

# Establishing the Diagnosis of Rosacea in Skin of Color Patients

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## PRACTICE POINTS

- The clinical signs of rosacea may be similar in all skin types; however, dermatologists must have a high clinical index of suspicion for rosacea in patients with skin of color (SOC).
- Dermatologists should consider a wide differential diagnosis when presented with an SOC patient with facial erythema and/or papules and pustules.

Rosacea is a chronic inflammatory cutaneous disorder that may be underreported and underrecognized in skin of color (SOC) patients. There are several skin disorders that can present with the classic features of rosacea, such as erythema, papules, and pustules, which can confound the diagnosis. To promote accurate and timely diagnosis of rosacea, we review possible rosacea mimickers in SOC patients.

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Rosacea is a chronic inflammatory cutaneous disorder that affects the vasculature and pilosebaceous units of the face. Delayed and misdiagnosed rosacea in the SOC population has led to increased morbidity in this patient population.<sup>1-3</sup> It is characterized by facial flushing and warmth, erythema, telangiectasia, papules, and pustules. The 4 major subtypes include erythematotelangiectatic, papulopustular, phymatous, and ocular rosacea.<sup>4</sup> Granulomatous rosacea is considered to be a unique variant of rosacea. Until recently, rosacea was thought to predominantly affect lighter-skinned individuals of Celtic and northern European origin.<sup>5,6</sup> A paucity of studies and case

reports in the literature have contributed to the commonly held belief that rosacea occurs infrequently in patients with skin of color (SOC).<sup>1</sup> A PubMed search of articles indexed for MEDLINE revealed 32 results using the terms *skin of color* and *rosacea* vs 3786 using the term *rosacea* alone. It is possible that the nuance involved in appreciating erythema or other clinical manifestations of rosacea in SOC patients has led to underdiagnosis. Alternatively, these patients may be unaware that their symptoms represent a disease process and do not seek treatment. Many patients with darker skin will have endured rosacea for months or even years because the disease has been unrecognized or misdiagnosed.<sup>6-8</sup> Another factor possibly accounting for the perception that rosacea occurs infrequently in patients with SOC is misdiagnosis of rosacea as other diseases that are known to occur more commonly in the SOC population. Dermatologists should be aware that rosacea can affect SOC patients and that there are several rosacea mimickers to be considered and excluded when making the rosacea diagnosis in this patient population. To promote accurate and timely diagnosis of rosacea, we review several possible rosacea mimickers in SOC patients and highlight the distinguishing features.

## Epidemiology

In 2018, a meta-analysis of published studies on rosacea estimated the global prevalence in all adults to be 5.46%.<sup>9</sup> A multicenter study across 6 cities in Colombia identified 291 outpatients with rosacea; of them, 12.4% had either Fitzpatrick skin types IV or V.<sup>10</sup> A study of 2743 Angolan adults with Fitzpatrick skin types V and VI reported that only 0.4% of patients had a diagnosis of rosacea.<sup>11</sup> A Saudi study of 50 dark-skinned female patients with rosacea revealed 40% (20/50), 18% (9/50), and

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42% (21/50) were Fitzpatrick skin types IV, V, and VI, respectively.<sup>12</sup> The prevalence of rosacea in SOC patients in the United States is less defined. Data from the US National Ambulatory Medical Care Survey (1993–2010) of 31.5 million rosacea visits showed that 2% of rosacea patients were black, 2.3% were Asian or Pacific Islander, and 3.9% were Hispanic or Latino.<sup>8</sup>

### Clinical Features

Each of the 4 major rosacea subtypes can present in the SOC population. The granulomatous variant has been predominantly reported in black patients.<sup>13</sup> This predilection has been attributed to either an increased susceptibility in black patients to develop this variant or a delay in diagnosis of earlier phases of inflammatory rosacea.<sup>7</sup>

In a Saudi study (N=50), severe erythematotelangiectatic rosacea was diagnosed in 42% (21/50) of patients, with the majority having Fitzpatrick skin type IV. The severe papulopustular subtype was seen in 14% (7/50) of patients, with 20% (10/50) and 14% (7/50) having Fitzpatrick skin types IV and VI, respectively.<sup>12</sup> In a Tunisian study (N=244), erythematotelangiectatic rosacea was seen in 12% of patients, papulopustular rosacea in 69%, phymatous rosacea in 4%, and ocular rosacea in 16%. Less frequently, the granulomatous variant was seen in 3% of patients, and steroid rosacea was noted in 12% patients.<sup>14</sup>

