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Epidemiologic Aspects of Alopecia Areata in Nangarhar Province, Afghanistan: A Retrospective Study (2023-2024)

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Abstract

Alopecia areata is a common, chronic, inflammatory disease causing non-scarring hair loss. This autoimmune disorder, mediated by T-cells, arises from inadequate major histocompatibility complex (MHC-I) molecule expression on hair follicle surfaces due to genetic defects, triggering antibody production. Hair follicles typically retain reactivation capacity, with most cases improving within a year. Clinically, smooth, shiny, circular patches of hair loss appear, often with broken hairs at the edges. Although etiology remains unclear, genetic predisposition, immune dysfunction, and environmental factors are implicated. This retrospective cross-sectional study at Nangarhar University Teaching Hospital analyzed 22,650 dermatology patients (2023–2024). Among 241(1.1%) alopecia cases, 81 had alopecia areata. Most (92.6%) exhibited mild (patchy) forms, 72.8% were male, and the majority (87.6%) were aged 1–30 years. Rural residents constituted 64.2%. Comparisons with global studies showed similar demographics, though no cases under one year were observed, contrasting with Saudi Arabian reports. Findings highlight a male predominance, mild clinical presentations, and middle-aged rural residents as the most affected.

Keywords: Alopecia Areata, Epidemiologic aspects, Nangarhar University Teaching Hospital

Introduction

Hair is an external part of the human body that plays a supportive role in the physiology of the skin and significantly contributes to the beauty of the human form. Alopecia areata is a disease that can cause the hair to fall out partially or completely from the body (Korta et al., 2018; Mostaghimi et al., 2023). Alopecia areata is a common, chronic, inflammatory disease that causes non-scarring hair loss. The disease is an autoimmune disorder mediated by T-cells, where, due to a genetic defect, hair follicles are unable to adequately express MHC-1 molecules on their surfaces. This leads the immune system to produce antibodies against the follicles, causing the disease (Chanprapaph et al., 2021; Colón et al., 1991). Hair follicles generally retain the ability to reactivate, and in most cases improve within a year. Clinically, areas of hair loss appear often circular, with the skin in these areas being smooth and shiny and broken hairs may be seen at the edges. This hair loss can be temporary or permanent (Lee et al., 2020).

The exact causes of the disease are still not fully understood, but a combination of genetic predisposition, immune system disorders, and possibly environmental factors are considered. The disease may lead the affected individuals to have

psychological and social issues, pushing them toward social isolation (McKenzie et al., 2022; Tosti et al., 1994).

Alopecia areata, from a clinical perspective, has three types. The first type is patchy alopecia, which presents as round and localized areas where hair has been lost, primarily affecting the scalp, but it can also appear in eyebrows, eyelashes, and beard areas. This type should be differentially diagnosed from tinea capitis in children. In fungal cases, localized, circular patches similar to alopecia areata may also develop, but signs of inflammation such as scaling and papules may be observed. A KOH test can be performed for accurate diagnosis. The second type is alopecia totalis, where all hair on the scalp is lost, and the prognosis is generally poor (Mostaghimi et al., 2023). The third type is alopecia universalis, in which all body hair is lost. In 10% of cases, patients completely recover (Aranishi et al., 2023). This study aims to clarify whether there are cases of this condition among dermatology patients who have visited the Nangarhar University Teaching Hospital, as well as to identify which demographic groups are most affected by this disease.

Methods and materials

This is a retrospective cross-sectional observational study conducted at the Department of Dermatology, Nangarhar University Teaching Hospital, which serves as the primary referral center for dermatology patients in Nangarhar province. The study's sample population included all patients who attended the hospital's department of dermatology between 2023 and 2024. Sampling was done using the non-probability convenience technique, all patients with alopecia areata serving as samples, other types of alopecia excluded. We used the hospital's formal register book for this purpose.

Statistical Analysis: Data from the study were entered into an Excel spreadsheet and analyzed using SPSS software version. Descriptive statistics, including frequencies and percentages, were used to summarize the demographic characteristics of the patients and the clinical features of alopecia areata. To assess associations between variables such as age, gender, and clinical form of alopecia areata, appropriate statistical test chi-square tests were employed. A p-value of <0.05 was considered statistically significant. Data analysis was conducted with the aim of identifying patterns and trends in the epidemiologic aspects of alopecia areata in the study population.

