CPC – Great Cases

Melissa Piliang, MD
Cleveland Clinic
Dermatology and Anatomic Pathology
Conflict of Interest

• No relevant conflicts
Case 1
• 70 yo Greek man
• New, asymptomatic dark spot on face
• Has never seen a dermatologist
• No history of NMSC, melanoma, or atypical nevi
Question 1
What is your best diagnosis?

A. Lentigo Maligna
B. Poison Ivy
C. Varicella zoster infection
D. Orf
E. Irritated seborrheic keratosis
Toxicodendron plants have resin channels throughout the plant

Resin channels contain urushiol oleoresins

Plant is injured:
- Sap is extruded
- Within minutes of exposure to air
- Sap hardens by oxidation into a black resin to seal injury

The oleoresin accounts for yellowish amorphous material present in the stratum corneum of skin

High concentration of urushiol needed to produce black resin accounts for irritant contact dermatitis

Black-spot poison ivy is mostly reported after contact with *Toxicodendron radicans* and *T. rydbergii* which are within the Anacardiaceae family
Black spot poison ivy

Carole McClanahan BA, Adam Asarch MD, Brian L. Swick MD

First published: 06 March 2014 | https://doi.org/10.1111/ijd.12367

Conflicts of interest: None.
• Poison Ivy (3 leaves)
  – T. radicans
  – T. rydbergii
• Poison Oak (3 leaves)
  – T. diversilobum
  – T. toxicarium
• Poison Sumac
  – T. Vernix (7-13 leaflets per leaf)

- **Dermoscopy**
  
  - Jagged, centrally homogeneous, dark brown lesion with a red rim
Treatment

• Wash immediately with soap and water
• Isopropyl alcohol applied liberally followed by copious rinsing with water is more effective than soap and water
• Organic solvents (alcohol, acetone) can extract allergen from contaminated surfaces
• Bleach rapidly inactivates urushiol on clothing and tools
• Topical steroids, oral steroids
Case 2
Clinical History

• 19 year old male with new painful necrotic lesions on left 5th toe and left heel x4 months
  • Began months after stepping on foreign object

• Prior work-up:
  • X-ray, CT scan - ? osteomyelitis
  • US, PVR studies – mild insufficiency of peroneal artery

• Prior treatments:
  • Oral antibiotics, IV antibiotics, Aspirin 81mg daily, wound care
Question 2
What is your best diagnosis?

A. Melanoma
B. Epithelioid Sarcoma
C. Angiosarcoma
D. Hemangioendothelioma
E. Vasculitis
Immunohistochemical stains

ERG (+)

Negative:
- HHV8
- Melan A
- SOX-10

Retained
- INI-1
Pseudomyogenic Hemangioendothelioma (PMH)
Pseudomyogenic Hemangioendothelioma (PMH)
Pseudomyogenic Hemangioendothelioma

- Rare vascular tumor of intermediate malignant potential
- Previously: epithelioid sarcoma-like hemangioendothelioma
- Classic presentation:
  - Males, ~20-50 years old
  - Painful deep nodules on lower extremities, multifocal
  - 20% with concurrent bone involvement
- Etiology unclear
- t(7;19)(q22;q13) SERPINE1-FOSB gene fusion
- Case reports of TSC1 gene mutation

Pseudomyogenic Hemangioendothelioma: A Distinctive, Often Multicentric Tumor With Indolent Behavior

Jason L. Hornick, MD, PhD and Christopher D.M. Fletcher, MD, FRCPath


**TABLE 3. Results of Immunohistochemical Studies on Pseudomyogenic Hemangioendotheliomas**

<table>
<thead>
<tr>
<th>Antigen</th>
<th>0</th>
<th>1+</th>
<th>2+</th>
<th>3+</th>
<th>4+</th>
<th>Total (%)</th>
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<tbody>
<tr>
<td>PAN-K</td>
<td>46</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1 (2)</td>
</tr>
<tr>
<td>AE1/AE3</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>45</td>
<td>50 (100)</td>
</tr>
<tr>
<td>CAM5.2</td>
<td>14</td>
<td>12</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>21 (60)</td>
</tr>
<tr>
<td>EMA</td>
<td>42</td>
<td>2 wk</td>
<td>2 wk</td>
<td>3 wk</td>
<td>0</td>
<td>7 (14)</td>
</tr>
<tr>
<td>CD34</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0 (0)</td>
</tr>
<tr>
<td>CD31</td>
<td>25</td>
<td>4</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>22 (47)</td>
</tr>
<tr>
<td>FLI-1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>32</td>
<td>34 (100)</td>
</tr>
<tr>
<td>S-100</td>
<td>46</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0 (0)</td>
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<tr>
<td>SMA</td>
<td>28</td>
<td>2</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>14 (33)</td>
</tr>
<tr>
<td>Desmin</td>
<td>46</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>INI1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>48</td>
<td>48 (100 intact)</td>
</tr>
</tbody>
</table>

