Patch Testing in Skin of Color
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Who do we patch test…compared to our population?

- DeKoven et al. (2021): study by the North American Contact Dermatitis Group (14 centers in North America) tested 4,947 patients between March 1st 2017 - December 31st 2018

- Compared to the general population:
  - Asian: 8.6% patch tested vs 4.8% population
  - Black: 4.9% patch tested vs 12.6% population
  - Latinx: 2.0% patch tested vs 16.4% population

- Allergic Contact Dermatitis (ACD) is estimated to affect up to 20% of the general population, with contact dermatitis (allergic/irritant) being the 5th most prevalent skin disease in the United States in a Burden of Skin Disease Study (2013)

- Annual estimated cost of $1.5 billion with $699 million in indirect costs for contact dermatitis patients

- Patients suffering from dermatitis have a lower quality of life compared to non-dermatitis patients. Negative effects have been found regarding psychological, social, and professional life

- Jacob et al. (2017) has found that Black children experience ACD 1.2 years longer than Whites, indicating there is a need for more patch testing and literature presentation in minority populations
**Why is this important?**

- ACD presumably effects all people equally, but studies in the literature have predominantly been in White patients
  - This may be due to under recognition of ACD in patients of color, lack of access to patch testing, or lack of patient diversity in referral centers reporting data
- By 2060, it is estimated that over half of the United States population will consist of non-White racial groups
  - Only three previous US publications exist reporting patch testing data in Black patients and none that examine these results in Asian, Black, and Latinx populations
  - Critical to:
    1) Review our current understanding of allergen trends in minority groups
    2) Publish more data on the prevalence of ACD and allergen trends in patients

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**Patch Testing Data in Blacks**

1. **DeLeo et al. (2016):** large study from the North American Contact Dermatitis Group reviewing 19,457 patients from 13 different centers in North America patch tested between 1998 - 2006 (92.9% White, 7.1% Black)
   - Blacks had **significantly** more positive reactions to \( p \)-phenylenediamine, bacitracin, mercaptobenzothiazole, thiuram, and mercapto mix
   - Whites had **significantly** more positive reactions to fragrances and formaldehyde
   - * These patients had a high suspicion of ACD at baseline!

2. **Dickel et al. (2001):** compared patch test results between 877 White patients and 114 Black patients
   - (a) **No overall difference** found in positive reactions between Whites and Blacks
   - (b) Significance noted in the sensitization rates for \( p \)-phenylenediamine and imidazolidinyl urea in Black men compared to White men

3. **DeLeo et al. (2002):** patch testing results in 8,610 patients by members of the North American Contact Dermatitis Group between 1992 and 1998
   - (a) **No overall difference** found between Black and White patients, with a distribution comparable to the general population breakdown
   - (b) Similar to Dickel et al, Black patients had higher rates of sensitization to \( p \)-phenylenediamine, cobalt chloride, thioureas, and \( p \)-tert-butylphenol formaldehyde resin
   - * The higher sensitization rates may reflect variations in exposure between racial groups!

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**Patch Testing Data in Asians**

* Only international studies exist

1. **Boochai et al. (2014):** large retrospective analysis in Thailand with 852 patients
   - (a) Most frequent allergens were gold sodium thiosulfate (30.7%), nickel sulfate (27.6%), potassium dichromate (20.8%), fragrance mix I (18.3%), and cobalt chloride (16.0%)
   - * High positivity rate of gold proposed to be due to high exposures in Thai culture (babies wear gold bangles, most jewelry is gold plated, etc.)

2. **Ni et al. (2011):** study in China with 366 patients patch tested between 1989 and 2009
   - (a) Most frequent allergen was \( p \)-phenylenediamine (22.7%) and nickel sulfate second most common (21.9%)
   - * These patients had a diagnosis of hand eczema and rates of \( p \)-phenylenediamine were commonly seen in hairdressers

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**Patch Testing Data in Latinx**

* Only international studies exist

1. **Collazo et al. (2008):** analysis out of Puerto Rico with 59 patients patch tested between 2001 and 2005
   - (a) Most common allergens were Carba mix, nickel sulfate, thiuram mix, \( p \)-tert butylphenol formaldehyde resin, paraphenylenediamine, and neomycin
Where do we go from here?

- Important to review patch testing results available in skin of color patients to help guide clinical management for these patients
  - Lack of studies with a growing minority population demonstrates the great need for more understanding of these results in diverse racial groups and comparing rates of positivity for certain allergens to Whites
  - In particular, a lack of data on Asian and Latinx patients in the United States results in relying on international sources, which can pose differences due to various cultural practices or climate differences that can affect results

- Consider & Address Barriers:
  (a) Difficulty being referred to patch testing or utilizing the healthcare system due to language or cultural barriers
  (b) Low rates of medical insurance coverage
  (c) Limited knowledge of health services
  (d) Difficulty in patch test assessment
    Ex. Dermatitis in Blacks appears more lichenified and hyperpigmented, which can be missed if the index for clinical suspicion is not high
    Ex. Lack of obvious erythema and an early papular response at the site of a positive patch test makes interpretation more difficult and requires viewing from different light angles, which can pose a challenge to Dermatologists in assessing a positive reaction

- Refer patients with suspected dermatitis for patch testing and provide education in clinical settings along with resources

- The more we can look at diverse data and publish it in the literature, the more we can understand patch testing results in minority groups and become more inclusive with our clinical management!

Thank you!

Please feel free to ask any questions!