Recognizing the signs of rosacea may be a challenge, particularly erythema and telangiectasia. Tips for making an accurate diagnosis include use of adequate lighting, blanching of the skin (Figure 1), photography of the affected area against a dark blue background, and dermatoscopic examination.<sup>3</sup> Furthermore, a thorough medical history, especially when evaluating the presence of facial erythema and identifying triggers, may help reach the correct diagnosis. Careful examination of the distribution of papules and pustules as well as the morphology and color of the papules in SOC patients also may provide diagnostic clues.

### Differential Diagnosis and Distinguishing Features

Several disorders are included in the differential diagnosis of rosacea and may confound a correct rosacea diagnosis, including systemic lupus erythematosus (SLE), seborrheic dermatitis, dermatomyositis, acne vulgaris, sarcoidosis, and steroid dermatitis. Many of these disorders also occur more commonly in patients with SOC; therefore, it is important to clearly distinguish these entities from rosacea in this population.

**Systemic Lupus Erythematosus**—Systemic lupus erythematosus is an autoimmune disease that commonly presents with erythema as well as erythematous inflammatory facial lesions similar to rosacea. The classic clinical appearance of SLE is the butterfly or malar rash, an erythematous macular eruption on the malar region of the face that also may involve the nose. This rash can appear similar to rosacea; however, the malar rash classically



**FIGURE 1.** Diascopy revealed telangiectasia associated with rosacea on the central face of a woman with Fitzpatrick skin type IV. Photograph courtesy of Jennifer David, DO (Philadelphia, Pennsylvania).

spares the nasolabial folds, while erythema of rosacea often involves this anatomic boundary. Although the facial erythema in both SLE and early stages of rosacea may be patchy and similar in presentation, the presence of papules and pustules rarely occurs in SLE and may help to differentiate SLE from certain variants of rosacea.<sup>15</sup>

Both SLE and rosacea may be exacerbated by sun exposure, and patients may report burning and stinging.<sup>16–18</sup> Performing a complete physical examination, performing a skin biopsy with hematoxylin and eosin and direct immunofluorescence, and checking serologies including antinuclear antibody (ANA) can assist in making the diagnosis. It is important to note that elevated ANA, albeit lower than what is typically seen in SLE, has been reported in rosacea patients.<sup>19</sup> If ANA is elevated, more specific SLE antibodies should be tested (eg, double-stranded DNA). Additionally, SLE can be differentiated on histology by a considerably lower CD4:CD8 ratio, fewer CD4<sup>+</sup>CD25<sup>+</sup> regulatory T cells, and more CD123<sup>+</sup> plasmacytoid dendritic cells compared to rosacea.<sup>20</sup>

**Seborrheic Dermatitis**—Seborrheic dermatitis is a frequent cause of facial erythema linked to the *Malassezia* yeast species in susceptible individuals. Seborrheic dermatitis has a notable prevalence in women of African descent and often is considered normal by these patients.<sup>21</sup> Rosacea and seborrheic dermatitis are relatively common dermatoses and therefore can present concurrently. In both diseases, facial erythema may be difficult to discern upon cursory inspection. Seborrheic dermatitis may be distinguished from rosacea by the clinical appearance

of erythematous patches and plaques involving the scalp, anterior and posterior hairlines, preauricular and postauricular areas, and medial eyebrows. Both seborrheic dermatitis and rosacea may involve the nasolabial folds, but the presence of scale in seborrheic dermatitis is a distinguishing feature. Scale may vary in appearance from thick, greasy, and yellowish to fine, thin, and whitish.<sup>22</sup> In contrast to rosacea, the erythematous lesions of seborrheic dermatitis often are annular in configuration. Furthermore, postinflammatory hypopigmentation and, to a lesser extent, postinflammatory hyperpigmentation are key clinical components of seborrheic dermatitis in SOC patients but are not as commonly observed in rosacea.

