

Duration of Contact Dermatitis Prior to Patch Test Appointment is Associated with Distance to Clinic and County Poverty Rate



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Introduction

- Contact dermatitis is associated with a significant impairment in quality of life¹⁻⁵
- Several socioeconomic factors have been linked to allergic contact dermatitis, including race, ethnicity, age, sex, rural-urban status and occupation⁵⁻⁹
- The influence of travel distance, insurance status, and other socioeconomic factors on the management of and outcomes for allergic contact dermatitis is not well described

Methods

Study Design and Data

- Retrospective study of patients who underwent patch testing 3/1/2012 – 8/1/2018
- Inclusion criteria: ZIP code in North Carolina, Georgia, South Carolina, Tennessee, Virginia
- Exclusion criteria: missing variables, no dermatitis, repeat patch testing
- Data were obtained from Duke Enterprise Data Unified Content Explorer (DEDUCE),¹⁰ Clarity, and chart review

Variables

- Sex, race, ethnicity, age, payor group, ZIP code & county of residence, duration of dermatitis, county poverty rate, rural-urban status

Statistical Analysis

- Continuous variables: mean, standard deviation, median, 25th and 75th percentiles, range, as appropriate
- Categorical variables: frequency counts and percentages. Kruskal-Wallis test was utilized for comparison of dermatitis duration across groups
- Generalized linear model with lognormal distribution was fit to study the association between duration of dermatitis and distance to clinic
- A p-value < 0.05 was considered statistically significant. Statistical analyses were performed using SAS version 9.4 (SAS institute Inc., Cary, NC).

Results

- 1552 patients completed patch testing 3/1/2012-8/1/2018
- 1131 patients (72.9%) were included in the analysis
- Mean age was 50.6 ± 17.7 years, with 818 female (72.3%) and 313 male (27.7%) patients
- Median duration of dermatitis prior to presentation was 14 months (Q1 = 7 months, Q3 = 36 months)
- Median distance to clinic was 18 miles (Q1 = 7 miles, Q3 = 45.9 miles) (**Table 1**)
- Ninety percent of patients traveled less than 90 miles to reach the clinic; the remaining 10% traveled between 90 and 560 miles (**Figure 1**)
- Univariable analysis of duration of dermatitis revealed that there was no statistical association with sex, insurance payor, county poverty rate, rural-urban status or race. Trends were noted for insurance payor, county poverty rate, rural-urban status and race (**Table 2**)
- In a generalized linear model analysis, both distance to clinic and county poverty rate were statistically significantly associated with duration of dermatitis
- For each 50-mile increase in distance to clinic, median duration of dermatitis increased by 17.9% (95% CI: [7.4%, 29.4%], p < 0.001)
- For every 5% increase in county poverty rate, median duration of dermatitis increased by 16.3% (95% CI: [1.3%, 33.6%], p = 0.032)

Table 1: Demographics

| | |
|---------------------------------|--------------|
| Age at Encounter (years) | |
| Mean (SD) | 50.6 (17.7) |
| Patient Sex | |
| Female | 818 (72.3%) |
| Male | 313 (27.7%) |
| Race | |
| White or Caucasian | 847 (74.9%) |
| Black or African American | 176 (15.6%) |
| Asian | 63 (5.6%) |
| Other | 45 (3.9%) |
| Ethnicity | |
| Not Hispanic/Latino | 1058 (98.1%) |
| Hispanic/Latino | 21 (1.9%) |
| Unknown | 52 (.%) |
| Distance in Miles | |
| Median | 18.0 |
| Q1, Q3 | 7.0, 45.9 |
| Range | (0.4-559.3) |
| State | |
| North Carolina | 1067 (94.3%) |
| Virginia | 41 (3.6%) |
| South Carolina | 20 (1.8%) |
| Tennessee | 2 (0.2%) |
| Georgia | 1 (0.1%) |

Figure 1: Study Population Map.

