Disclosures

- Employee of Atlanta Dermatopathology, A PathGroup Company
- No conflicts of interest
Overview

- Communication between the dermatologist and dermatopathologist
- Melanocytic lesions
- Soft tissue lesions
- Adnexal lesions
- Inflammatory lesions
Communication

- Communication between the dermatologist and dermatopathologist is essential for a successful relationship.
- The dermatopathology requisition form is the primary way that dermatologists communicate information to the dermatopathologist.
- Including more information on the requisition form helps your dermatopathologist make the best diagnosis for your patient.
The Dermatopathology Requisition Form: Attitudes and Practices of Dermatologists

- Larissa A. Chismar, MD, Nicole Umanoff, BS, Blair Murphy, BS, Kate V. Viola, MD, MHS, Bijal Amin, MD

- Journal of the American Academy of Dermatology
  - Volume 72, Issue 2, Pages 353-5 (February 2015)
What Did We Want to Know?

- Demographic information
- Who fills out form?
- Estimate of time spent on form
What Did We Want to Know?

- How important do you think it is to include various pieces of information?
  - Location, color, size, duration, clinical DDx, treatment history, Fitzpatrick skin type, ethnicity, history of malignancy, history of organ/bone marrow transplant, history of HIV, history of Hepatitis B or C, other past medical history, history of melanoma

- How often do you include the above pieces of information?
What Did We Want to Know?

- How strongly do you agree with the following statements?
  - I am reluctant to add clinical information because I do not want to bias the dermatopathologist
  - I believe the dermatopathologist should be able to make a diagnosis without any clinical information
### Table 1: Participant demographics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Percent (N=145)</th>
</tr>
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<tbody>
<tr>
<td><strong>Age:</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;30 yrs</td>
<td>20.3% (29)</td>
</tr>
<tr>
<td>30-39 yrs</td>
<td>42.7% (61)</td>
</tr>
<tr>
<td>40-49 yrs</td>
<td>9.8% (14)</td>
</tr>
<tr>
<td>50-59 yrs</td>
<td>11.9% (17)</td>
</tr>
<tr>
<td>60-69 yrs</td>
<td>9.8% (14)</td>
</tr>
<tr>
<td>70+ yrs</td>
<td>5.5% (8)</td>
</tr>
<tr>
<td><strong>Gender:</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>40.3% (59)</td>
</tr>
<tr>
<td>Female</td>
<td>59.7% (86)</td>
</tr>
<tr>
<td><strong>Participant Type:</strong></td>
<td></td>
</tr>
<tr>
<td>Dermatologist</td>
<td>50.3% (73)</td>
</tr>
<tr>
<td>Resident</td>
<td>49.7% (72)</td>
</tr>
<tr>
<td><strong>Years in Practice:</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;10 years</td>
<td>66.2% (96)</td>
</tr>
<tr>
<td>10-19 years</td>
<td>8.9% (13)</td>
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<tr>
<td>20-29 years</td>
<td>9.7% (14)</td>
</tr>
<tr>
<td>&gt;=30 years</td>
<td>15.2% (22)</td>
</tr>
</tbody>
</table>

*Practice Location:*
- Northeast (east coast): 47.5% (69)
- Northwest (west coast): 52.5% (76)

### Table 2: Practice characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Percent (N=145)</th>
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<tbody>
<tr>
<td>Practice Focus:</td>
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<tr>
<td>Adult Medical Dermatology</td>
<td>64.1% (93)</td>
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<tr>
<td>Pediatric Dermatology</td>
<td>5.5% (8)</td>
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<td>Dermatologic Surgery</td>
<td>7.6% (11)</td>
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<tr>
<td>Cosmetic Dermatology</td>
<td>0.7% (1)</td>
</tr>
<tr>
<td>Multi-focal Practice Setting</td>
<td>22.1% (32)</td>
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<tr>
<td>Title of Pathology Requisition filler:</td>
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<tr>
<td>Physician (attending)</td>
<td>49.7% (72)</td>
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<tr>
<td>Physician (resident, fellow)</td>
<td>22.8% (33)</td>
</tr>
<tr>
<td>Nurse</td>
<td>5.5% (8)</td>
</tr>
<tr>
<td>Medical Assistant</td>
<td>6.2% (9)</td>
</tr>
<tr>
<td>Physician and Resident/Fellow</td>
<td>6.2% (9)</td>
</tr>
<tr>
<td>Physician, Resident/Fellow and other staff</td>
<td>9.6% (14)</td>
</tr>
<tr>
<td>Pathology Requisition Form Completion:</td>
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</tr>
<tr>
<td>&lt;30 seconds</td>
<td>16.6% (24)</td>
</tr>
<tr>
<td>30-60 seconds</td>
<td>53.8% (78)</td>
</tr>
<tr>
<td>&gt;1 minute</td>
<td>29.6% (43)</td>
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Attitudes Toward Requisition Forms