0 indicates no staining; 1+, <5% tumor cells reactive; 2+, 5 to 25% tumor cells reactive; 3+, 26% to 50% tumor cells reactive; 4+, >50% tumor cells reactive; EMA, epithelial membrane antigen; SMA, smooth muscle actin.

**FIGURE 12.** All tumors showed diffuse immunoreactivity for keratin AE1/AE3 (A) and FLI1 (B), whereas approximately half were positive for CD31 (C). Unlike epithelioid sarcoma, all tumors showed intact expression of INI1 (D).
### Epithelioid Sarcoma-Like Hemangioendothelioma

<table>
<thead>
<tr>
<th>Epithelioid Sarcoma-like Hemangioendothelioma (Pseudomyogenic Hemangioendothelioma)</th>
<th>Epithelioid Sarcoma</th>
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<tbody>
<tr>
<td>Cytokeratin +</td>
<td>Cytokeratin +</td>
</tr>
<tr>
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<td>CD31 -</td>
</tr>
<tr>
<td>Fli-1 +</td>
<td>Fli-1 -</td>
</tr>
<tr>
<td>Vimentin +</td>
<td>Vimentin +</td>
</tr>
<tr>
<td>CD34 -</td>
<td>CD34 + (50-60%)</td>
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</table>
FOSB is a Useful Diagnostic Marker for Pseudomyxogenic Hemangioendothelioma

Yin P. Hung, MD, PhD, Christopher D. M. Fletcher, MD, FRCPath, and Jason L. Hornick, MD, PhD

(Am J Surg Pathol 2017;41:596-606)

| TABLE 1. Summary of Immunohistochemical Staining for FOSB |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Tumor Type                      | Total Cases     | FOSB Positive (%) | 0   | 1+  | 2+  | 3+  | 4+  |
| Pseudomyxogenic hemangioendothelioma | 50              | 48 (96)          | 2   | 0   | 0   | 1   | 47  |
| Epithelioid hemangioma           | 24              | 13 (54)          | 6   | 4   | 1   | 6   | 7   |
| Conventional                     | 8               | 6 (75)           | 0   | 1   | 1   | 4   | 2   |
| Cellular                         | 10              | 1 (10)           | 6   | 3   | 0   | 0   | 1   |
| Angiolymphoid hyperplasia with eosinophilia | 6               | 6 (100)          | 0   | 0   | 0   | 2   | 4   |
| Other endothelial neoplasms and histologic mimics | 200            | 7 (4)            | 142 | 42  | 9   | 4   | 3   |
| Epithelioid angiosarcoma         | 20              | 1 (5)            | 11  | 7   | 1   | 0   | 1   |
| Spindle-cell angiosarcoma        | 10              | 1 (10)           | 9   | 0   | 0   | 1   | 0   |
| Epithelioid hemangioendothelioma | 20              | 1 (5)            | 15  | 4   | 0   | 1   | 0   |
| Epithelioid angiomatous nodule   | 10              | 0                | 9   | 1   | 0   | 0   | 0   |
| Epithelioid sarcoma              | 20              | 0                | 10  | 0   | 0   | 0   | 0   |
| Spindle-cell squamous cell carcinoma | 20            | 0                | 16  | 4   | 0   | 0   | 0   |
| Spindle-cell rhabdomyosarcoma    | 20              | 0                | 19  | 1   | 0   | 0   | 0   |
| Leiomyosarcoma                   | 20              | 0                | 18  | 2   | 0   | 0   | 0   |
| Cellular benign fibrous histiocytoma | 20            | 0                | 12  | 4   | 4   | 0   | 0   |
| Nodular fasciitis                | 20              | 2 (10)           | 7   | 7   | 4   | 2   | 0   |
| Proliferative fasciitis          | 20              | 2 (10)           | 16  | 2   | 0   | 0   | 2   |

| 0, <5%; 1+ 5% to 25%; 2+, 25% to 50%; 3+, 50% to 75%; 4+, 75% to 100%. |
| FOSB positivity was defined as moderate-to-strong nuclear staining in at least 50% of cells. |
An aggressive case of pseudomyogenic haemangioendothelioma of bone with pathological fracture and rapidly progressive pulmonary metastatic disease: case report and review of the literature

