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Human papilloma virus induced molecular pathogenesis of verruca vulgaris

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Verruca vulgaris is the general wart of the skin frequently located on hands, fingers, knees and elbows. It is primarily related to three important human papilloma viruses HPV-2, HPV-4, and HPV-40. HPV causes a restricted growth in the superficial layer of the skin and thus verruca vulgaris is hyperkeratotic, exophytic, dome shaped papules or nodules. The lesions are typically sessile, verrucous with discrete borders. HPV essentially causes intraepithelial extended infectious cycle with no cell death or viraemia. The virus first infects a primitive basal keratinocyte through integrin receptors after binding with syndecan-1 and TRAPPIII complex, then the virus and cells replicate together. In these phases, mainly *E* genes are expressed. After this, in differentiated cells, virus replication is mediated by both *E* and *L* genes; subsequently during desquamation of viral laden grown-up squamous cells and infection of naïve individuals *L* genes are expressed. Early on gene expressions occur with *E6*, *E7*, *E1*, *E2* gene with latent infection and episomal viral DNA. The late gene expressions occur helping viral assembly and release by *L1*, *L2*, *E4* gene. There is up regulation of IL6, IL8, IL10 and down regulation of IL1- β , IL18, IL2, TNF- α and γ -IFN. Crosstalk with the Hippo pathway signaling molecules and EGFR may also occur which may lead to malignancy. HPV also induces inflammation and epigenetic changes. The whole process may take 30–50 days. Neutralizing antibody if occurs it may prevent new infections although there is a chance that it may koebnerize or spread with skin trauma.

Biography

Satadal Das has completed his MD from Calcutta University. He is at present Principal Investigator of Virology Laboratory, Regional Research Institute, Kolkata, CCRH, Govt. of India and Consultant Microbiologist, Peerless Hospital & B. K. Roy Research Centre, Kolkata. He has published 112 papers in reputed journals, a textbook and many monographs.

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