Diagnostic Slide Session
Case 2015-2

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Clinical History:

18 year old woman with right facial pain and hyperalgesia

Past Medical History:
- dilated cardiomyopathy
- pulmonary hypertension
- moderate bilateral hearing loss
- orthotopic heart transplant at 17 years of age complicated by renal insufficiency, DRESS syndrome, pulmonary nocardiosis
MRI revealed an enhancing, extra-axial, 20mm mass lesion in Meckel's cave. The mass abutted the trigeminal nerve and extended through the foramen ovale.
Subtotal Excision
Rare Mitotic Figures
Differential Diagnosis?
EBV-Associated Smooth Muscle Tumor

Caldesmon

Desmin

SMA

EBV
Discussion: Clinical and diagnostic features

EBV associated neoplasms:

Historical:
1st recognition of a smooth muscle tumor arising in an immunocompromised patient: 1970
Causative link between EBV and smooth muscle tumors recognized in 1995.

Clinical setting:
Immunosuppression most commonly due to AIDS or transplantation (typically 30-161 months post transplant)
Sites of involvement: liver, kidney, heart, soft tissue, adrenal gland, lung, gall bladder, bone, bladder, spleen, thyroid, and brain

Discussion: Clinical and diagnostic features

Histologic features:
- Dual population of spindle cells in fascicles and primitive round cells
- T cell infiltrate common
- Variable mitotic rate

Immunohistochemical profile:
- Smooth muscle actin strong and diffuse
- Caldesmon diffuse
- Desmin variable
- CD3 positive T lymphocytes common
- EBV extensive
Discussion: Prognostic features

Histologic features:

- Mitotic figures: Range 0-18 mitotic figures/10 hpfs (average <3/10hpf)
- Necrosis: present in a small subset
- Myxoid change: focally present in half of cases
- Nuclear pleomorphism: mild-moderate

<table>
<thead>
<tr>
<th>Case No.</th>
<th>Site</th>
<th>Mitoses/10 HPF</th>
<th>Necrosis</th>
<th>Lymphocytes</th>
<th>Pleomorphism</th>
<th>Myxoid</th>
<th>Cell Shape</th>
<th>EBER</th>
<th>SMA</th>
<th>Desmin</th>
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<tbody>
<tr>
<td>1</td>
<td>Lung</td>
<td>1.8</td>
<td>No</td>
<td>Few</td>
<td>Mild</td>
<td>No</td>
<td>R/S</td>
<td>Positive</td>
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<td>Negative</td>
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<td>Vocal cord</td>
<td>11</td>
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<td>Few</td>
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<td>No</td>
<td>R</td>
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<td>Negative</td>
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<td>S</td>
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Features used to differentiate ordinary leiomyoma from leiomyosarcoma have not been shown to have prognostic significance.
Discussion: Prognostic features

Multi-focality:
Greater than 50% of patients present with multiple EBV-SMT, originally interpreted as evidence for metastatic disease

EBV molecular studies to address clonality
- relative number of Long Terminal Repeats
- EBV copy number
Discussion: Prognostic features

Multi-focality:
Greater than 50% of patients present with multiple EBV-SMT, originally interpreted as evidence for metastatic disease

EBV molecular studies have shown evidence for independent infection events
- relative number of Long Terminal Repeats
- EBV copy number

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<th>Relative No. of LTR</th>
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<td>106.76</td>
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<td>2</td>
<td>Bladder</td>
<td>ND</td>
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<td></td>
<td>Small bowel</td>
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<td>5</td>
<td>Nasopharynx</td>
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<td>Right tonsil</td>
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<td>Left tonsil</td>
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<td>8</td>
<td>Liver</td>
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<td>Spinal cord</td>
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<td>24.63</td>
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<tr>
<td></td>
<td>Gallbladder</td>
<td>7.04</td>
<td>12.09</td>
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Clinical follow-up

The EBV-SMT grew to fill in the resected space. Immunosuppression was decreased and follow-up cardiac biopsies demonstrated moderate acute cellular rejection. Immunosuppression was increased and therapy is now focused on pain control.

Conclusions

Consider EBV-SMT in immunosuppressed patients with spindle cell neoplasms.

EBV-SMT characterized by mixed round cell and spindle cell components, diffuse positive staining for SMA, variable desmin staining, and T cell infiltration.

Usual histologic features used to predict ordinary smooth muscle tumor prognosis do not apply to EBV-SMTs.

The presence of spatially segregated EBV-SMTs is correlated with separate infection events and does not indicate metastatic disease.
Thank You