APPROACH TO IMPROVING DIAGNOSIS: DERMATOPATHOLOGY

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DISCLOSURE OF RELATIONSHIPS WITH INDUSTRY

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U001: Lessons in CPC

DISCLOSURES
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APPROACH TO IMPROVING DIAGNOSIS: DERMATOPATHOLOGY

• Errors and discordance in dermatopathology

• Perception and cognitive bias in dermatopathology

• Tips for reducing error and improving concordance
Errors and discordance in dermatopathology

- Difficult to estimate: often based on concordance

- Concordance: 66-77 percent

- Major discordance: 7 percent
  - Melanocytic, lymphoid, adnexal tumors

- ‘Errors’ in 7 percent of cases:
  - Failure to correlate pathology and clinical context
  - Lack of dermatologic knowledge

Errors and discordance in dermatopathology

• Studies of second opinion

• Major discordance rate up to 22 percent overall

• Inflammatory disorders: 33 percent
  • Wrong tissue reaction pattern: 50 percent
  • Right pattern, wrong differential: 20 percent

Errors and discordance in dermatopathology

• Studies of second opinion

• Melanocytic tumors
  • Melanoma versus nevus up to 25 percent

• Malignant neoplasms overall
  • Impactful discordance in 9 percent

Perception and cognition

• Perception
  • Interpretation after processing visual stimuli
  • Filters limit what we perceive

• Cognition
  • System 1: Heuristics → “gestalt”
  • System 2: Analysis → “conscious checklist”

Perception: figure-ground segregation

- Formlessness of space
- Inner side of a line
- Meaning

Formlessness of space

Trichoblastoma versus BCC

Trichoblastoma versus BCC

Expert

Novice

Trichoblastoma

BCC
Inner side of a line – convex and concave

Dermatofibroma with sebaceous induction

Expert 

Novice
Cognitive bias and heuristics

• **Heuristic** → efficient and accurate mental shortcut

• **Bias** → diagnostic errors when used incorrectly

• **Diagnostic errors**: 50 percent associated with ≥ 1 bias
  • Most common biases: premature closure and availability

Cognitive bias in dermatopathology

- Premature closure
- Availability
- Confirmation
- Representativeness
Premature closure

• Tendency to stop looking after encountering a diagnostic finding
  • Bias $\rightarrow$ make diagnosis then stop searching $\rightarrow$ wrong

Availability bias

• Judging something to be *MORE* likely because it comes to mind readily
  • Bias → next case in sequence must be *SAME* as prior → wrong

Clues to nutritional deficiency

• Well-established features:
  • Psoriasiform hyperplasia
  • Confluent parakeratosis
  • Epidermal pallor

• Less established CLUES
  • Subtle evidence of dysmaturation
  • Dermal edema

Confirmation bias

• Looking for evidence to support rather than refute
  • Bias $\rightarrow$ finding features to support erroneous impression $\rightarrow$ wrong

Epidermal necrosis of factitious dermatitis

**CLUES**

- Distorted keratinocytes
  - Multinucleate
  - Vertically elongated nuclei

- Confluent epidermal necrosis with sharp demarcation
Epidermal necrosis

• Interface dermatitis reaction pattern
  • Lichen planus and variants
  • Erythema multiforme
  • Cutaneous lupus erythematosus
  • Pityriasis lichenoides
  • Graft-versus-host disease
  • Syphilis
Epidermal necrosis

- *Dysmaturation and exogenous insults*
  - Irritant dermatitis
  - Phototoxicity → ‘sunburn’ cells
  - Nutritional deficiency
  - Chemotherapy reactions
  - Bowen disease
  - Acantholytic dermatoses
Representativeness bias

- Judging something based on a mental prototype: “this feature = that disease”
  - Heuristic $\rightarrow$ finding $=$ diagnosis $\rightarrow$ correct
  - Bias $\rightarrow$ finding $\neq$ diagnosis $\rightarrow$ wrong

Columnar dyskeratosis versus cornoid lamellae

• True cornoid lamella of porokeratosis
  • Diagonal, continuous tier of parakeratotic cells
  • Porokeratosis

• Columnar dyskeratosis: pseudocornoid lamella
  • Epidermal dells or invaginations
  • Vertical, discontinous tier of dyskeratotic cells
  • Wong-type dermatomyositis and EDV
Learning from quality assurance programs

• Typical benchmark for amendments is 1% or less

• Less than half of amended reports are diagnostic
  • Melanocytic – 40 percent
  • Inflammatory – 30 percent

• But most of these are major changes with impact

Tips for reducing error and improving concordance

• Communication of appropriate clinical info at time of biopsy

• Direct communication between clinician and pathologist

• Conference review: tumor boards, grand rounds, CPC conferences
  • Leads to discovery of misinterpretation, education, and amendment

Tips for reducing error and improving concordance

• Blind slide review before report release or after signout*

• Study amended reports as part of QA program

• Find out why your changes occur

THANK YOU!

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