Revisiting Rosacea Criteria
Where Have We Been, Where Are We Going, and How Will We Get There?

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KEYWORDS

• Evidence-based • Criteria • Assessment • Management

KEY POINTS

- A valid case definition of rosacea is critical for the appropriate interpretation and external validity of research studies.
- Current criteria for rosacea are based on expert opinion.
- Incorporating techniques from other specialties can improve the reliability and validity of rosacea criteria and help advance understanding of rosacea in the future.

INTRODUCTION

Rosacea, first noted in the fourteenth century,[1] is one of the most common and misunderstood dermatologic conditions.[2] The depiction of rosacea, throughout history, altered with advancing imaging technologies.[3] Today, rosacea is defined by recognizable morphologic features but without any single laboratory, pathologic, or radiologic feature serving as a pathognomonic gold standard.[4–6] As a result, rosacea criteria are intended to provide a consensus standard to ascertain cases in a consistent manner across clinical and epidemiologic studies. A valid case definition of rosacea is fundamentally critical for interpretation and external validity of epidemiologic and clinical studies. Nonvalid criteria unnecessarily incorporate subjects without disease into clinical studies.[7] Unfortunately, the definition of rosacea and its subgroups has been driven more by impressions and opinions than by evidence. As a result, empiric data underpinning the reliability and validity of rosacea criteria are lacking, which has hindered understanding of rosacea and contributed to conflicting scientific results.[5,8–26]

CURRENT ROSACEA CRITERIA

In 2002, a National Rosacea Society consensus (NRSC) committee developed provisional diagnostic and classification criteria based on phenotypic features and scientific knowledge.[27] The purpose was to establish standard terminology that would improve communication globally, allow study comparisons, and advance epidemiologic, pathophysiologic, and clinical understanding of rosacea. According to the diagnostic criteria, the presence of 1 or more primary features (flushing, erythema, papules and pustules, and telangiectasia) in a centrofacial distribution is indicative of rosacea.[27] Multiple concerns or questions need to be addressed because lack of specificity can be harmful.[28] For instance, is the sole presence of facial flushing in women diagnostic? If so, 88% of women between 40 years and 65 years of age have rosacea.[29] Are multiple inflammatory papules distributed over the cheeks rosacea? Can rosacea be diagnosed in a patient with facial erythema after a weekend at the beach? Is the presence of centrofacial telangiectasias associated with extrinsic aging adequate to establishing a diagnosis of rosacea? Recently, the global

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ROSacea Consensus panel re-evaluated and recommended updated criteria for diagnosis, classification, and assessment of rosacea.[30] Both the National Rosacea Society consensus and ROSacea Consensus criteria were synthesized from expert opinion. Neither addresses validity or reliability nor have they been tested in subsequent studies.

Diagnostic or classification criteria for disease diagnosis that are based solely on expert opinion are tentative, at best. Expert opinion is susceptible to various biases; frequently, their precision and accuracy are decreased when they are applied to a general clinical setting. For example, the Jones criteria establish a set of features diagnostic of rheumatic fever based on expert opinion.[31] In certain populations, the Jones criteria had altered validity, resulting in rheumatic fever missed with subsequent devastating health consequences.[32] Importantly, the weaknesses were identified and the American Heart Association revised the criteria to reflect current epidemiologic trends and advancing scientific knowledge. The purpose of revisiting previous criteria is not to criticize but to incorporate novel knowledge and current literature to improve reliability and validity of criteria.[33]

PURPOSE AND OBJECTIVES OF ROSACEA CRITERIA

Synthesizing rosacea criteria requires that an objective be predefined. Frequently, rosacea diagnostic and classification criteria are intertwined in clinical and epidemiologic interpretations, which have limited scientific progression and masked potential insight into advancing our understanding of rosacea.[5] Diagnostic and classification criteria are modeled differently and should be distinguished. A diagnosis is the end outcome of a process that incorporates a physician's skill, knowledge, and intuition that aims to confirm or deny the presence of a health condition. The purpose is to guide patient care and predict prognosis. The process is complex and incorporates individual weights for variables that differ between clinicians, settings, and patients.[34] Even the most basic features of rosacea are disagreed on. For instance, approximately 30%, from an expert panel, disagree that flushing is a major feature of rosacea.[30] In the absence of a gold standard, rarely is a single diagnostic criterion adequate because of different disease prevalence and presentations among different populations; for these reasons, the American College of Rheumatology no longer endorses diagnostic criteria.[35] In contrast, classification criteria are intended to define a cohort of subjects with a shared set of homogenous features for clinical research.[36] They should standardize the definition of rosacea and its subtypes across various populations. As a result, the external validity of rosacea studies is protected by minimizing identification bias; in other words, the sample is a true representation of the disease, ensuring the same disease entity is studied consistently.

Rosacea criteria validity, which can be measured by sensitivity and specificity, is defined by its ability to distinguish rosacea from other conditions. Most importantly, the criteria should focus on maximizing construct validity, that is, the criteria correlate with clinical construct (convergent validity) and diverge from other conditions (divergent validity).[37] In this paradigm, optimal evaluation and diagnosis of rosacea incorporate current scientific knowledge (increasing diagnostic sensitivity) and exclude diseases with similar phenotypic features (increasing diagnostic specificity).[38] Diagnostic disagreements, beyond training and experience, arise primarily from inadequate nosology; often due to nonspecific criteria.[39]

SYNTHESIZING VALID CRITERIA FOR ROSACEA

Using evidence and historical lessons from other specialties can provide a framework for developing valid rosacea criteria. Diagnostic and classification criteria are used widely in psychiatry and rheumatology due to the lack of a single gold standard test. The *Diagnostic and Statistical Manual* (*DSM*) was developed in response to multiple landmark studies that demonstrated frequent diagnostic disagreement.[40] Initially, the first edition of the *DSM* and the *DSM* (Second Edition) had low reliability; subsequent revisions improved its reliability and diagnostic agreement among clinicians.[41,42] Similarly, classification criteria in rheumatic disease have consistently been revised to reflect current literature. Well-developed criteria improve clinical decision making and individual care.[43] An approach using a well-defined framework described by the American College of Rheumatology and incorporating evidence-based literature that might produce well-developed and validated criteria for rosacea is outlined.[35]

Synthesizing rosacea classification criteria begins with a formal group consensus method, designed to organize subjective judgements in conjunction with available objective evidence. Universal agreement is not expected; rather, a predefined consensus should identify a central tendency and quantify the level of agreement.[44,45] Panel selection should comprise a heterogeneous group of enthusiastic expert participants that understand the demand and responsibilities required.[44] A

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