

Seroepidemiology of Herpes Simplex Virus Type 1 and 2 in Anzali city 2010-2011

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Article information	Abstract
<p>Article history: Received: 31 Oct 2011 Accepted: 24 Sep 2012 Available online: 28 Sep 2012</p> <p>Keywords: ELISA HSV Antibody</p> <p>*Corresponding author at: Department of Microbiology, Lahijan Islamic Azad University, Lahijan, Iran. Email:Rezaei_sara_ir@yahoo.com</p>	<p>Background: Objective of this study was to determine the seroprevalence of herpes simplex virus type 1 and 2 in Anzali city for the first time.</p> <p>Materials and Methods: 200 persons selected randomly and demographic data gathered. HSV-1, 2 and HSV-2 ELISA kits used to determine IgG type specific antibodies.</p> <p>Results: HSV-1 and HSV-2 IgG antibodies were positive in 131 (65.5%) and 7(3.5%) subjects.</p> <p>Conclusion: HSV-1 Was more prevalent than HSV-2 and seropositivity increased with age</p>

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Introduction

Herpes simplex viruses are divided to two type, 1 and 2 (HSV-1 & 2), which are among the most common viral infections of humans worldwide [1]. Humans are the only natural reservoir of these viruses [2]. Important feature of this virus is to enter the ganglion and causes latent infection after entering host body to causes primary infection [3, 4, 5].

While HSV-1 mostly causes labial herpes, but the importance of this type of virus is because of causing diseases with more severe symptoms such as: ocular herpes, encephalitis, genital primary infections [6]. HSV-2 is one of the most common causes of genital ulcers that is also able to causes neonatal herpes and non-purulent meningitis [2]. HSV-2 is of public health importance because it is as an important co-factor for HIV infection. Serologic studies are able to measure symptomatic and asymptomatic infections.

Materials and Methods

This descriptive study was conducted in Anzali city over one year time from 2010 to 2011. First, the necessary coordination with Anzali private laboratories was done. Random cluster sampling was used as a sampling method in this study. After obtaining a verbal consent and completing a well designed questionnaire included personal details, peripheral venous blood samples of 200 persons referred to the laboratories was collected. Sampling was conducted randomly. The questionnaire

was completed based on person's said. Blood samples were centrifuged and sera samples were collected into microtubes, in the laboratory. Collected sera samples transferred to the central laboratory via cool box and were stored at -20°C. Type specific serum antibodies to HSV-1 and HSV-2 were detected using HSV-1, 2 and HSV-2 ELISA IgG kits (Vircell Spanish kits sensitivity: 91% and specificity: 100%).

Person's chi-square test was applied to compare HSV-1 and HSV-2 seropositivities among different groups of randomly selected persons. Statistical significance was set at $p < 0.05$.

Results

IgG antibody seroprevalence rate against herpes simplex virus infection, totally obtained 69% (including type 1 and 2) which HSV-1 and HSV-2 seropositivity were 65.5% and 3.5%, respectively.

The study group comprised subjects aged from 1 to 85 years old and patients were classified to three age groups: 0-19, 20-39, >40 years old. The most HSV prevalence belonged to >40 (88.3%) years old persons and the minimum amount belonged to 0-19 (37%) years old subjects which were statistically significant ($p < 0.05$). Prevalence rate in females (71%) and in males (63.6%) were obtained which were not significant.

Results showed high prevalence rate in married persons which were statistically significant. According to this

study, there were no difference between patients who lived in city (69%) and those lived in village (68.9%) and based on education, while elementary educated persons indicated high prevalence (86.7%) the minimum amount belonged to persons with university degree (59.5%) which were not statistically significant (Table 1).

After job, symptoms, disease history consideration, it were observed that high prevalence belonged to barbers and beauticians (100%), persons who had sore and eczema symptoms (94.1%) and persons who had disease history (86.6%) which all of them were statistically significant (Table 2).

General symptoms were included: Influenza like symptoms, headache, muscular pain, backache, fatigue and adenitis.