Table 1

<table>
<thead>
<tr>
<th>Author</th>
<th>Bone disease</th>
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<th>Distant metastatic spread</th>
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<tr>
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<td>Y</td>
<td>N</td>
<td>N</td>
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</tbody>
</table>

Primary Pseudomyogenic Hemangioendothelioma of Bone


FIGURE 1. Radiographs showing multiple oval, lytic, relatively well-circumscribed tumors involving the femur (A) and tibia (B). The tumors involve both the medullary cavity and the cortex.
Treatment

- **Surgical excision**
- Radiofrequency ablation
- Adjuvant radiation
- Chemotherapy (no guidelines)
- mTOR inhibitors
  - Sirolimus - Pediatr Blood Cancer. 2018 Feb;65(2)

SERPINE1, part of PMH gene fusion mutation encodes a protein that uses Akt signaling pathway

https://www.researchgate.net/figure/PI3K-Akt-mTOR-signaling-pathway_18_fig1_315060776
Summary

• 19 year old male with painful necrotic lesions on left 5\textsuperscript{th} toe and left heel consistent with pseudomyogenic hemangioendothelioma, now involving bone and lungs

• PMH is a rare diagnosis, presented for clinical interest

• Key points
  • Consider PMH in young men with multi-focal lesions on lower extremities
  • Intermediate malignant potential, requires long-term follow up
  • Distinct IHC profile with new histologic marker; FOSB
  • mTOR inhibitors emerging for non-resectable disease
Key Points

• Consider PMH in young men with multi-focal lesions on lower extremities
• Intermediate malignant potential, requires long-term follow up
• Distinct IHC profile with new histologic marker; FOSB
• mTOR inhibitors emerging for non-resectable disease
Case 1
• 48-year-old man
• Neurosarcoidosis on infliximab and methotrexate
• New draining lesion on his right lower abdomen
Clinical History

• One year ago
  - Draining, non-healing wound on abdomen
  - Methotrexate injection site
  - Biopsy - chronic wound
  - Tissue cultures all negative (bacterial, fungal, atypical mycobacterial)
  - Never completely healed
Past Medical History

- Neurosarcoidosis complicated by seizures

Medications

- Infliximab 7 mg/kg IV q 4 weeks
- Methotrexate SQ 20 mg weekly (left arm)
- Levetiracetam 1500 mg BID
- Phenytoin 100 mg TID
Question 3
What is your best diagnosis?

A. Blastomycosis
B. Hidradenitis suppurativa
C. Traumatic panniculitis (Facticial)
D. Atypical mycobacterial abscess
E. Drug induced panniculitis
Tissue culture grew M. chelonae
Mycobacterium chelonae

- Environmental pathogen
- Contaminated water
- Acquired from contaminated medical injection, surgery, or traumatic puncture
  - Contaminated surgical instruments
  - International patients
  - ‘Medical tourists’
  - Tattoo
Atypical Mycobacteria

- Ubiquitous in the environment
- Tap water is the major reservoir
  - Difficult to eradicate
    - Biofilm formation
    - Not killed by bleach
    - Temperature sensitive (water temp >130F)
  - In one study, up to 70% of home with municipal water had mycobacteria

M. abscessus

• Rapidly growing mycobacteria
  • Others: *M. fortuitum, M. chelonae*

• Commonly causes skin and soft tissue infections
  • Trauma, surgery and cosmetic procedures (medical tourism)
  • Immunocompetent hosts
Clinical History

• Prior to initial presentation, ran out of MTX needles
• He started reusing the old needles after washing them with tap water
Key Points

- Water typical source of atypical mycobacterial abscesses infections
- Look for organisms in vacuoles
- Patients with neurologic disease may not have good judgement (MS, neurosarcoid, Parkinson’s, etc)
Thank you!

pilianm@ccf.org