results were analyzed using SPSS Statistics V.19.0.

Results: The average age of the participants was 22.00 years. The positive rate of HSV-1 and HSV-2 was estimated 76.9% and 7.7%, respectively with a total rate of 84.6% (11/13).

Conclusion: Most of the patients were infected with HSV-1 instead of HSV-2 in genital ulcers. There is a crucial need for further investigation on a larger population to attain more accurate information.

Keywords: Genital Herpes; HSV-1; HSV-2; Iran

Abbreviations

HSV-1: Herpes Simplex Virus Type 1; HSV-2: Herpes Simplex Virus Type 2; HIV: Human Immunodeficiency Virus; PCR: Polymerase Chain Reaction

Introduction

Herpes genitalis is one of the most prevalent sexually transmitted infections worldwide which is caused by either HSV-1 or HSV-2 [1,2]. The aforementioned viruses belong to the Herpesviridae family [3,4]. Following the virus replication within epithelial cells, it moves to sensory nerves and establishes latent infection in the sensorial ganglion. The virus reactivates under some circumstances, such as psychosocial effects, stress, fear, illness, and menstruation, and then locates in mucosal or epidermal surfaces where results in asymptomatic

viral shedding or clinical manifestations [1,5]. Approximately, after 4 - 7 days from first sexual contact with the virus, in some genital areas including genitalia, perineum, buttocks, upper thighs or perianal areas shallow lesions appear which proceed through the stages of erythema, papules, vesicles, ulcers and crusts that take about 2 - 3 weeks to re-epithelialize the damaged skin. The asymptomatic viral shedding can take place in the absence of clinical manifestations, as well [6,7].

Previously, HSV-1 and HSV-2 were account for orolabial ulcers and genital lesions, respectively, whereas, recent studies showed a new pattern of infection with an increased rate of genital HSV1 infection [8-10]. Based on a study in 2016, there are 192 million genitally HSV-1 infected persons worldwide [1]. Moreover, in some countries including the USA, the rate of oral HSV-1 infection has decreased and the rate of genital HSV-1 infection has increased significantly [11]. Additionally, in another survey in North America, HSV-1 was account for 62% of herpetic genital lesions. Probably due to changes in sexual activities and increased rate of hygiene in societies that lead to the absence of an immunity to HSV especially type 1 before puberty, the risk of genitally HSV1 infectivity has multiplied [12]. Since there are probabilities of this trend happening globally and because of the importance of herpetic infection as a considerable public health problem, the monitor of HSV infections epidemiology and Type-specific testing of genital Herpes is recommended for prevention and control strategies [13]. It seems there is no molecular data on genital Herpes epidemiology in the southeast of the Caspian Sea, Iran.

Aim of the Study

This study aimed to investigate the proportion of HSV-1 and HSV-2 in genital Herpes disease in this region.

Materials and Methods

This study was approved by the ethics committee of Golestan University of Medical Science (Gorgan, Iran) (Ethic code: 321892102217). Molecular rate of HSV-1 and HSV-2 was evaluated in genital lesions of 13 women attending to Obstetrics and Gynecology Clinics in the Southeast of the Caspian Sea, Iran, from January 2014 to January 2015. All samples were collected in less than one week after the onset of symptoms. Viral DNA extraction was performed by viral nucleic acid kit (Roche, USA) according to manufacturers and the presence of HSV-1&2 was determined based on PCR assay [14]. Clinical, behavioral, and socio-demographic factors were analyzed using SPSS Statistics V.19.0. Qualitative variables were tested using the Chi-Square test. P values ≤ 0.05 were considered statistically significant.

