

## **A Note on Human Herpes Simplex Viruses Developing Venereal Diseases and Cancer in Human**

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**Received:** May 18, 2021; **Published:** May 25, 2021

### **Abstract**

The most commonly known to us as herpes viruses, the herpes simplex viruses (HSVs) are of two types i.e. HSV-1 and HSV-2. Herpes simplex viruses are usually transmitted via sharing objects, intimate skin to skin contact, kissing and sexual contact including oral and anal sex. While HSV-1 produces fever blister or cold sores around the mouth, HSV2 develops genital herpes in and around the genitals and rectum. As these viruses, sometimes, have also been reported to cause cancer in human, the present mini review deals with the study of etiology, transmission, diseases and cancer developing abilities of these viruses in human.

**Keywords:** Human Herpes Simplex Viruses; Diseases and Cancer

### **Abbreviations**

HHVs: Human Herpes Simplex Viruses; HSVs: Herpes Simplex Viruses; HSV-1: Herpes Simplex Virus-1; HSV-2: Herpes Simplex Virus-2; HSV-3: Herpes Simplex Virus-3; HSV-4: Herpes Simplex Virus-4; HSV-5: Herpes Simplex Virus-5; HSV-6: Herpes Simplex Virus-6; HSV-7: Herpes Simplex Virus-7; HSV-8: Herpes Simplex Virus-8; EBV: Epstein Bar Virus; CMV: Cytomegalovirus; KSHV: Kaposi's Sarcoma Herpesvirus

### **Introduction**

Herpes viruses are popularly known to cause venereal diseases. They have been the most notorious, persistent, resistant, fast-growing and infectious microorganisms of human and animals. Indeed, every species of animal seems to have evolved with its own kind of herpes viruses. These viruses are now blamed to have caused more illnesses than any other human viruses [1]. All human herpesviruses (HHVs) known to us have been implicated in immune system evasion and suppression [2]. The human herpes viruses include herpes simplex viruses (HSV-1 and HSV-2), Varicella zoster virus (VZV or HHV-3), Epstein - Barr virus (EBV or HHV-4), Kaposi's sarcoma-associated herpesvirus (KSHV or HHV-8), cytomegalovirus (CMV or HHV-5) and roseoloviruses (HHV-6 and HHV-7) [3,4].

Human herpes simplex viruses are worldwide in occurrence. However, HSV-2 is more common in Sub-Saharan Africa. Though, these infections have never been lethal to us but can be annoying and painful. Since, in most of the cases, these infections are asymptomatic, they

are spread through saliva without them ever knowing about their herpes status. The clinical symptoms of herpes infections are fever with ill feeling, swollen and tender lymph nodes, tingling, itching, soreness and swelling in the genitals. And, if not treated the possible complications may occur as genital thrush, urinogenital problems and meningitis [1-4]. The present review is an attempt to discuss the present scenario of human herpes simplex viruses in the light of recent researches done so far in the field of the viral origin of diseases and cancer.

### Discussion

Human herpes simplex viruses as HSV-1 and HSV-2 are the 2 types of human herpes viruses (HHVs) causing oral and genital infections. While HSV-1 causes oral infections known as herpetic labialis or cold sores, HSV-2 is responsible for the development of genital herpes in human [5-7]. These viruses are generally transmitted by direct contact with body fluids or the lesions of an infected individual. While HSV-2 is primarily a sexually transmitted infection, the rate of genital infections caused by HSV-1 increases abruptly, usually acquired during childhood via kissing, oral or anal sex [5,8,9]. Both the viruses are able to cause either anogenital or oropharyngeal infections [10]. Sometimes, HSVs can also affect the other areas of skin exposed to close contact with a severely infected person. For instance, a very common infection named herpetic whitlow is the infection of fingers showing red, swollen and painful condition [11]. Further, these viruses if persisted for long can cause cancer in human. While HSV-1 has been linked with benign and malignant thyroid tumors, the HSV-2 also causes thyroid and prostate cancer, melanoma, vulvar and cervical cancer [12-20]. The DNA fragments of genital herpes have also been isolated in nearly half the patients suffering from cervical cancer [16,17].

The latency and reactivation of human simplex viruses have played a key role in mimicking to cause cancer in human cells. We are at present unable to understand clearly that how these viruses can hide out in certain cells they invade and how they are living and surviving with the harmony of host cells. Scientists are trying to find out what form the viruses are in during latency and how they transform healthy cells into cancerous ones. Also, how can we save the cells from these latent infections? Scientists have discovered the enzymes required to produce at least three types of proteins responsible for the transformation of cancer cells. Unfortunately, since an important antiherpetic drug currently available today as acyclovir can inhibit the function of only one protein instead of all three, it has never been possible for us to remove the hidden viruses from the host [2,20,21]. Also, no current vaccine is available for HSV [25].

### Conclusion

Human herpes simplex viruses are common pathogens distributed globally. They are very contagious having the significant potential of developing diseases and complications in immunocompetent and immunocompromised hosts. According to an estimate two-thirds of the global population under 50 are infected with the human herpes simplex viruses [22]. Similarly, this is quite unfortunate that once a person is infected with the HSVs the virus remains in the sacral ganglia for life long with no cure developing diseases and cancer in future. But, as cancer often takes years, even decades to develop after a person gets an infection there is nothing more to worry about it except to be alert. Similarly, since there is no way to know which people who have cancer-causing pathogens will develop cancer, it arises from our bad luck [23,24]. Last but not the least, the persons experiencing the psychological distress developed due to negative stigma have also been found to be associated with the genital and facial lesions rendering it a challenging clinical paradox [25]. So, more researches are still required to link up and chain the right path exploring the facts regarding the human herpes simplex viruses.

### Acknowledgements

This piece of research work is dedicated to the memory of my friend Late Professor Manmohan Singh Tiwari who died recently due to diabetes with kidney failure. The authors are also deeply appreciating the institutions concerned about providing us with the necessary facilities during this research work.

### Competing Interests

The authors have declared that no competing interests exist. They have approved the final version of the manuscript contributing equally.

### Financial Support

No financial support was granted during this research work.

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**Volume 5 Issue 6 June 2021**

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