BREAKTHROUGH INSIGHT INTO HPV

– *infection as an emerging risk factor in Prostate cancer*

Research have found a link between HPV virus and prostate cancer. The young men once exposed to HPV infection, initiates a chain of host genetic transformation that can eventually lead to cancer decades later. There is an implication of a possible correlation in HPV infection and a recent rise in prostate cancer in men in Sweden. **Neha Singh**, Systems Biology Research Centre - Tumor biology, School of Life Sciences, University of Skövde discusses the findings.

Prostate cancer is a common urological malignancy and an important health concern worldwide. The exact mechanisms of the progression of prostate gland into a cancer are not well characterized. The immune responses influence the development of prostate cancer as infectious agents are potent factors in prostatic inflammation. Viral infections in particular may lead to chronic inflammation of the prostate and lead to initiation or development of prostate cancer[1]. The emerging epidemiological studies have suggested that prostate tissue is prone to sexually transmitted infection with several viruses having oncogenic potential such as polyomaviruses (SV40), HPVs and members of the herpes virus family. Harald zur Hausen received the Nobel Prize in Physiology and Medicine 2008 for the discovery of the oncogenic potential of HPV in cervical cancer. Human papillomavirus is a small, non-enveloped DNA virus with a circular, double stranded DNA genome of approximately 8 Kb genome size. The HPV participates in cancer initiation/progression through its E6 and E7 oncogenes that interact with and inhibit the activities of critical components of cell-cycle regulatory systems of the host, in particular E6 with p53 gene and E7 with Rb gene.

HPV infection may throw some light on the recent increase in the incidence of prostate cancer in men. The young men once exposed to HPV infection, initiates a chain of host genetic transformation that can eventually lead to cancer decades later. In our previous studies we have reported that oncogenic subtypes of HPV, with the most common types 16 and 18, have a strong association with cervical cancer[2,3]. It has been speculated that cervical and prostate cancer may represent, in some aspects, homologous cancers in females and males, respectively. Both of the cancer types are influenced by similar factors like sexual activities and infection status[4] with a roughly equal lifetime risk. There is a possibility that there would be an association between oncogenic HPV infection and prostate cancer. Our latest pioneering study represents the incidence of HPV infection in prostate cancer in Indian population and strengthens the hypothesis that HPV infection could be one of the co factors associated with progression of prostate cancer[5]. The prevalence of high risk HPV type 16 DNA in prostate cancer cases indicated a potential association between HPV infection and cancer risk[5]. The clinical relevance of HPV infection in prostate carcinogenesis is prospective; therefore, screening of young men with these HPV types may play a vital role in curing the cancer progression[6].

MORE RESEARCH ABOUT HPV-VACCINE AND PC NECESSARY

The research investigations of its kind are of tremendous importance as the availability of HPV vaccines may guarantee indispensable prevention of HPV viral infection that may play a critical role in causing prostate cancer. The differences in the incidence of HPV infection in different populations indicate the influence of demographic factors like geographi-

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cal area, ethnicity, lifestyle in its prevalence in prostate cancer. However, the role of HPV in prostate carcinogenesis is still debatable and needs to be elucidated. The study further strengthens the hypothesis that the prostate gland in males represents a complex niche where multiple infections with oncogenic DNA viruses like HPV occur and implicates the potential role of these viruses in progression of prostate cancer. It is very important to establish the clinical relevance of HPV infection in prostate carcinogenesis that has been underestimated until date. The epidemiological investigations of HPV infection in the males are essential for understanding the HPV natural history, transmission of the infection and the ideal use of HPV vaccines. The need to screen HPV in young men becomes all the more important with the fact that HPV infection in men is often asymptomatic, resulting in a large number of asymptomatic carriers[7]. This could be of particular importance among men in Sweden owing to their sexual lifestyle that comprises of high sexual activity, early intercourse and multiple sexual partners that increases the risk of prostate cancer in later age. There is an implication of a possible correlation in HPV infection and a recent rise in prostate cancer in men in Sweden.

The most common cancer among Swedish men is prostate cancer which accounts for 30.5 percent of cases in 2013 and the age-specific incidence has increased for younger age groups[8]. Once young men are infected to HPV it initiates a chain of genetic alterations that can eventually lead to prostate cancer decades later. HPV vaccines have been shown to be highly effective in preventing infection with high-risk type HPV types in cervical cancer. In future it would be excellent if the rates of prostate cancer also decrease by administering these vaccines in men if HPV is established as a risk factor.

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