**Dermatomyositis**—Dermatomyositis is a systemic autoimmune disease characterized by progressive and symmetric proximal musculoskeletal weakness and cutaneous findings. Facial erythema in the malar and nasolabial folds can be seen in patients with dermatomyositis<sup>18</sup>; however, the facial erythema seen in dermatomyositis, known as heliotrope rash, has a violaceous dusky quality and also involves the periorbital region. The violaceous hue and periorbital involvement are distinguishing features from rosacea. Okiyama et al<sup>23</sup> described facial macular violaceous erythema with scale and edema in Japanese patients with dermatomyositis on the nasolabial folds, eyebrows, chin, cheeks, and ears; they also described mild atrophy with telangiectasia. Other clinical signs to help distinguish rosacea from dermatomyositis are the presence of edema of the face and extremities, Gottron papules, and poikiloderma. Dermatomyositis is a disease that affects all races; however, it is 4 times more common in black vs white patients,<sup>24</sup> making it even more important to be able to distinguish between these conditions.

**Acne Vulgaris**—Acne vulgaris, the most commonly diagnosed dermatosis in patients with SOC, is characterized by papules, pustules, cysts, nodules, open and closed comedones, and hyperpigmented macules on the face, chest, and back.<sup>25,26</sup> The absence of comedonal lesions and the presence of hyperpigmented macules distinguishes acne vulgaris from rosacea in this population.<sup>1</sup> In addition, the absence of telangiectasia and flushing are important distinguishing factors when making the diagnosis of acne vulgaris.

**Sarcoidosis**—Sarcoidosis is a multisystem inflammatory disease characterized histologically by the presence of noncaseating granulomas in sites such as the lungs, lymph nodes, eyes, nervous system, liver, spleen, heart, and skin.<sup>27</sup> Cutaneous sarcoidosis is known as a great mimicker of many other dermatoses, as it may present with multiple morphologic features. Cutaneous sarcoidosis most typically presents as papules, but nodules, plaques, lupus pernio, subcutaneous infiltrates, and infiltration of scars also have been identified.<sup>28</sup> Sarcoid papules typically are 1 to 5 mm in size on the face, neck, and periorbital skin<sup>29</sup>; they are initially orange or

yellow-brown in color, turn brownish red or violaceous, then involute to form faint macules.<sup>30</sup> Papular lesions may either resolve or evolve into plaques, particularly on the extremities, face, scalp, back, and buttocks. Additionally, there are a few case reports of patients with cutaneous sarcoidosis presenting with large bulbous nasal masses initially thought to be rhinophyma.<sup>31-33</sup> Finally, it may be difficult to distinguish sarcoidosis from granulomatous rosacea, which is characterized by firm yellow, brown, violaceous, red, or flesh-colored monomorphic papules or nodules affecting the perioral, periorcular, medial, and/or lateral areas of the face (Figure 2).<sup>4,34</sup> Patients also can have unilateral disease.<sup>35</sup> Patients with granulomatous rosacea lack flushing and erythema as seen in more characteristic presentations of rosacea. They may report pain, pruritus, or burning, or they may be asymptomatic.<sup>36</sup> Features that distinguish granulomatous rosacea from sarcoidosis include the absence of nodules, plaques, lupus pernio, subcutaneous infiltrates, and infiltration of scars. Clinical, histological, and radiographic evaluation are necessary to make the diagnosis of sarcoidosis over rosacea.

**Steroid Dermatitis**—Steroid dermatitis involving the face may mimic rosacea. It is caused by the application of a potent corticosteroid to the facial skin for a prolonged period of time. In a report from a teaching hospital in Baghdad, the duration of application was 0.25 to 10 years on average.<sup>37</sup> Reported characteristics of steroid dermatitis included facial erythema, telangiectasia, papules, pustules, and warmth to the touch. Distinguishing features from rosacea may be the presence of steroid dermatitis on the entire face, whereas rosacea tends to occur on the center of the face. Diagnosis of steroid dermatitis is made based on a history of chronic topical steroid use with rebound flares upon discontinuation of steroid.



**FIGURE 2.** Granulomatous rosacea in a woman with Fitzpatrick skin type VI. Photograph courtesy of Susan C. Taylor, MD (Philadelphia, Pennsylvania).



## Final Thoughts

Rosacea has features common to many other facial dermatoses, making the diagnosis challenging, particularly in patients with SOC. This difficulty in diagnosis may contribute to an underestimation of the prevalence of this disease in SOC patients. An understanding of rosacea, its nuances in clinical appearance, and its mimickers in SOC patients is important in making an accurate diagnosis.

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