Genital Warts

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Venereology

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List of Abbreviations

AIN: anal intraepithelial neoplasia.

CHM: Cycloheximide.

CIN: cervical intraepithelial neoplasia.

EMLA: Eutectic Mixture of Local Anesthetics.

FPDL: Flash lamp-pumped pulsed dye laser**.**

5-FU: 5-fluorouracil.

GW: Genital warts.

HPV: human papillomavirus.

HR: high-oncogenic risk.

IFN: interferon.

LEEP: Loop Electrosurgical Excisional Procedure.

Nd:YAG: Neodymium: Yttrium-Aluminum-Garnet Laser.

ORFs: Open Reading Frames.

PAP: Papanicolaou smear.

PCR: polymerase chain reaction.

PDT: photodynamic therapy.

PIN: penile intraepithelial neoplasia.

STD: sexually transmitted diseases.

TCA: trichloroacetic acid.

VAIN: vaginal intraepithelial neoplasia.

VIN: vulval intraepithelial neoplasia.

Introduction

Condylomata acuminata (genital and anal warts) are common disease may be venereal or non venereal. They are fairly soft, pink, friable, verrucous lesions that occasionally coalesce into cauliflower-like masses. They are infectious, usually sexually transmitted, and found on the moist parts of the genitalia and rectum(**Blaustein,1982).**

Despite the generally benign nature of the proliferations, certain types of HPV can place patients at a high risk for anogenital cancer**(Chuang and Brashear, 2005).**

Treatment of GW is aimed at destruction of the warty growths rather than elimination of the virus. Choice of therapy depends on the morphology and extent of warts and should be guided by the preference of the patient, available resources, and the experience of the health-care provider**(von Krogh, 2001).**

Aim of the study

The aim of this essay is to review aetiology, epidemiology, clinical picture, differential diagnosis, carcinogenesis of the genital warts and to evaluate the efficacy of available treatment modalities for genital warts to assess the success rate of each type.

Chapter I

Aetiology

Aetiology

Until the 19th century, genital warts (GW) were believed to be a form of syphilis or gonorrhea. The viral etiology of warts was established in 1907 by inoculation of wart filtrates into skin, inducing papillomas at the injection site. Today, condyloma acuminatum or GW generally are recognized as benign proliferations of the anogenital skin and mucosa that result from infection with human papilloma viruses (HPV). The HPV family has at least 78 well-documented genotypes. Some believe that the number of HPV types eventually will reach 100 or more**(Chuang and Brashear, 2005).**

Genital warts are an epidermal manifestation attributed to the epidermotropic human papillomavirus HPV**(Dupin , 2004).**

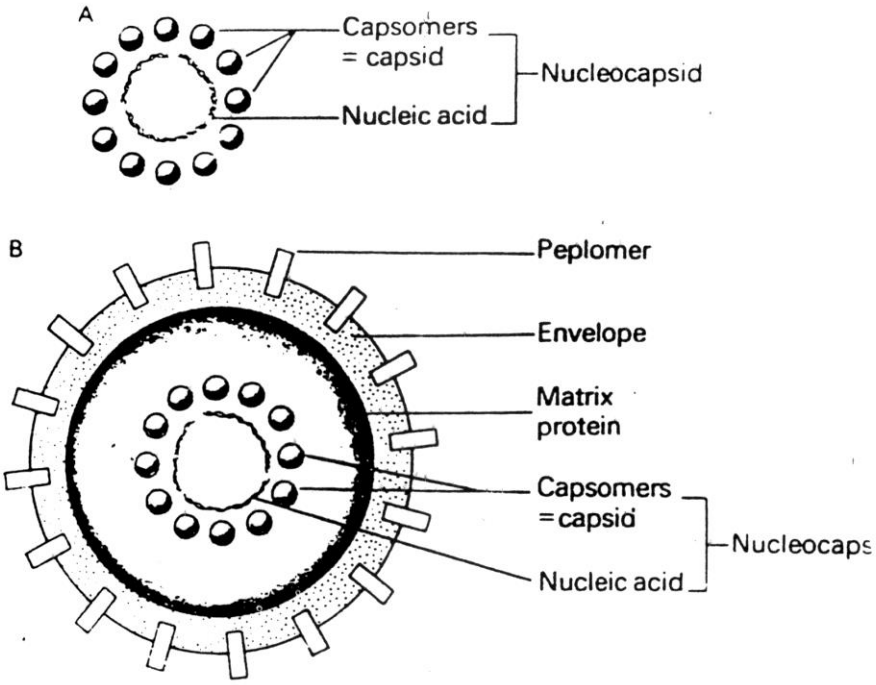
Human papillomavirus is one of the most prevalent sexually transmitted viruses. It is a DNA virus, which infects the squamous epithelial cells in humans producing cutaneous, mucosal, and epidermodysplasia verruciformis type infections(**Perez, 2001).** The most significant human diseases caused by HPV are skin warts, genital warts, laryngeal papilloma and cervical carcinoma**(Broker, 1987).**

