Correlation of Angiogenic Factors in Neuroendocrine Tumors and Their Prognostic Implications

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Background

- Neuroendocrine tumors (NETs) are rare and commonly considered indolent neoplasms.
- Two factors, CD31 and Factor VIII, describe the angiogenic potential of a tumor and can correlate with tumor growth and metastasis.
- We hypothesized that these two angiogenic parameters are highly correlated, and higher angiogenic parameters and would also have a higher proliferative index (Ki-67), and therefore would have poorer prognoses.

Methods

- Pathology reports from all NET patients who had surgery performed at our institution from April 2003 to October 2014 were queried for Factor VIII, CD31 and Ki-67 immunohistochemical values.
- Patient demographics, tumor characteristics and pathology reports were analyzed.
- For subjects with multiple values, the highest value was used in statistical calculations. Survival was calculated via Kaplan-Meier method and statistical significance was defined as p<0.05.

Results

- One-thousand and seventy-two specimens from 534 NET patients were analyzed.

Patient Characteristics (n=534) N (%)

<table>
<thead>
<tr>
<th>Sex</th>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td></td>
<td>238 (45%)</td>
<td>296 (55%)</td>
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<td>Primary Site</td>
<td></td>
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<tr>
<td>Small Bowel</td>
<td>321 (60%)</td>
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<td>Pancreas</td>
<td>60 (11%)</td>
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<tr>
<td>Duodenum</td>
<td>38 (7%)</td>
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<tr>
<td>Rectum</td>
<td>26 (5%)</td>
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<td>Lung</td>
<td>14 (3%)</td>
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<td>Other Sites</td>
<td>75 (14%)</td>
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- CD31 and Factor VIII were statistically significantly correlated (p<0.0001; r=0.8663).
- When individually compared to Ki-67, CD31 and Factor VIII showed no statistical correlation (p>0.05).
- Survival sorted by Ki-67 ranges (WHO 2010) was statistically significant, as expected (p<0.05).
- Survival stratified by CD31 and Factor VIII was not statistically significant (p>0.05).

Conclusion

- Factor VIII and CD31 in NETs are significantly correlated regardless of primary tumor site, and a high value does not necessarily predict a poor prognosis.
- Further studies are warranted to determine the role of angiogenic markers in the diagnosis and management of NETs.

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