INTRODUCTION

- Cytology-histology correlation (CHC): retrospective quality assurance (QA) & educational exercise in cervical cytopathology
- Marked variation documented in methodology, definition of true positives & discrepancies
- Recommendations & guidelines for cervical CHC provided by American Society of Cytopathology (ASC) in 2017
- No published robust study yet implementing ASC guidelines in cervical CHC

AIMS AND OBJECTIVES

- To perform cervical CHC in accordance with the ASC guidelines 2017
- To elucidate the reasons for major overcalls and undercalls of ASC-H/HSIL on cytology
- To determine test characteristics of Pap smear to detect high grade lesions

RESULTS AND OBSERVATIONS

- 162 cervical biopsies with Pap smears
- Cytologic-histologic agreement: 118 (72.8%)
- Major discrepancy: 5 cases (3.1%)
  - Undercall – 2
  - Overcall – 3
- Minor discrepancy: 34 (20.9%):
  - Undercall – 14
  - Overcall – 20
- Review of discrepant cases:
  - Interpretative error on Pap – 23
  - Sampling error on Pap – 16
  - Screening error on Pap – 4
  - Sampling error on Bx – 1
- Test characteristics of Pap smear
  - ASC-US threshold
  - SE: 99.5%, SP: 72.6%, PPV: 65.2%
  - LSIL threshold
  - SE: 90.9%, Specificity: 88.4%, PPV: 77.9%

DISCUSSION

- CHC: advocated as quality control measure for Pap smear reporting
- Marked variation among labs: definition of true-positives & discrepancy
- Recent ASC guidelines 2017 for CHC in gynecologic cytopathology:
  - Optimal time interval between Pap smear & biopsy: < 180 days
  - HSIL or CIN2+ diagnosis: reference point for discrepancy assessment
- Present study:
  - Major CHC discordance: 3.1%
  - Atypical metaplasia & hyperchromatic crowded groups in atrophic smears – misinterpreted as HSIL
  - Test characteristics of Pap smear for diagnosis of CIN2+ lesions in our laboratory comparable to other reports

MATERIALS AND METHODS

- A retrospective review of cervical biopsies with preceding (within last six months) or concurrent Pap smear (Jan 2015-Jun 2018)
- Cytologic-histologic discrepancy assessment grid prepared in accordance with ASC guidelines 2017
- Major under/ overcall: Pap smear NILM, ASC-US & Biopsy ≥CIN2, or the reverse
- Pap smear & biopsy slides of all discordant cases reviewed for reason of discrepancy
- Sensitivity, specificity & PPV of Pap smear for diagnosis of CIN2+ lesions determined

Table 1 Discrepancy Assessment Grid

<table>
<thead>
<tr>
<th>Pap Diagnosis</th>
<th>Non-Dx/Inadeq</th>
<th>Inflam</th>
<th>CIN 1</th>
<th>CIN 2/ CIN 3</th>
<th>Malignant</th>
</tr>
</thead>
<tbody>
<tr>
<td>NILM</td>
<td>NA</td>
<td>Agree</td>
<td>Minor under</td>
<td>Major under</td>
<td>Major under</td>
</tr>
<tr>
<td>ASC-US</td>
<td>NA</td>
<td>Minor var</td>
<td>Agree</td>
<td>Major under</td>
<td>Major under</td>
</tr>
<tr>
<td>LSIL, AGC-NOS</td>
<td>NA</td>
<td>Minor over</td>
<td>Agree</td>
<td>Minor under</td>
<td>Major under</td>
</tr>
<tr>
<td>ASC-H, HSIL, AGC-N</td>
<td>NA</td>
<td>Minor over</td>
<td>Minor over</td>
<td>Agree</td>
<td>Minor over</td>
</tr>
<tr>
<td>Malignant</td>
<td>NA</td>
<td>Minor over</td>
<td>Minor over</td>
<td>Minor over</td>
<td>Agree</td>
</tr>
</tbody>
</table>

Minor var: minor variance; Major over: major overcall; Minor under: minor undercall; Major under: major undercall

Table 2 Cytology-histology correlation data

<table>
<thead>
<tr>
<th>HISTOLOGIC DIAGNOSIS</th>
<th>Chronic cervicitis</th>
<th>CIN 1</th>
<th>CIN 2-3</th>
<th>Malignant</th>
</tr>
</thead>
<tbody>
<tr>
<td>NILM (153)</td>
<td>117 (A)</td>
<td>27 (Minor under)</td>
<td>9 (Major under)</td>
<td>0</td>
</tr>
<tr>
<td>ASC-US (18)</td>
<td>8 (Minor var)</td>
<td>6 (A)</td>
<td>4 (Major under)</td>
<td>0</td>
</tr>
<tr>
<td>ASC-H (8)</td>
<td>2 (Major over)</td>
<td>4 (Minor over)</td>
<td>2 (A)</td>
<td>0</td>
</tr>
<tr>
<td>HSIL (43)</td>
<td>4 (Minor over)</td>
<td>13 (A)</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Malignant (78)</td>
<td>0</td>
<td>0</td>
<td>10 (Minor over)</td>
<td>68 (A)</td>
</tr>
<tr>
<td>AGC-NOS (10)</td>
<td>3 (Minor over)</td>
<td>2 (A)</td>
<td>2 (Minor under)</td>
<td>3 (Major under)</td>
</tr>
<tr>
<td>AGC-N (8)</td>
<td>0</td>
<td>2 (Minor over)</td>
<td>4 (A)</td>
<td>2 (Minor under)</td>
</tr>
<tr>
<td>Adenoca (3)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3 (A)</td>
</tr>
</tbody>
</table>

CONCLUSIONS

- Cytology-histology correlation (CHC) is an important quality control and educational exercise for laboratories performing cervical cytopathology.
- True positives & discrepancy assessment must be defined as per ASC guidelines.
- To improve laboratory efficiency, it is essential to review all discrepant cases to determine common sources of error.

REFERENCES