- Clinical information biases pathologist
- Pathologist should make diagnosis without clinical information

Bar chart showing:
- Do not Agree
- Somewhat Agree
- Agree
Table 3: Predictors of attitudes toward dermatology requisition forms

<table>
<thead>
<tr>
<th>Variable</th>
<th>P-value</th>
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<tr>
<td>Reluctance to add clinical information because do not want to bias dermatopathologist</td>
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<tr>
<td>Years of Practice</td>
<td>NS (0.3260)</td>
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<tr>
<td>Subspecialty Type</td>
<td>NS (0.4685)</td>
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<tr>
<td>Practice Location</td>
<td>NS (0.2428)</td>
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<tr>
<td>Belief that dermatopathologist should be able to make diagnosis without clinical information</td>
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<tr>
<td>Years of Practice</td>
<td>NS (0.2550)</td>
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<tr>
<td>Subspecialty Type</td>
<td><strong>0.0105</strong></td>
</tr>
<tr>
<td>Practice Location</td>
<td>NS (0.1737)</td>
</tr>
</tbody>
</table>

*P-values are chi-squared or Fisher’s exact test statistics for comparing distribution of variables with specific attitudes.*
Studies Regarding the Dermatopathology Requisition Form

- Waller and Zedek, JAAD 2010;62(2):257-61
- Looked at clinical information provided and microscopic diagnosis for 100 consecutive melanocytic lesions
  - Important information not always included on requisition form
    - Clinical morphology provided in 33%
    - No mention of any ABCDE criteria in 55%
    - Lesion size provided in 22%
    - Partial vs. complete sampling of lesion specified in 0%
    - Only information on form “r/o X” in 29%
Comfere et al, J Cutan Pathol 2015;42(5):333-45
- Survey of 598 dermatopathologists
  - Also focus groups at 2 national meetings
- 42.7% rated overall quality of clinical information as fair or poor
- 44.7% of dermatopathologists spend 30 minutes or more every day searching for relevant clinical information
- Missing clinical information at least half of the time:
  - Melanocytic proliferations (53.7%)
  - Non-melanocytic proliferations (57.4%)
  - Inflammatory dermatoses (59.1%)
Impact of quality, completeness and clarity of clinical information provided within the skin biopsy requisition form on the following:

- Dx confidence
- Dx accuracy
- Specificity of dx
- Speed of dx
- Need communication with clinician
- Need addl histopath studies
- Ability to provide meaningful clinical guidance

Comfere et al, J Cutan Pathol 2015;42(5):333-45
What Information is Important to Include?

- Lesion location
- Patient age
- Clinical impression/differential diagnosis
- Partial versus complete sampling
- Duration of lesion
- Lesion morphology
- Clinical symptoms
- Previous treatments
- Known clinical diagnoses
- Previous dermatopathologic diagnoses (like history of melanoma)
- Clinical photographs
Remember...

- The information you supply on the requisition form becomes a part of the patient’s medical record!
Challenges with Melanocytic Lesions
Challenges with Melanocytic Lesions

- Partial biopsies
Partial Biopsies for **Suspected Melanoma**

- **31%** of US dermatologists (Survey 1995)
- **27%** of cases in Victoria, Australia (2000)
- **30%** and **22%** of cases referred by GPs and dermatologists, respectively, to a UK surgical unit (2008)

Impact of Partial Biopsy on Histopathologic Diagnosis of Melanoma

- Increased odds of false negative diagnosis in partial versus excisional biopsies
  - Shave: odds ratio 2.6%
  - Punch: odds ratio 16.6%

Concordance with Excision Specimen

- 96% of shave biopsies
- 71% punch biopsies

Most Diagnostic Criteria to Distinguish Nevus from Melanoma Rely on Excisional Biopsies
Criteria for the Diagnosis of Melanoma

- **Architecture – Asymmetry of**
  - Silhouette
  - Lateral junctional borders
  - Distribution of melanocytes and nests at the junction
  - Distribution of pigment within the lesion
  - Distribution of inflammatory response
  - Epidermal alteration
  - Cytologic details

- **Architecture – Other**
  - Large dimension of the lesion
  - Poor delimitation of the lesion
  - Large confluent nests
  - Expansile nodules and solid growth pattern
  - Consumption of the epidermis
  - Lack of maturation

- **Cytologic and other criteria**
  - Cellular atypia
  - Cellular pleomorphism and mitotic figures
  - Pagetoid spread
  - Sun damage

It Can Be Easy

- Utilization of known criteria
Challenges with Melanocytic Lesions

- Partial biopsies
  - It is possible to diagnose melanoma through the utilization of known criteria in a partial biopsy
  - It is not possible to exclude melanoma!
    - Sampling error
CASE

