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Commentary

The color of skin

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Introduction

The idea for an issue on color and the skin was initiated by the 2017 exhibit "Breathing Color" at the new Design Museum in London, England. Although variations in color may play a significant role in diagnosing a skin disease, little attention has been directed toward the influence that color may have in identifying a dermatologic disease and even monitoring a therapeutic agent. The reader need only recall how early dermatology atlases were hand colored to provide a more realistic picture of a disease.[1]

Color continues to be an integral part of the diagnostic and therapeutic processes. Like identifying the sex of the patient, it helps to focus the clinician on narrowing the differential diagnosis.[2] As important as color should be, we have found specific attention to color in just two textbooks.[3,4]

An aspect to which little attention has been paid is how the clinician recognizes color. Even if one were to recall the primary colors from grammar school, the definitions change from culture to culture.[5–7] Another complication may involve color blindness. If a clinician is color blind, as in the case of J. Graham Smith, Jr (1928-2010), the founding editor of the *Journal of the American Academy of Dermatology,* how does he or she compensate?[8]

We have provided introductory sections on the concept of light, the physiology of melanin, the differences due to ethnicities, and the psychiatric aspects concerned with skin color. Two distinguished skin biologists, both from Brown University, Walter Quervado (1930-2010)[9] and William Montagna (1947-2013), have published pioneering work on pigmentation.[10,11] There is also an extensive literature on how racial differences are perceived by the clinician.[12] As unbiased as one may be, words of color often convey a variety of meaning, some intended and some not.[13,14]

Background

The issue begins with a background into how color is perceived, with Grzybowski and Kupidura-Majewski pointing out that the human eye recognizes visible light that represents a small portion of the electromagnetic spectrum. There are three concepts for the perception of color: the trichromatic color theory, the opponent process theory, and the zone theory.[15]

M. Lambert and her group have provided a superb analysis of the current status of melanocyte production and how eumelanin creates color in people. This has been a lifelong work, as shown in Figure 1 of her early associates at the Massachusetts General Hospital in Boston, Massachussetts.[16]

Skin color often is used to define patients and to provide information about their ethnic background. Such information may be significant in arriving at an appropriate diagnosis of the cutaneous affliction, as Jothishankar and Stein have shown.[17]

V. Gupta and Sharma have put into perspective the role of the Fitzpatrick scale, first introduced by Thomas Fitzpatrick

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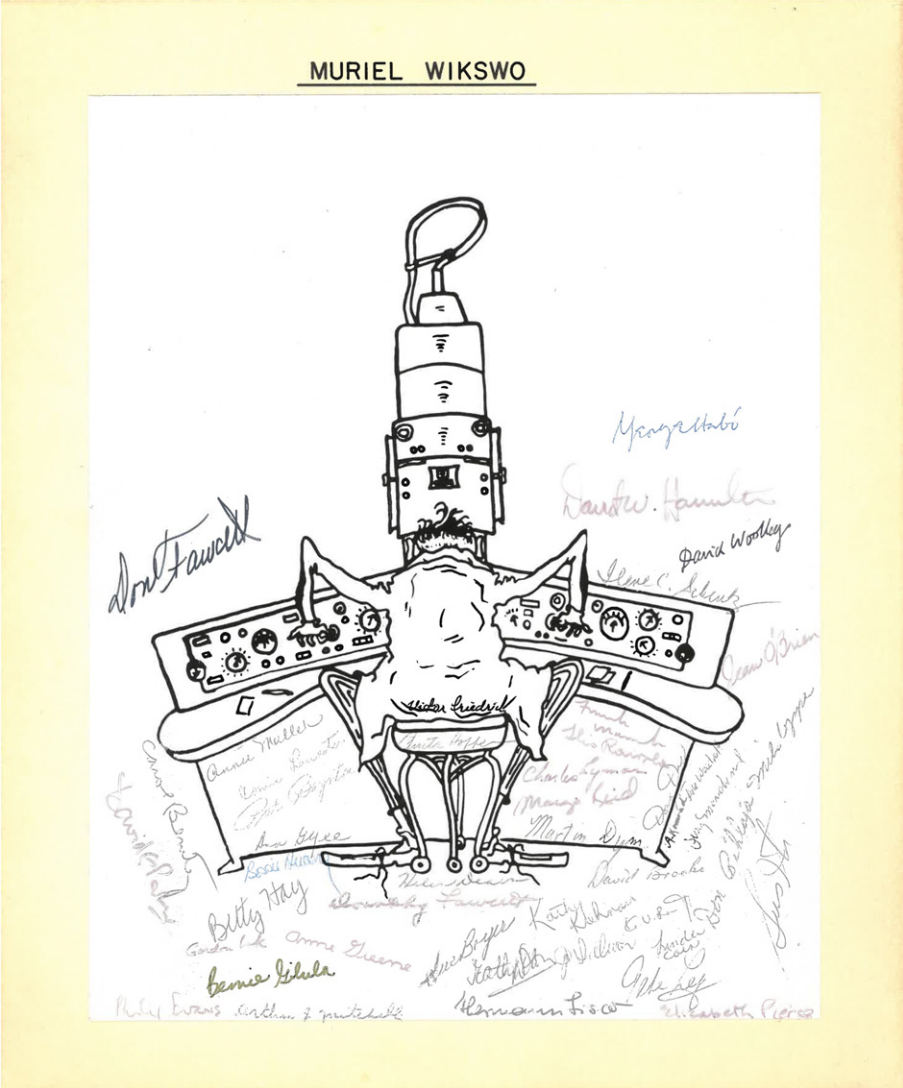