Results

The dermatology department of Nangarhar University Teaching Hospital saw a total of 22,650 patients between 2022 and 2023. Of them, 241 people (1.1% of the population) had various kinds of alopecia. Because the epidemiologic aspects of alopecia areata are the major focus of our research, we employed pre-designed questionnaires to collect and analyze data. A total of 81 people were diagnosed with alopecia areata, with the majority of them having patchy baldness (Table 1).

Table 1: Describe distribution of clinical types of the Disease

Type of Alopecia Areata	Number	%
Patchy Alopecia	75	92.6%
Alopecia Totalis	4	4.9%
Alopecia Universalis	2	2.5%

In the perspective of age, it can be seen that disease can affect individuals of any age. In this data, individuals under one year old who were affected by alopecia areata are not observed, and among those over fifty years of age, only one person was affected by the disease (Table 2).

Table 2: Describe the distribution of the disease according to age

Number of the Patients	**Age Group**
0	**Under 1 year old**
34	**1-10 years old**
37	**11-30 years old**
9	**30-50 years old**
1	**Above 50 years old**

The study found that patients suffering from alopecia areata predominantly reside in rural areas, while fewer urban residents were affected in comparison (Table 3).

Table 3: Distribution of the Disease According to Area of Residency

Area of Residency	Number of the Patients	Percentage
Urban	**29**	**35.8%**
Rural	**52**	**64.2%**

From a gender perspective, the majority of the patients were male, accounting for 59 (72.8%) of the cases.

Discussion

The findings of this study reveal several important epidemiological characteristics of alopecia areata in Nangarhar, Afghanistan. Consistent with previous studies, the majority of patients were young, with 87.6% of cases occurring in individuals aged 1–30 years. This aligns with the findings from a study conducted in India, where 61% of patients with alopecia areata were in the same age range (Sehgal et al., 2007). Similarly, our study observed a male predominance, with 72.8% of patients being male, which is consistent with global studies, including those from Iran, where 57% of alopecia areata patients were male (Farajzadeh et al., 2013). However, in contrast to studies in Saudi Arabia, which reported cases of alopecia areata in infants under one year of age (Alshahrani et al., 2020), our study did not identify any cases in this age group. This difference could be due to regional genetic factors, variations in healthcare access, or differences in study design.

In terms of clinical presentation, our findings show that 92.6% of cases were of the patchy form of alopecia areata, a result similar to studies from the United States, where the majority of cases also exhibited a mild form of the disease (Benigno et al., 2020). However, the proportion of alopecia totalis and universalis in our study was lower, with only 7.4% of patients exhibiting these severe forms. This may reflect regional differences in the progression of the disease or the

availability of medical treatments. The study also found a higher prevalence of alopecia areata in rural areas (64.2%), which could be attributed to factors such as environmental exposures, limited access to healthcare, or genetic predispositions in these populations.

While our findings are generally consistent with global patterns of alopecia areata, they also highlight some regional differences that warrant further investigation. These variations could be influenced by genetic, environmental, and healthcare-related factors, and additional studies across different regions of Afghanistan and neighboring countries would be valuable to gain a deeper understanding of the epidemiology of alopecia areata in this part of the world.

The current study has some limitations that should be acknowledged. Firstly, it was conducted at a single institution, Nangarhar University Teaching Hospital, which limits the generalizability of the findings to other regions in Afghanistan or different healthcare settings. The study's retrospective design is another limitation, as it relies on the accuracy and completeness of existing medical records, which could result in missing data or misclassification of cases. Additionally, the study did not include information on the potential environmental or genetic factors that may influence the development of alopecia areata, which could provide deeper insights into its etiology. Another limitation is the lack of long-term follow-up with patients, which means we could not assess the progression or long-term outcomes of the disease. Future research should address these limitations by including a larger, multi-center sample across different regions of Afghanistan, prospectively collecting data, and considering the role of genetic and environmental factors. Longitudinal studies with follow-up visits would also help in understanding the progression of alopecia areata over time and the effectiveness of various treatments.

Conclusion

The findings of this study indicate that most patients were of middle age, with a higher prevalence observed in males. Many of them were residents of rural areas, and from a clinical perspective, the majority of cases presented as mild forms of the disease.

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Conflict of interest

There is no conflict of interest.

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