SKIN

ORIGINAL ARTICLE

What Do Clinicians Mean When Submitting a Biopsy as "Rule Out Eczema"

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ABSTRACT

Background: "Eczema" encompasses many dermatological conditions and usually manifests with spongiosis histologically. Dermatopathologists often receive biopsy specimens with requests to "rule out eczema." However, this broad term is limiting and lacks the necessary clinical context for precise diagnoses.
Objective: This study explored the conditions implied by "rule out eczema" when rendered by clinicians and whether they regard it as synonymous with atopic dermatitis or other spongiotic conditions. Understanding this distinction is vital for guiding appropriate treatment which differs among disparate conditions appearing similar histologically.
Method: 63 clinicians (54 dermatologists, 5 physician assistants, 4 nurse practitioners) completed a web-based questionnaire. Participants identified conditions considered when requesting to "rule out eczema," who completed requisition forms, and whether they modify automated EMR phrases to specify these conditions.
Results: 83% (52/63) included atopic dermatitis in the differential diagnosis, with "rule out eczema" also referencing nummular eczema (65%), dyshidrotic eczema (54%), contact dermatitis (51%), neurodermatitis (22%), and seborrheic dermatitis (14%). Other conditions included mycosis fungoides, psoriasis, and tinea infections. Most forms were completed by medical assistants (51%) or dermatologists (43%). 81% were modified from the suggested EMR diagnosis before submission.

INTRODUCTION

Dermatopathologists often receive biopsy specimens with requests to "rule out eczema". In many instances, requisition forms do not clearly specify clinical impressions or differential diagnoses and instead include automated electronic medical record (EMR) phrases or nonspecific terminology, such as "rule out eczema". However, this vague and nonspecific term is limiting and lacks the necessary clinical context for diagnostic precision and patient management.

In a retrospective study analyzing 475 requisition forms, the use of "rule out" was significantly linked to delayed diagnosis and increased use of additional stains and sections before reaching a definitive diagnosis, when compared to requisition forms that did not use this term[1]. Despite being single-institution data, these results

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underscore the need to eliminate vague terms from pathology requisition forms to improve diagnostic accuracy and communication. This is particularly important given that the clinical presentation of eczema can vary widely, potentially affecting the accuracy of diagnoses based on biopsy alone.

In this study, we investigated the clinical implications of the term “rule out eczema” as used by clinicians, including dermatologists, physician assistants, and nurse practitioners. We examined whether the term is considered synonymous with atopic dermatitis (AD) or encompasses a broader range of spongiotic conditions. Clarifying this distinction is crucial for guiding appropriate treatment, which varies among different conditions that may appear similar histologically.

METHODS

63 clinicians, including 54 dermatologists, 5 physician assistants, and 4 nurse practitioners from various states, completed a web-based questionnaire from July to September 2023. The online survey consisted of multiple-choice questions with a free-response option for all questions to allow for additional diagnoses or comments. Participants identified three key aspects of their clinical workflow: 1) the specific conditions they consider when submitting a request to rule out eczema, with multiple answers allowed, 2) the healthcare professional who is tasked with filling out the requisition forms that are sent to the dermatopathologist, and 3) whether modifications are made to the automated phrases in the EMR system to indicate the conditions being considered. The results were collected in a spreadsheet and summarized.

RESULTS

The majority of the respondents, accounting for 83% (52 out of 63), included atopic dermatitis into their differential diagnosis. The term “rule out eczema” was commonly used to encompass a spectrum of eczematous disorders, including nummular eczema (65%), dyshidrotic eczema (54%), contact dermatitis (51%), neurodermatitis (22%), and seborrheic dermatitis (14%). Additionally, the differential diagnosis occasionally covered other dermatological conditions, such as mycosis fungoides, psoriasis, and tinea infections (**Table 1**). Regarding the completion of requisition forms, medical assistants were identified as the primary individual responsible in 51% of cases, closely followed by dermatologists themselves in 43% of cases (**Table 2**). Notably, 81% of clinicians reported customizing the pre-set EMR diagnostic phrases to better reflect the specific clinical scenario prior to submission (**Table 3**).

