High-risk Human Papillomavirus (hrHPV) Genotypes and Cervical Cancer

Aims & Objectives:
To determine the correlation between HPV types 16, 18 and other and the histological diagnosis of CGIN & SMILE, SCC and Adenocarcinoma

Background
• hpHPV is an automated molecular test introduced as a more sensitive method of detecting cervical lesions and used as first line of investigation
• hpHPV test specifically identifies HPV 16 and 18 while concurrently detecting other 12 high risk types (31, 33, 35, 39, 45, 51, 52, 56, 58, 66, 68)
• Molecular platform used at RWT : Roche Cobas 6800 and 8800
• Cobas HPV test is based on 2 major processes: 1. Extraction of HPV and cellular DNA and 2. PCR amplification of target DNA

Method
• Data were collected retrospectively from Nov 2019 – Nov 2020 by running colposcopy extraction access database ‘Colp database’
• 15 tables set up to extract data for different colposcopy units within the West Midlands
• Two searches set up:
  1. Extracted all cervical cancer cases
  2. Extracted CGIN & SMILE cases

Results
• Cervical cancer cases Nov 2019 – Nov 2020: 115 cases identified
• 21% referred directly to Gynae dept. due to clinical symptoms with no cervical screening intervention
• 79% of cervical cancers identified by cervical screening test: importance and effectiveness of screening programme.

115 cervical cancers:
• 92 (80%) SCC
• 22 (19%) Adenocarcinoma
• 1 case Adenosquamous

These results are in line with the published cervical screening invasive cancer audit (PHE 2019, Cervical screening invasive cancer audit 2013-2016).

Discussion
1. HPV 16 is the most prevalent subtype in SCC cases followed by HPV ‘other’ and then HPV 18. This is an unusual finding with regard to emergence of HPV subtype ‘other’ in SCC cases compared to previous studies (Ayatollahi, H. et al. 2014) which showed prevalence of HPV 16, followed by HPV 18 and then HPV ‘other’ SCC cases.
2. Adenocarcinoma and CGIN cases shows that HPV 18 and 16 were closely associated with HPV subtypes compared to previously published studies (Clifford et al. 2003) which showed HPV 18 as the most prevalent subtype in glandular lesions. The possible explanation for the above-mentioned variations in our audit could be because of geographical area, age and effects of vaccination on this cohort of patients. Further information on prevalence of ‘other’ HPV subtypes will depend on availability of suitable assay kits from manufacturers.

The data on HPV subtype results could provide vital information for the Pharmaceutical companies to modify and create HPV subtype specific vaccinations.

Conclusion
HPV 16 is the most prevalent subtype in SCC cases, followed by HPV ‘other’ and then HPV 18. Adenocarcinoma and CGIN cases are associated with HPV 18 as the highest proportion and closely followed by HPV 16.

Limitations
Due to time constraints, I was unable to produce data on CIN3 cases to include in this audit, which would have provided useful information regarding HPV subtype correlation between CIN3 and SCC. The case numbers used for this study might not be a true representation of total number of cancer cases expected per year due to effects of COVID-19 pandemic during this period on women attending for screening and subsequent diagnosis.

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References