• 55 y/o F
• Left posterior shoulder
• “R/O nevus with increased pigment”
Diagnosis: “Nevus”
Diagnosis:
“Nevus”

10 years later:
Metastatic melanoma
Challenges with Melanocytic Lesions

- Partial biopsies
  - It is not possible to exclude melanoma!
    - Sampling error
      - Melanoma arising in association with a nevus
CASE

• 69 y/o F
• Right lateral malar cheek
• “Irregular brown macule”
• “Atypical nevus versus melanoma versus benign nevus”
Diagnosis:
“Pigmented solar keratosis and solar lentigo”
Diagnosis:
“Pigmented solar keratosis and solar lentigo”

Keep looking
Challenges with Melanocytic Lesions

- Partial biopsies
  - It is not possible to exclude melanoma!
    - Sampling error
      - Melanoma arising in association with a nevus
      - Contiguous lesions in lentigo maligna
Contiguous Pigmented Lesions

- Present in 48% of LM specimens
  - Solar lentigo (30%)
  - Pigmented actinic keratosis (24%)

CASE

- 60 y/o M
- Right preauricular
- “SK vs. lentigo vs. lentigo maligna”
Challenges with Melanocytic Lesions

- Partial biopsies
  - It is not possible to exclude melanoma!
    - Sampling error
      - Melanoma arising in association with a nevus
      - Contiguous lesions in lentigo maligna
      - Skip areas or regression in MMIS
“... a partial biopsy may result in a partial diagnosis which may be a misdiagnosis.”

Surgical Pathology Claims to a US Medical Indemnity Provider

- False-negative dx of melanoma - single most common reason for filing a malpractice claim against a pathologist
- Partial bx was responsible for over 50% of false-negative melanoma misdiagnoses

Size of the lesion

Single most important piece of clinical information when submitting a pigmented lesion!

Usually known to the clinician, but not always communicated
Size of the lesion

“Hence the standard for clinicians should be to include clinical measurements of a pigmented lesion, whether the biopsy is in whole or in part.”

Preferred bx technique for evaluation of a lesion highly suspicious for melanoma: narrow *excisional biopsy* with 1- to 3-mm margins ...

...via saucerization/shave, punch, or elliptical biopsy...

*AAD and the NCCN clinical practice guidelines for melanoma*
Challenges with Melanocytic Lesions

- Vague DDx on requisition can be challenging
  - Let your pathologist know when you’re really worried!
- Clinical photographs can be helpful
CASE

• 66 y/o F
• 5\textsuperscript{th} right toe
• “R/O atypia”
Final diagnosis: Acral nevus
CASE

• 56 y/o F
• 5\textsuperscript{th} left toe
• “R/O DN vs wart vs hematoma”
Final diagnosis: Acral lentiginous melanoma
Challenges with Soft Tissue Lesions
Challenges with Soft Tissue Lesions

- Large number of soft tissue tumor types
- Relative rarity of most types
- Subtle histological differences between them
- Inflammatory lesions may mimic sarcomas
- Malignant soft tissue tumors may mimic benign lesions → often misdiagnosed
Classification of Soft Tissue Tumors

1. Adipocytic
2. Fibroblastic/ Myofibroblastic
3. So-called Fibrohistiocytic
4. Smooth Muscle
5. Pericytic (perivascular)
6. Skeletal Muscle
7. Vascular
8. Chondro-osseous
9. Tumors of Uncertain Differentiation
Classification of Soft Tissue Tumors

Biological Potential

- Benign
- Intermediate (locally aggressive)
- Intermediate (rarely metastasizing)
- Malignant (= sarcoma)
CASE

• 49 y/o F
• Left shoulder
• “R/O neoplasm”
Repeat biopsy:
Diagnosis: Dermatofibrosarcoma protuberans
Dermatofibrosarcoma Protuberans

- Fibrohistiocytic neoplasm of intermediate malignancy (rarely metastasizing)
- Young and middle-aged adults, but also in infants and children
- Trunk > proximal extremities, head & neck
- Slowly growing firm plaque → (multi-) nodular
- Average size at time of excision 4-5 cm!
- Recurrence rate 20-50%
- May metastasize 0.5% - 4%
### DFSP Immunophenotype

<table>
<thead>
<tr>
<th>DF</th>
<th>DFSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>FXIIIa +</td>
<td>FXIIIa -</td>
</tr>
<tr>
<td>CD34 -</td>
<td>CD34 +</td>
</tr>
</tbody>
</table>
CD34 Positive Soft Tissue Tumors

- Spindle cell lipoma
- Neurofibroma
- Solitary fibrous tumor
- Pleomorphic fibroma
- Kaposi sarcoma and other vascular tumors
- MPNST
- Epithelioid sarcoma
- Gastrointestinal stromal tumor
Dermatofibrosarcoma Protuberans Variants