Human papilloma virus types 6 and 11 are the most prevalent viral types found in condyloma acuminata and they are responsible for the large majority of exophytic condylomas in the genital tract. Other virus types causing mucocutaneous lesions in the genital region that are considered to be at highest risk for causing cervical and cutaneous cancers include HPV 16, 18 and several others**(Heinzel and chan, 1995; Leung, 2003).**

Virology

Viruses are strictly intracellular and potentially pathogenic entities fundamentally characterized by containing only one type of nucleic acid, either DNA or RNA. They multiply in the form of their genetic material. Viruses are unable to grow and to undergo binary fission .They are devoid of enzymes for energy production, therefore they are unable to replicate outside living cells. The virus' replication cycle is characterized by an eclipse phase**(Fenner,1976).**

The structure of the virus



Figure(1) The structure of viruses

(A) A diagram of a simple nucleopcapsid. **(B)** A diagram of a more complicated enveloped virus **(Robinson and Heath, 1983)**

Nucleic Acid

Viruses are the only organisms that use RNA instead of DNA for the transfer of genetic information to subsequent generations. Both kinds of nucleic acid may be either double stranded or single stranded**(Simons et al., 1982).**

Nucleoproteins and Envelope

The viral nucleic acids are always closely associated with and enclosed by proteins and this combination is termed nucleoprotein. The protein maintains the stability of the labile nucleic acid and is particularly important in protecting it from nucleases and other tissue destructive factors. The nucleoprotein enclosing the nucleic acid is called the capsid and the combined structure is accordingly termed the nucleocapsid. The capsid consists either of a number of small repeating protein molecules known as structural units or easily visualized aggregates of these units which are known as capsomeres. The envelope usually consists of an inner protein and outer lipid layer in which surface proteins (peplomeres) are embedded. These surface proteins can be visualized as well-defined spikes. Figure (1) showing two diagrams one of a simple nucleopcapsid and another of a more complicated enveloped virus**(Robinson and Heath, 1983;Miller, 1988).**

Symmetry

This term describes the type of arrangement of the nucleoprotein that surrounds the nucleic acid .An icosohedron is a twenty sided solid, each face being an equilateral triangle and the capsomeres are arranged in equal numbers on each face, the number of which on a single face is characteristic of a particular virus. The other common form of symmetry is when the nucleoprotein units are arranged around the nucleic acid in a helical form. Other forms include no particular arrangement or very complex arrangement**(Diener,1982).**

Replication cycle

Viruses do not undergo mitosis, meiosis or binary fission. The essential feature of viral replication is that on entering the cell , the virus disintegrates and the released nucleic acid instructs the appropriate metabolic processes of the cell to produce and then assemble the individual components of the complete virus. Attachment of virus to the wall of the host cell is a function of the viral coat, which may be either the capsid or the envelope. The virus may enter the cell by phagocytosis (a process that is specifically referred to as viropexis) or the viral coat may fuse with the cell wall permitting naked nucleocapsids to enter the interior. The viral nucleic acid becomes freed from all viral proteins and directs the production of enzymes or proteins essential for replication, when the DNA viruses are concerned, messenger DNA (m DNA) is transcribed but with RNA viruses this function is undertaken by the original or newly formed viral nucleic acid itself**(Simons et al., 1982).**

The replication of the nucleic acids of RNA viruses shows greater variation and with double stranded RNA viruses, the parental nucleic acid is conserved and one of its strands is continuously transcribed to produce complementary replicates. The replication of single stranded RNA is similar, since replicates transcribed from the original parental strand act either as mRNA or as templates for the production of progeny strands which are ultimately incorporated into the new virus particles. It is a general rule that the replication of viral DNA takes place in the nucleus of the host cell and the replication of viral RNA occurs in the cytoplasm, but this occurs with few exceptions. The assembly of the newly formed nucleic acid strands, protein units and other components into new virus particles occurs in the host cell and is followed by the release of these particles from the host cell. Release occurs either by the virus budding from the surface of the host cell or by disruption of the cell resulting from the damaging effect of the replicative process. The eclipse phase of virus replication is the period from entering the cell to complete assembly and