DISCUSSION

Accurate clinical impressions provided on requisition forms can play a vital role in arriving at the correct histopathological diagnosis. The main findings of this study demonstrate that the use of the phrase “rule out eczema” by clinicians encompasses a wide array of conditions with varied etiologies, such as atopic dermatitis, nummular eczema, dyshidrotic eczema, contact dermatitis, neurodermatitis, seborrheic dermatitis, mycosis fungoides, psoriasis, and tinea infections. The breadth of this term’s usage underscores the importance of clearly indicating the clinical impression and differential diagnosis being considered before sending a biopsy to the dermatopathologist for interpretation

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Table 1. Dermatological conditions considered by 63 clinicians when submitting a biopsy to "rule out eczema"

Dermatosis	Number of Respondents (Percentage of Respondents)
Atopic dermatitis	52 (82.5%)
Nummular eczema	41 (65.1%)
Dyshidrotic eczema	34 (54.0%)
Contact dermatitis	32 (50.8%)
Neurodermatitis	14 (22.2%)
Seborrheic dermatitis	9 (14.3%)
Psoriasis	3 (4.8%)
Mycosis fungoides	3 (4.8%)
Tinea infection	2 (3.2%)
Cutaneous T-cell lymphoma	1 (1.6%)
Scabies	1 (1.6%)
Chronic atopic dermatitis	1 (1.6%)
Drug dermatitis	1 (1.6%)
Connective tissue disease	1 (1.6%)
Benign eczematous conditions	1 (1.6%)
Psoriasiform dermatitis	1 (1.6%)
Dermal hypersensitivity reaction	1 (1.6%)

Imprecise terminology compromises patient care and may result in dermatopathologists rendering incorrect diagnoses.

"Eczema" is a descriptive morphological term rather than a specific condition and includes a variety of dermatological conditions that histologically present with spongiosis. It is frequently used interchangeably with "atopic dermatitis" since AD is the most common form of eczema. Despite the word "atopic", it is worth noting that approximately 60% of children who exhibit clinical signs of atopy do not show IgE-mediated sensitivity to allergens.[2] This discrepancy and resulting ambiguity prompted the World Allergy Organization to suggest a change in terminology, wherein "eczema" is used as a general term for skin conditions with certain clinical and genetic features, and "atopic dermatitis" is used for skin conditions with an IgE-associated process. Furthermore, eczema without signs of atopy is common, with studies reporting a prevalence of 45-64% in children and 40% in adults.[3] Therefore, even though the majority of

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respondents in our study include atopic dermatitis in their differential diagnosis, if eczema is colloquially used synonymously with atopic dermatitis, there may be a tendency to overlook other types of eczema with distinct etiologies that are not characterized by atopy, such as contact dermatitis or nummular eczema. The differentiation between AD and eczema is further complicated by the fact that ICD-9 and ICD-10 codes for AD are distinct from those for eczema, potentially leading to systematic coding errors that can impact billing, reimbursement, and medical research.[4]

Table 2. Primary individual responsible for completing dermatopathology requisition form

Primary individual	Number of Respondents (Percentage of Respondents)
Medical assistant	32 (50.8%)
Dermatologist	27 (42.9%)
Physician assistant	1 (1.6%)
Nurse practitioner	1 (1.6%)
Resident	1 (1.6%)
Software system	1 (1.6%)

Table 3. Modification status of EMR-automated phrases for differential diagnoses prior to submission to dermatopathologist

Personal modifications made	Number of Respondents (Percentage of Respondents)
Yes	48 (81.4%)
No	11 (18.6%)
N/A*	4

*Includes no response, users of handwritten paper requisition forms, or those not utilizing an automated EMR system