- Sclerosing
- Granular
- Myoid nodules
- Atrophic / Plaque-like
- Myxoid
- Pigmented (Bednar tumor)
- Giant cell fibroblastoma-like
- Fibrosarcomatous
Challenges with Soft Tissue Lesions

- History can be misleading
CASE

• 35 y/o F with a non-healing lesion on the palm noticed after injury
• Previous biopsy at outside institution was suspicious for an infectious process
Diagnosis:
Epithelioid sarcoma
Epithelioid Sarcoma

- Malignant sarcoma of uncertain differentiation
- Young adults age 10-39 years
- M > F
- Extremities, especially flexor surfaces of hands, wrists and forearm > lower extremity
- Slow growing painless plaque or nodule
- May have multifocal involvement at presentation
- History of trauma in 20%
Epithelioid Sarcoma

- Aggressive sarcoma that propagates along fascial planes, tendons, and nerve sheaths
- Local recurrences in up to 77%
- Metastases in 40% (regional LN, lungs, skin of scalp), usually after multiple recurrences
- 70% of patients die of the disease
Challenges with Soft Tissue Lesions

- History can be essential for diagnosis
CASE

• 66 y/o M
• Right superior parietal scalp
• “Tumor”
Diagnostic Considerations

- Neural tumor – malignant peripheral nerve sheath tumor
- Spindle cell malignant melanoma with loss of some melanocytic markers
Outside Consultation

- Prominent soft tissue expert
- Favored diagnosis of spindle cell malignant melanoma
  - Tumor close to the overlying epidermis without evidence of pre-existing neurofibroma
  - Staining for H3K27me3 was positive
    - Loss highly specific for MPNST (homozygous PRC2 (polycomb repressive complex 2) inactivation results in loss of histone H3K27 trimethylation)
      - 51% MPNST in series of 100 tumors negative for H3K27me3
        » 49% sporadic tumors, 70% NF 1-associated tumors, 100% radiation-associated
Additional History

• Patient with history of NF1
• MPNST on right upper back (dx 2013)
• Metastasis of MPNST to right lower lobe of lung (dx 2014)
• Metastasis to liver (dx 2016)
New Diagnostic Considerations

• History makes MPNST more likely
  – ? Metastatic lesion
  – ? New primary
Excision:
Final Diagnosis

• MPNST arising in NF
Challenges with Adnexal Tumors
CASE

• 65 y/o F
• Right posterior scalp
• “Firm white nodule. R/O BCC vs SK vs cyst.”
Diagnosis:
Surface of cystic proliferation with focal poroid features
Excision

1.5 x 1.1 cm ellipse:
Diagnosis:
Malignant adnexal neoplasm, favor solid carcinoma
Solid Carcinoma

- Thought to be a variant of microcystic adnexal carcinoma
- Innumerable small, solid aggregates of neoplastic cells extending throughout the dermis, often into the subcutis (infiltrative growth pattern)
- Larger aggregates of neoplastic cells than MAC
- Cells are cytologically bland, mitoses are rare (usually absent)
- Has been reported on the scalp (Lai et al, Am J Dermatopathol 2014;36(11):925-7.)
Challenging Inflammatory Lesions
Challenging Inflammatory Lesions

- Patient’s history may be misleading
CASE

- 38 y/o M
- Right occipital scalp/posterior neck
- “Confirm tick bite”
Diagnosis:
Varicella zoster virus folliculitis
Varicella Zoster Virus Folliculitis

- Varicella zoster virus affecting hair follicle/sebaceous unit (“sebaceitis”)
- **Often not evident in initial sections** (need deeper levels!)
  - Mimics robust inflammatory process and easily misdiagnosed
- **Could be completely missed with shave biopsy**
- Patient history may be misleading
Partial biopsies can be misleading even for very basic diagnoses
CASE

• 65 y/o F
• Right dorsal hand
• “R/O carcinoma”
Diagnosis:
Hyperplastic solar (actinic) keratosis

Note: The atypical epithelial changes are transected at the base. If the lesion fails to respond to conservative therapy, an additional biopsy is recommended.
Repeat biopsy performed at follow-up visit:
Diagnosis:
Invasive squamous cell carcinoma
Conclusions

- Good dermatologist-dermatopathologist communication is essential to make the best diagnosis for your patient
- More clinical information is better
- Beware of partial biopsies (and always alert your dermatopathologist!)
- Carefully read your pathology report – always consider repeat biopsy or call to your dermpath if something seems unusual or doesn’t fit well with clinical findings
References


Olson MA, Lohse CM, Comfere NI. Rates of provision of clinical information in the skin biopsy requisition form and corresponding encounter visit note. J Pathol Inform. 2016 Sep 1;7:40.