Table 1. Prevalence of HSV antibodies in the sample studied by age, sex, marital status, living area and education level in Anzali

Variables		Positive N (%)	Negative N (%)	p-Value
Age	0-19	10 (37)	17(63)	0.001
	20- 39	60 (62.5)	36 (37.5)	
	40 <	68 (88.3)	9 (11.7)	
Gender	Male	35 (63.6)	20(36.4)	0.764
	Female	103(71)	42(29)	
Marital status	Single	17(39.5)	26(60.5)	0.001
	Married	121(77.1)	36(32.9)	
Living area	City	118(69)	53(31)	0.136
	Village	20(68.9)	9(31.1)	
Education level	University	25(59.5)	17(40.5)	0.136
	High school	49(66.2)	25(66.2)	
	Guidance school	22(66.6)	11(33.4)	
	Elementary school	26(86.7)	4(13.3)	
	Illiterate	16(76.2)	5(23.8)	

Table 2. Prevalence of HSV antibodies in the sample studied by job, clinical symptoms and history of disease in Anzali

Variables		Positive N(%)	Negative N(%)	p-Value
Job	Physician and other related job	3(75)	1(25)	0.041
	Barber & beautician	1(100)	0 (0)	
	Farmer	3(100)	0(0)	
	Employee	7(58.3)	5(41.7)	
	Cultural	3(75)	1(25)	
	Free job	11(64.7)	6(35.3)	
	Other	110(69.2)	49(30.8)	
	General symptoms	66(71.7)	26(28.3)	
Clinical symptoms	Eczema & sore	16(94.1)	1(5.9)	0.001
	Pain during urinate	19(79.2)	5(20.8)	
	Alzheimer disease	17(89.5)	2(10.5)	
	Without clinical symptoms	54(60.7)	35(39.3)	
History of disease	With history	110(86.6)	17(13.4)	0.001
	Without history	28(38.4)	45(61.6)	

Discussion

HSV-2 prevalence in people with HIV, causes the spread of this disease is considered as an indicator of sexually transmitted diseases. There is few information about HSV prevalence for Iranian population and such this study only have been done about a few Iran cities. This study has been done city for the first time in Anzali. According to this study, prevalence rate of HSV-1 infection (65.5%) was obtained more than HSV-2 infection (3.5%). Based on age, high prevalence rate of IgG antibody against HSV infection belonged to elderly persons of society that had more opportunity to contact with infected persons and the lowest amount was observed among children and teens. The prevalence increases with age.

Based on statistical tests undertaken, gender, education level and residence were ineffective on the prevalence of the virus. But effective variables were included: marital status (high prevalence was among married persons), job (high prevalence was belonged barbers, beauticians and farmers), symptoms (high prevalence was found among persons with sore and eczema) and disease history (genital, oral and cutaneous diseases) which had significant correlation with ELISA test results. In this study, job effect on virus prevalence rate has been proved for the first time.

A study among Kazeroun Azad university students who had no symptoms have been done by Tayyebi and his colleagues which was published in 2010. In this study, HSV-1 and HSV-2 seropositivity were 79.2% and 23.3%, respectively, which were more than this infection rate in Anzali city. HSV-2 prevalence rate were more in females [7].

Ziyayyan and his colleague, on pregnant women at delivery period, conducted another study in Tehran. Prevalence rate of HSV-1 and HSV-2 reported 90.75% and 8.25%, respectively. Most of women were infected by HSV-1 before fertilization. In this study like our study, HSV-2 seroprevalence increased with age [8]. In a study in Shiraz on women, HSV-2 prevalence was 28.19% and unexpectedly, it was more among educated subjects [9].

According to Mofidi and his colleagues study in Gorgan (2006) on patients referred to Gorgan laboratories, HSV-2 seroprevalence were reported 4.9%. In this study like ours, Prevalence increased with age and was more among married subjects [2].

In Europe, a study was done by Pebody and his colleagues which proved women have more risk for HSV-2 infection than men. According to this study, HSV-1 seroprevalence in Finland, Netherland, Belgium, Czech republic, Bulgaria were 52%, 57%, 67%, 81%, 84% and HSV-2 seroprevalence were 13%, 9%, 11%, 6%, 24%, respectively. So, HSV-1 seroprevalence in Finland and Netherland was lower and in Belgium, Czech Republic and Bulgaria was more than Anzali. Seroprevalence was more in Europe and like our study HSV-1 seroprevalence was more than HSV-2 [10].

In Hashido and tunback study which considered HSV-2 prevalence among Swedish 0-19 year old subjects and Japanese adults villager, prevalence rate were 0.5% and

1.5% which were lower than Anzali [11, 12]. According to our study, HSV-1 and 2 seroprevalence in Anzali were lower than many cities and countries which proved health in Anzali society. Finally, despite of low prevalence of these two types of virus in Anzali, there is need to aware people about disease transmission and incidence to prevent from new cases. We suggest that prevalence of virus in other cities and relation of it with central nervous system diseases such as: MS is considered.

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