Human papillomavirus infection

Pathology
Pathogenesis of genital warts

Epithelial ‘trauma’

HPV entry into basal germinal layer of epithelium

Expression of viral early proteins

Cellular proliferation

Capsid proteins produced in superficial layers of epithelium

BASSH HPV Special Interest Group
Productive life cycle of HPV is linked to epithelial differentiation

HPV natural history

Infection → Sub-clinical

- Transient infection -viral clearance-
- Low-grade infection -viral persistence-

Sub-clinical → Clinically-evident

- Condyloma
- CIN I

Clinically-evident → + Cofactors

- CIN II
- CIN III
- Cancer

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Cofactors in HPV disease

- Environmental
  - Smoking
- Immunological
  - Biological aging
  - Immunosuppression (HIV, transplant recipients)
  - Genetic (Li-Fraumeni syndrome; HLA polymorphisms)
## Duration of HPV infection

<table>
<thead>
<tr>
<th></th>
<th>HPV types</th>
<th>Months, median (95% CI)</th>
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</thead>
<tbody>
<tr>
<td>Franco (1999)*</td>
<td>“Oncogenic types”</td>
<td>8.1 (7.8-8.3)</td>
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<tr>
<td></td>
<td>“Nononcogenic types”</td>
<td>4.8 (3.9-5.6)</td>
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<tr>
<td>Woodman (2001)**</td>
<td>HPV-16</td>
<td>10.3 (6.8-17.3)</td>
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<td>HPV-18</td>
<td>7.8 (6.0-12.6)</td>
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*J Infect Dis. 1999 Nov;180(5):1415-23

**Lancet. 2001 Jun 9;357(9271):1831-6
Limitations of HPV studies

- Assay sensitivity: NAAT vs DNA hybridisation studies
- Assay specificity: complicated by multiple HPV types
- Multiple HPV infections at same site
- Absence of detection ≠ Absence of infection
Histological features of HPV infection

• Koilocytosis
• Acanthosis
• Multinucleation
• Hyperkeratosis and parakeratosis
• Papillomatosis
Correlation of aceto-white lesions and confirmatory diagnostic tests

91 men with aceto white lesions
78 (86%) penoscopy appearance of GPV1
56 (62%) penoscopy and histopathology agreement
55 (60%) penoscopy and hybridisation assay

Wikstrom 1992