Progenitor cells in ovario-fimbrial zone of female uterine adnexa: a potential clue for epithelial tumors pathogenesis

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I have no financial relationships to disclose.
Ovarian cancer incidence and mortality in Europe

Estimated incidence from ovarian cancer in women

Estimated mortality from ovarian cancer in women
Popularity of “Tubal” theory for high-grade serous carcinoma pathogenesis

Falconer H., 2015

M. Kessler, 2015
Transition zones: “hot spots” for carcinogenesis

Cervical transition zone

Anorectal transition zone

Paratubal/paraovarian transition zones

Mod Pathol. 2015 Jul;28(7):994-1000
Material: 165 tissue samples

HGSC tissue 22%
parafimbrial zones 15%
oviductal epithelium 15%
fimbriae 15%
paraovarian zones 33%

Methods

Histology
(hematoxylin & eosin)

Immunohistochemistry
LGR5, NANOG, LNX9, CD117, CD44 and Oct4

Statistics
(Student t test with the Bonferroni correction for multiple comparisons)
Special technique for tissue sampling

For parafimbrial transition zone  
For paraovarian transition zone
Tubal-peritoneal junction morphology

- Junction on the lateral aspect of the plica (44%)
- Junction at the plical tips (26%)
- Junction in the crevice between the plicae (31%)
- Transition cell metaplasia in tubal-peritoneal junction (28%)
Paraovarian transition zone

- ‘Ovarian fimbria’
- Peg cells
- Secretary cells
- Ciliated cells
- Fallopian tube mucosa

- Ovarian surface epithelium
- Peritoneal mesothelium
- ‘Ovarian fimbria’
- Ovarian surface epithelium
<table>
<thead>
<tr>
<th>Stem cell markers</th>
<th>Fimbriae</th>
<th>Parafimbrial zone</th>
<th>Paraovarian zone</th>
<th>Ovarian epithelium</th>
<th>surface</th>
<th>P-Value</th>
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<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
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<tr>
<td>LGR5</td>
<td>38/17</td>
<td>22/3</td>
<td>21/4</td>
<td>32/3</td>
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<td>$p_{1-4}, p_{1-3} &lt; 0.05$</td>
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<td>3.8±0.2</td>
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<td>20/5</td>
<td>24/1</td>
<td>35/0</td>
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<td>5.2±2.5</td>
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<td>19/6</td>
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<td>25/10</td>
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<td>CD117</td>
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<td>10/15</td>
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<td>11/24</td>
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LGR5 and NANOG expression in paraovarian and parafimbrial transition zones

Paraovarian transition zone

Parafimbrial transition zone
Signalling pathways in stem cells
Potential ways for neoplastic transformation initiation

1. 'Ovarian fimbria'
2. Mesothelium
3. Ovarian surface epithelium
4. Stem cells
THANK YOU FOR YOUR ATTENTION!