In a 2013 survey study distributed among dermatologists and dermatology residents, approximately one-third of the participants somewhat agreed with the statement that they were reluctant to add clinical information to requisition forms because they did not want to bias the dermatopathologist.[5] Similarly, about one-third somewhat agreed that pathologists should make a diagnosis without clinical information. However, the requisition form serves as a vital document facilitating transition of care between clinicians and pathologists and carries significant implications for the accuracy of biopsy interpretations and clinicopathologic correlations. This is particularly evident in requisition forms sent to "rule out eczema," given that spongiosis is a histologic feature that is not specific to any single dermatosis. As such, histologic features alone may often be inadequate for a definitive diagnosis. The lack of specificity is especially problematic

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when the biopsy requisition form does not include accompanying clinical images, pertinent patient medical history, provider notes, or personal modifications to automated EMR phrases. In the absence of such clinical details, pathologists must rely exclusively on the information present in the requisition form. Unfortunately, the standardized format of many requisition forms may inadvertently replace the descriptive narrative that is often crucial for accurate diagnosis, especially in the absence of clinical photographs. The reasons for not including additional information might be linked to the time constraints faced by busy clinicians with high patient volumes,6 variability in the level of training or clinical experience among the personnel tasked with filling out the requisition form, or possibly a lack of awareness regarding the importance of providing a clear clinical impression or differential diagnosis on pathology requisition forms.

It should be noted that the findings of this study, which are based on self-reported data from a national sample of dermatology clinicians, may be prone to selection bias and may not be entirely representative, as the study did not include participants from every state. The validity of our results may also be impacted by non-response bias, considering potential differences between respondents and non-respondents. Nevertheless, our findings highlight the importance of establishing an agreement on the proper nomenclature for eczematous or spongiotic dermatoses, especially with regards to enhancing communication between clinicians and pathologists. The use of non-specific terms such as “rule out eczema” on biopsy requisition forms can lead to broader differential diagnoses, which may increase the risk of misdiagnosis or diagnostic delays due to lack of specificity in the biopsy requisitions, thereby potentially delaying appropriate treatment and affecting patient outcomes.

Ambiguous phrases like “dermatitis unspecified,” often generated by EMR programs, offer limited value and thus should not be provided to clinicians when submitting biopsy specimens. Furthermore, the term “rule out eczema” is nonspecific, and conditions may not be readily distinguished based on histology alone. To enhance diagnostic accuracy, it is recommended that the phrase be discarded in favor of specifying which disorder the clinician is presumptively diagnosing clinically.

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References:

1. Abdou Y, Lohse C, Comfere NI. Use of the term “rule out” in requisition forms may cause diagnostic delays in dermatopathology practice. *International Journal of Dermatology*. 2017;56(1):86-91. doi:https://doi.org/10.1111/ijd.13403
2. Williams HC. Atopic Dermatitis. *New England Journal of Medicine*. 2005;352(22):2314-2324. doi:10.1056/NEJMcp042803
3. Johansson SGO, Bieber T, Dahl R, et al. Revised nomenclature for allergy for global use: Report of the Nomenclature Review Committee of the World Allergy Organization, October 2003. *Journal of Allergy and Clinical Immunology*. 2004;113(5):832-836. doi:10.1016/j.jaci.2003.12.591
4. Kantor R, Thyssen JP, Paller AS, Silverberg JI. Atopic dermatitis, atopic eczema, or eczema? A systematic review, meta-analysis, and recommendation for uniform use of 'atopic dermatitis'. *Allergy*. Oct 2016;71(10):1480-5. doi:10.1111/all.12982
5. Chismar LA, Umanoff N, Murphy B, Viola KV, Amin B. The dermatopathology requisition

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form: attitudes and practices of dermatologists. *J Am Acad Dermatol*. Feb 2015;72(2):353-5. doi:10.1016/j.jaad.2014.10.021

6. Romano RC, Novotny PJ, Sloan JA, Comfere NI. Measures of Completeness and Accuracy of Clinical Information in Skin Biopsy Requisition Forms: An Analysis of 249 Cases. *Am J Clin Pathol*. Dec 2016;146(6):727-735. doi:10.1093/ajcp/aqw186

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