Tinea Capitis: Are Epidemiologic Shifts Associated With Distinct Clinical Presentations?

Sigrid Collier, MD; Cuong V Nguyen, MD; Ashley Merten, MD; Sheilagh M Maguiness, MD; Kristen P Hook, MD

Department of Dermatology, University of Minnesota, Minneapolis, MN

Introduction

- Tinea is an infection of the hair on the scalp caused by dermatophytic fungi.
- The geographic distribution of individual organisms has changed significantly over time.1-3
- In the late 19th and early 20th century, in Europe, Trichophyton and Microsporum were predominated, both of which are anthropophilic organisms, being passed from human to human.1
- This has followed by an era of zoophilic organisms, those passed from animals to humans, such as M. canis and T. mentagrophytes.1
- In the United States, T. tonsurans, an anthropophilic organism, is now the most common cause of tinea capitis.2
- It has been noted that while M. canis continues to be the predominant organism in Western Europe there has been increased prevalence of T. tonsurans and T. violaceum in the last 25-30 years.2-3
- The epidemiological and biological underpinnings for these changes over time are complex and the importance of environmental factors, genetic predisposition, and movement of populations has been broadly debated.1

Methods

- Retrospective electronic chart review at the University of Minnesota, Department of Dermatology and division of Pediatric Dermatology.
- Children under 18 years of age with diagnosis of tinea capitis identified between the years 2010-2015.
- Patients with negative cultures or only grew species that are considered non-pathogenic were excluded from the analysis.
- Significance was determined by the Fisher’s exact test.
- Inflammatory tinea capitis was defined as the presence of pustules, bogginess, or lymphadenopathy.

Results

- 7. T. tonsurans was significantly more likely than T. violaceum to exhibit an inflammatory pattern (p < .02, p-value of 0.0001).
- When tested for an association between the tinea species and each feature individually, i.e. presence of pustules, bogginess, or lymphadenopathy, there was no clinical significance.
- In the 18 (42%) patients that were infected with either T. violaceum or T. tonsurans, all were of African ethnicity.
- In contrast, T. violaceum was identified in a minority of African patients (22%), revealing a statistically significant difference between ethnicity and infectious species (p-value <0.0001).
- There was no significant difference in successful treatment regimen for T. tonsurans vs T. violaceum.

Discussion

- This study corroborates the clinical experience at our institution that tinea capitis caused by T. violaceum is less inflammatory than tinea capitis caused by T. tonsurans, which is less inflammatory than zoophilic species.
- We found significant association in the degree of inflammatory response even between these two anthropophilic species.
- Clinicians in the United States are more familiar with the more inflammatory clinical presentation of tinea capitis associated with T. tonsurans, as this is the predominant species in the United States (Figure 2).
- Tinea capitis associated with T. violaceum can be extremely subtle and the clinical presentation can even mimic non-dermatologic dermatitis (Figure 1).
- In our study, T. violaceum infections were more commonly seen among people of African ethnicity, and lack of awareness of the distinct clinical presentation associated with T. violaceum likely leads to incorrect diagnosis and inadequate treatment of tinea capitis in this patient population.
- According to census data between 2000 and 2015, more than 20,000 East Africans with refugee status resettled in Minnesota.6,7
- As new populations successfully integrate into communities the predominant anthropophilic species of tinea capitis and associated clinical presentations may change.
- Studying epidemiologic changes in tinea capitis can help us understand how geographic changes interact with clinical disease presentations as our population make up evolves, allowing us to provide crucial quality health care to all.

References