

# Lifetime Incidence Risk of Alopecia Areata Estimated at 2.1% by Rochester Epidemiology Project, 1990–2009

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## TO THE EDITOR

Alopecia areata (AA) is characterized by patchy, nonscarring, autoimmune-mediated hair loss, although many aspects of AA pathogenesis are unknown (Gilhar *et al.*, 2012). The scalp is most commonly involved in clinically treated AA, but any hair-bearing surface of the body may be affected (Wasserman *et al.*, 2007). Males and females of any age and hair color can have AA (Finner, 2011; Kyriakis *et al.*, 2009). According to the first National Health and Nutrition Examination Survey conducted in the early 1970s, AA is fairly common; it was estimated to affect about 2 of every 1,000 people in the United States (Safavi, 1992). Dermatologists encounter AA in 0.7–4.0% of their patient populations (Price, 1991; Sharma *et al.*, 1996; Tan *et al.*, 2002). A previous study reported by Mayo Clinic and National Institutes of Health (Safavi *et al.*, 1995) showed that the overall incidence of AA in Olmsted County, Minnesota, was 20.2 per 100,000 person-years from 1975 to 1989. A similar incidence rate for both sexes with a lifetime risk of 1.7% was observed.

The purpose of the current study was to continue the previous analysis and document the most current lifetime incidence risk of AA. Clinical data accessed via the Rochester Epidemiology Project (REP) provided a retrospective review of all patients resident in Olmsted County, Minnesota, that were newly diagnosed with AA from 1990 to 2009. Of 530 qualifying patients, the mean age at diagnosis was 33.6 years (median, 33 years; range, 0–90 years). Additional features for the study cohort are summarized in Table 1. The mean age at diagnosis of AA for males was 31.5 years (median, 31 years; range, 0.5–80 years);

for females, it was 36.2 years (median, 36.4 years; range, 1.8–90.7 years).

As shown in Table 2, the age- and sex-adjusted incidence of AA was 20.9 per 100,000 person-years (95% confidence interval (CI), 19.1–22.6). Cumulative AA incidence increased almost linearly with age (0.3%, 20 years; 0.6%, 30 years; 0.8%, 40 years; 1.1%, 50 years; 1.4%, 60 years), while cumulative lifetime incidence was 2.1%. Age-adjusted incidence was 21.3 per 100,000 person-years (95% CI, 18.8–23.9) for females and 20.2 per 100,000 person-years (95% CI, 17.7–22.6) for males (no significant difference,  $P=0.77$ ), supporting the observation that both females and males display similar susceptibility to AA.

At 2.1%, the cumulative lifetime incidence of AA from this recent 20-year period (1990–2009) was slightly higher than 1.7% observed in the older study (years 1975–1989) (Safavi *et al.*, 1995). Similarly, REP data analyzed in studies of other autoimmune-associated diseases have shown that incidence of rheumatoid arthritis (Myasoedova *et al.*, 2010) and systemic lupus erythematosus (Uramoto *et al.*, 1999) have also increased in the region in recent years. These data do not refute the hypothesis that autoimmune disease incidence may be rising, generally.

The current study also confirms that AA does not exhibit a gender bias (Muller and Winkelmann, 1963). Although some studies have reported AA to be slightly more common in females (Tan *et al.*, 2002; Goh *et al.*, 2006; Kyriakis *et al.*, 2009), such findings might be attributable to a greater cultural awareness of and sensitivity to hair loss among females that prompts them to seek medical attention. Interestingly, in Turkey, a higher male:female ratio (1.6:1) was reported for

patients with AA (Kavak *et al.*, 2008). The authors explained the likely artificial skew toward male patients in the context of religious practices and suggested that the headscarves worn by women may have allowed some to avoid seeking medical attention for hair loss. The predominantly white patient population in the current study is reflective of the geographic race distribution and is not a sign of racial differences in AA prevalence. In conclusion, we assessed the incidence of AA in Olmsted County, Minnesota, during a recent 20-year period (1990–2009), and found that the lifetime incidence risk was 2.1%.