Results and Discussion

The participants ranged from 18 - 28 years old with a mean of 22.00 years (SD \pm 3.18). Based on marital status, 84.6% (11/13) were married and 15.4% (2/13) single and none of them were pregnant. The clinical site of lesions were major labia 61.5% (8/13) and perineum in 38.5% (5/13). The molecular rate of HSV-1 and HSV-2 was 76.9% (10/13) and 7.7% (1/13), respectively with a total rate of 84.6% (11/13). Two samples were negative for both viruses and the mean age of HSV-1 and HSV-2 positive patients was 22.85 and 28, respectively. This study was the first survey on genital herpes in the Southeast of the Caspian Sea, Iran. The scarce number of patients with symptomatic genital herpes in one year probably denotes two different notes, firstly good health condition in this region and secondly due to religious and social beliefs of Iranians, most of the genital ulcer people infected don't refer to Obstetrics and Gynecology Clinics.

STIs are one of the main public health concerns worldwide [15]. Principally, HSV-1 was account for orolabial infections, however, it has been observed that it's one of the main causes of genital ulcers [16]. Previously, it was expected that HSV-2 is a causative agent of genital herpes, however, in this study, the estimated rate of HSV-1 (76.9%) was greater than that of HSV-2 (7.7%) which is compatible with other studies and demonstrates a changing trend of HSV infectivity [13,15]. According to the studies, the new pattern of HSV-1 infection, i.e. a remarkable decline in childhood infectivity and an increase of infection in adults, is a result of less HSV-1 acquisition during childhood and changing sexual practices including more orogenital contact [1,17].

The mean age of HSV-1 positive patients is approximately low (22.85) and this is in line with the findings of some studies that suggested lower age in HSV-1 positive patients in comparison with HSV-2 positive individuals. These findings are consistent with the result of a study that indicates the high prevalence of oral sex in individuals aged 15 - 24 years (66% female and 65% male) [12,18,19].

Besides the irritating ulcers resulting from HSV-1, this infection is important due to the other consequences including sporadic encephalitis and neonatal infections which are rare but fatal. Based on studies, the risk of vertical transmission of HSV-1 is higher than HSV-2 [20]. The rate of HSV-1 in comparison with HSV-2 in genital lesions of this study is consistent with our previous study in agreement with the large share of HSV-1 in children with herpetic meningitis in Gorgan [14].

There is a crucial need for consideration of HSV-2 as a cofactor of HIV. People infected with HSV-2 are at higher risk of acquiring HIV. Genital ulcers caused by HSV-2 are a suitable environment for HIV-1 acquisition and replication. On the other hand, HSV-2 hampers the innate and adaptive immunity of host cells, as a facilitating way of HIV-1 infectivity [21,22].

In summary, this study showed the significant necessity of surveys on genital herpes infections. There is a vital need for designing a controlling public health strategy because; firstly there is a less probability of recurrent HSV-1 than HSV-2. Secondly, there is a higher risk of HSV-1 vertical transmission. And the last reason is the likelihood of HSV-1 contribution to HIV contamination as HSV-2 [18,19,23].

Unfortunately, the small sample size was one source of weakness in the current investigation which could have affected the measurements of genital herpes. On the other hand, due to some cultural taboos in this area, it is not easy to access information regarding vaginal infections or STIs.

Conclusion

The current study had several limitations. Due to the low sample size, we are not able to investigate the relationship between characteristics of patients with the type of virus and since there are no related studies, we are not able to compare the results and assess the changes of virus types during the time in this region. We couldn't determine the primary infection from reactivated cases because of the absence of serological data. So, we would continue this study to collect more samples for further investigation to clear HSV infection pattern in this area.

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Conflict of Interest

The authors report no conflict of interest in this work.

Authors' Contributions

AT and DH designed the study, AT and HGH collected and analyzed samples, AT, NJ and DH interpreted the data and drafted the manuscript, AT, HGH, NJ contributed to analyzing the results and reviewing the article. DH, AT, NJ, HGH were involved in the interpretation of results and reviewing the article. All authors critically revised the manuscript and approved the final version.

Ethics Approval and Consent to Participate

This project was approved by the Ethic Committee of Golestan University of Medical Sciences (Ethic code: 321892102217) and it has been accomplished under supervision of an obstetrician. Participants have been informed by doctors about this study informed consent was taken from them.

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