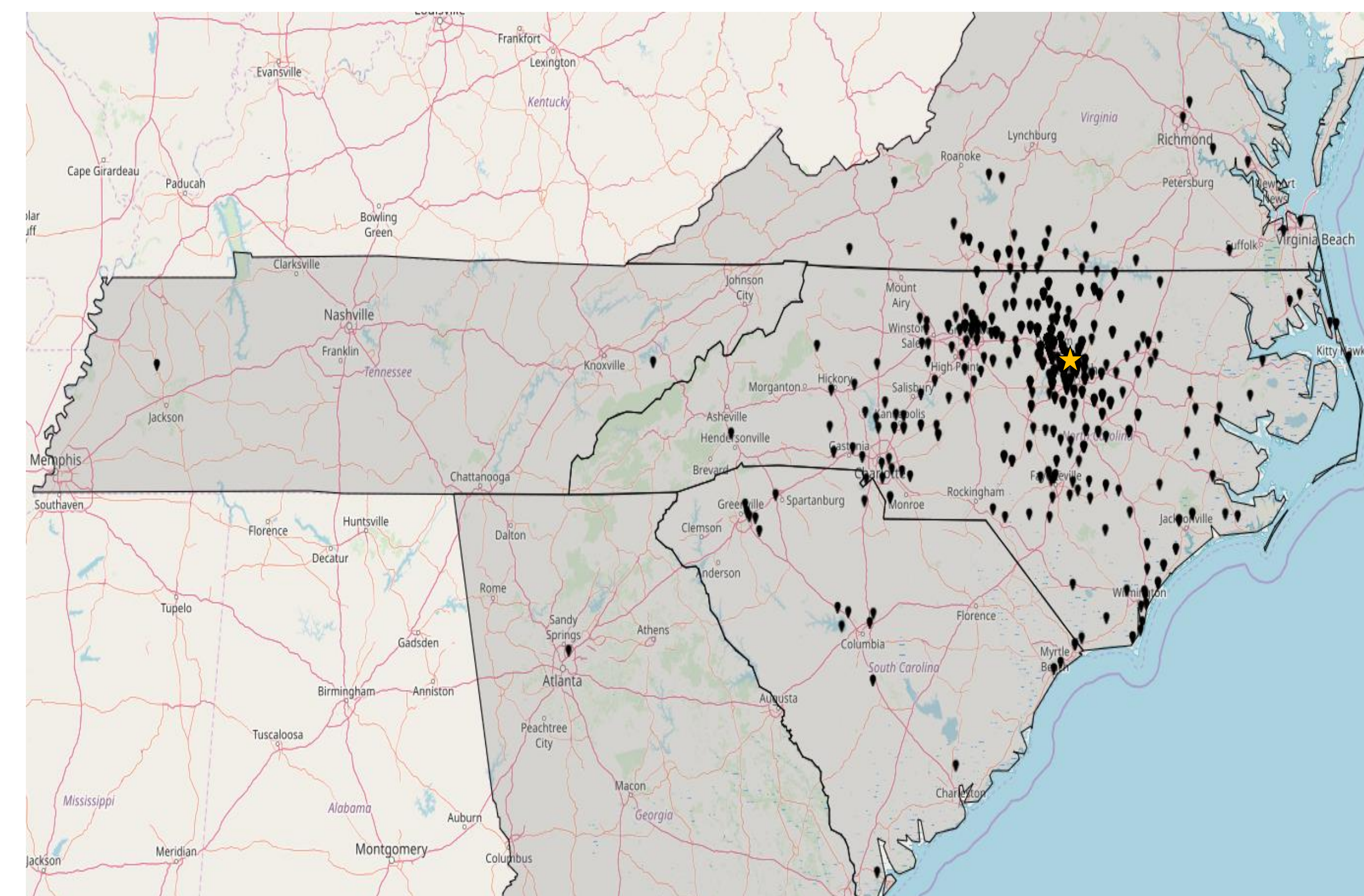


Table 2: Univariable Analysis of Duration of Dermatitis in Months

| | Study Population Total n = 1131 | Sex | | Race | | | | Insurance Payor | | | | County Poverty > 20% | | Metropolitan Area (Urban-Rural Status) | |
|--------|---------------------------------------|-------------------|-----------------|-------------------------------|--------------------------------------|-----------------|-----------------|-----------------------|--------------------|---------------------|------------------------|----------------------|---------------|--|----------------|
| | | Female n = 818 | Male n = 313 | White or Caucasian n = 847 | Black or African American n = 176 | Asian n = 63 | Other n = 45 | Commercial n = 907 | Medicaid n = 42 | Medicare n = 141 | VA & Tricare n = 41 | No n = 1102 | Yes n = 29 | No n = 147 | Yes n = 984 |
| Median | 14 | 14 | 13 | 13 | 16.5 | 12 | 15 | 14 | 18.5 | 12 | 24 | 13 | 24 | 18 | 13 |
| Q1, Q3 | 7, 36 | 6, 36 | 8, 38 | 7, 36 | 6, 60 | 6, 24 | 7, 60 | 7, 42 | 7, 36 | 6, 36 | 8, 48 | 7, 36 | 10, 36 | 8, 36 | 7, 40 |
| Range | 0 – 720 | 0 – 720 | 0.3 – 636 | 0 – 720 | 1 – 720 | 0.8 – 360 | 3-300 | 0 – 720 | 1 – 264 | 0.5 – 720 | 0.8 – 636 | 0 – 720 | 2 – 240 | 0.5 – 720 | 0 – 720 |
| | | p = 0.35 | | p = 0.27 | | | | p = 0.54 | | | | p = 0.21 | | p = 0.41 | |

Discussion

- Greater distance to clinic and county poverty rate > 20% were statistically significantly associated with longer duration of dermatitis prior to presentation
- Greater distance to clinic has been associated with more advanced skin cancer¹¹⁻¹³ and decreased phototherapy adherence¹⁴
- Poverty status has been associated a lesser likelihood for implanted cardiac device¹⁵ and decreased breast cancer survival¹⁶
- There was not a statistical association between age, sex, race, ethnicity, payor group, or rural-urban status on the duration of dermatitis
- There were non-statistically significant trends for longer duration of dermatitis prior to presentation based on payor group (VA & Tricare, Medicaid), rural-urban status (rural), and race (Black). These trends should be investigated further

Conclusions

- There was a significant relationship between duration of dermatitis and both distance to the contact dermatitis clinic & county poverty rates
- Further work is needed to explore these very important relationships between patient access to comprehensive contact dermatitis and patch testing care and demographic and socioeconomic factors

Abstract & References