This study was approved by the institutional review boards of Mayo Clinic and Olmsted Medical Center. The REP medical records system links information from all health care providers in Olmsted County, Minnesota. It includes medical records for all residents of the county, regardless of where care was received in the county. The relative geographic isolation of Olmsted County residents from other medical institutions provides a unique opportunity to conduct population-based analyses (St Sauver *et al.*, 2012).

The REP databank was used to identify Olmsted County residents with their first lifetime diagnosis of AA established from 1990 to 2009. Medical records of identified patients were reviewed and data were abstracted. Each diagnosis was validated by a physician and documented in the medical record.

Incidence rates per 100,000 person-years were calculated using incident cases of AA as the numerator and age- and sex-specific estimates of the county population as the denominator. The populations at risk for the years 1990–2000 were estimated using census data from 1990 to 2000, with linear interpolation for intercensal years. The populations at risk for the years 2001–2009 were obtained from US Intercensal

**Table 1. Patient characteristics (n = 530)**

Characteristic	Number of patients (%)
<i>Year of diagnosis (n = 530)</i>	
1990–1994	90 (17)
1995–1999	120 (23)
2000–2004	149 (28)
2005–2009	171 (32)
Female sex	271 (51)
<i>Diagnosis</i>	
Dermatologist	460 (87)
Nondermatologist physician	70 (13)
Biopsy confirmation <sup>1</sup>	73 (14)
<i>Race (n = 482)</i>	
White	423 (88)
Asian	30 (6)
Black	18 (4)
Hispanic or Latino	11 (2)

<sup>1</sup>All biopsy results were confirmed by dermatologists.

**Table 2. Incidence of alopecia areata in Olmsted County, Minnesota, 1990–2009, stratified by age and sex**

Age at diagnosis	Females		Males		Total	
	No. of patients	Rate <sup>1</sup>	No. of patients	Rate <sup>1</sup>	No. of patients	Rate <sup>1</sup>
0–9	27	14.9	32	16.7	59	15.8
10–19	33	19.4	26	14.6	59	17.0
20–29	49	27.1	58	32.9	107	29.9
30–39	45	23.1	73	37.2	118	30.1
40–49	52	27.1	36	19.2	88	23.2
50–59	35	25.4	24	18.1	59	21.8
≥60	30	14.3	10	6.4	40	10.9
Total	271	21.3 <sup>2</sup>	259	20.2 <sup>2</sup>	530	20.9 <sup>3</sup>

<sup>1</sup>Incidence rates per 100,000 person-years.

<sup>2</sup>Incidence rates per 100,000 person-years were age-adjusted to the 2000 US white population.

<sup>3</sup>Incidence rates per 100,000 person-years were age- and sex-adjusted to the 2000 US white population.

Estimates (United States Census Bureau). Because the population of Olmsted County is nearly all white, incidence rates were directly age- and sex-adjusted to the structure of the 2000 US white population. Incident cases were grouped on the basis of age at diagnosis (0–9, 10–19, 20–29, 30–39, 40–49, 50–59, and ≥60 years) and year of diagnosis (1990–1994, 1995–1999, 2000–2004, and 2005–2009). The relationships of age at diagnosis, sex, and year of diagnosis with

the incidence of AA were assessed by fitting Poisson regression models using the SAS procedure GENMOD (SAS Institute). *P*-values less than 0.05 were considered statistically significant.

#### CONFLICT OF INTEREST

The authors state no conflict of interest.

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**Sultan A. Mirzoyev<sup>1</sup>,  
Adam G. Schrum<sup>2</sup>, Mark D.P. Davis<sup>1</sup>  
and Rochelle R. Torgerson<sup>1</sup>**

<sup>1</sup>Division of Clinical Dermatology, Mayo Clinic, Rochester, Minnesota, USA and <sup>2</sup>Department of Immunology, College of Medicine, Mayo Clinic, Rochester, Minnesota, USA  
Email: Torgerson.rochelle@mayo.edu

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