Figure 1 Members of the Research Group at the Masschusetts General Hospital, Boston, MA.

(1919-2004) in 1975, in estimating the response of skin to sun exposure. Although there may be other scales, the one by Fitzpatrick remains the gold standard.[18]

M. and A. Gupta say it all when they write, "Skin color is one of the major attributes that defines both individual distinctiveness and differences between groups." They discuss the psychologic and psychiatric aspects of color changes of the skin, whether iatrogenic or pathogenic.[19]

Various colors

The next section of the issue elaborates on color changes to the skin due to cutaneous and systemic diseases. We have arbitrarily selected ten colors for discussion of various dermatologic entities. The three primary colors are red, yellow, and blue, which, when mixed, can provide a number of additional colors, although the concept of what colors are primary has changed over time.[5–7]

Black diseases of the skin, nails, and mucosa are discussed by Qui et al. They have included such diseases as acanthosis nigricans and calciphylaxis that might not often be considered in this group.[20]

The presentation of blue conditions also provides some surprises. P. Cohen enumerates on diseases from the well-known argyria to blueness created by ingesting FD&C blue dye no. 1.[21]

The Kutlubay group have found a myriad of diseases that can appear brown. These range from Schamberg disease (progressive pigmented purpura) to Riehl melanosis and poikiloderma of Civatte.[22]

Lichen planus pigmentosus and erythema dyschromicum perstans are just some of the cutaneous maladies that may appear to be gray. Abdel-Naser also discusses hereditary conditions, including incontinentia pigmenti and hypomelanosis of

Ito, along with the "gray baby syndrome" caused by chloramphenicol.[23]

Ghosh and Bandyopadhyay provide an exhaustive list of those skin diseases that can appear to be green. These include the well-known pseudomonas nail infection as well as the greenish discoloration of the hands and feet that once occurred due to prescriptions that contained brilliant green.[24]

Sarcoidosis and pityriasis rubra pilaris may present with orange coloration. Soundararajan et al also point out that Fox-Fordyce spots and sebaceous adenomas can have orange appearances.[25]

Steuer and Cohen observe that purplish discoloration can range from the pigmented purpuric dermatoses to various vasculides. Cryoglobulinemia and eosinophilic granulomatosis with polyangiitis (Churg-Strauss syndrome) may also have a purplish presentation.[26]

Red diseases might represent the most common color of skin conditions. The presentations of atopic dermatitis, contact dermatitis, and seborrheic dermatitis are often all red. Rosacea, by definition, has redness, as do cherry angiomas, as Elias et al point out.[27]

Brown and her group have included such white diseases as albinism and its associated syndromes, along with the more common halo nevus of Sutton and the less common malignant atrophic papulosis (Degos disease). They also remind us of the atrophic scar that can be induced by intralesional steroids.[28]

The Logans have provided a detailed account of yellow diseases. They enumerate the pathways for this discoloration to occur: skin surface changes, lipid accumulation, structural changes, and circulatory hyperpigmentation.[29]

Conclusions

We hope that you, the reader, will find this issue of *Clinics in Dermatology* as informative as we have in preparing it.

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