



E-ISSN: 2708-0064  
P-ISSN: 2708-0056  
[www.allcasereports.com](http://www.allcasereports.com)  
JCRSI 2019; 1(1): 09-10  
Received: 12-11-2018  
Accepted: 15-12-2018

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## Alopecia Areata in 12 years old female treated with Oral Azathioprine- A case report & review

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**DOI:** <https://doi.org/10.33545/27080056.2019.v1.i1a.5>

### Abstract

Alopecia Areata (AA) is an autoimmune condition that attacks the hair follicles. AA typically presents as smooth, sharply demarcated, round patches of hair loss without atrophy. We reported a case of Alopecia Areata (AA) in 12 years old female treated with oral azathioprine.

**Keywords:** Alopecia Areata, Autoimmune, Azathioprine.

### Introduction

Alopecia Areata (AA) is an autoimmune condition that attacks the hair follicles, causing nonscarring hair loss. Some smaller studies indicate a slight female-to-male gender bias, but this may be due to higher female concern regarding hair loss and subsequent treatment <sup>[1]</sup>.

AA typically presents as smooth, sharply demarcated, round patches of hair loss without atrophy with “exclamation point hairs” observed on the periphery of the patches <sup>[2]</sup>. Special designations of the disease include alopecia universalis (AU) (total body hair loss), alopecia totalis (AT) (total scalp hair loss), or alopecia in an ophiasis pattern (band-like hair loss on the temporal and occipital scalp). Less common variants include the diffuse variant with widespread thinning of hair across the scalp or the reticular pattern with recurrent hair loss in one area and spontaneous hair regrowth in another. Ophiasis inversus causes band-like hair loss in the frontoparietotemporal area <sup>[3]</sup>.

Although asymptomatic, cosmetic unacceptability associated with the condition is distressing for the patients and frequently the reason for seeking medical consultation. Mostly, topical or locally intensive treatment modalities are resorted to for the treatment of segmental or patchy involvement in alopecia areata. Given the frequent recurrences associated with natural course of the disease, local treatment measures such as topical steroids and topical minoxidil do not offer therapeutic benefits of long-term remissions. Other immunosuppressive drugs (like oral azathioprine) in armamentarium are warranted nowadays to interrupt progression of the disease and achieve longer remissions <sup>[4]</sup>. We reported a case of Alopecia Areata (AA) in 12 years old female treated with oral azathioprine.

### Case Report

A 12 year-old female patient reported to the department with patches of alopecia areata involving the scalp. History revealed that patient took so many medications for the same but in vain. Clinical examination revealed multiple patches of alopecia areata with partial areas of regrowth in the frontoververtical area of the scalp.

Patient was given oral azathioprine in the dose of 25 mg daily (1 mg/kg). She reported good hair growth by 6 weeks. On background of frequent episodes of recurrence reported in natural course of the disease, azathioprine was continued for 6 months, which resulted in remission. After 6 months, azathioprine was discontinued and the patient was maintained on topical minoxidil. The prognosis was good.

### Discussion

Alopecia areata is a commonly encountered autoimmune condition which may present with wide spectrum of clinical presentations ranging from single or few smooth bald patches involving frontoververtical or temporal areas to almost near-total or complete hair loss.

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Histologically, it reveals perifollicular T-cell colonization which prevents eruption of hair follicle to skin surface [5]. The exact pathophysiology of the disease is currently unknown. However, evidence suggests that AA is caused by an autoimmune reaction to the hair follicles due to both genetic and environmental factors. Genetic factors Observational studies show a high correlation (10%–42%) between AA and family history. Genome-wide association studies have identified numerous single-nucleotide polymorphisms (SNPs) associated with AA [6]. In a recent meta-analysis, human leukocyte antigen-DR (HLA-DR) on chromosome 6 appears to be the largest risk factor for AA. These HLA class II genes are highly linked to CD4+ and CD8+ T-cells, which are important effector cells in AA. In addition, this study implicated BCL2-like protein 11, also known as BIM, which helps to regulate autophagy in the disease pathogenesis. Genes encoding for natural killer cell receptor D ligands and downstream effectors of the JAK pathway also influence AA susceptibility [7]. We reported a case of Alopecia Areata (AA) in 12 years old female treated with oral azathioprine.

Environmental factors likely exacerbate or induce AA. Stress is an often-cited cause of AA, but the literature from human studies is inconclusive. However, in a mouse model, the activity of the central and peripheral hypothalamus pituitary adrenal axis was higher compared to normal mice. The elevated adrenocorticotropic hormone, corticosterone, and estradiol correlated to elevated pro-inflammatory cytokine levels in the skin, suggesting a potential role of psychological and physiological stressors to cause AA [8]. Other potential environmental stressors that may be implicated in AA include infections, vaccinations, hormone fluctuations, and diet, although their exact impact is unknown. In the mouse model, soy products have been associated with AA, and there are new studies emphasizing a correlation between AA and Vitamins A and D levels. It is likely that multiple environmental factors impact the disease course [9].

Azathioprine is an antimetabolite drug having wide range of dermatological indications; of which predominantly listed are vitiligo, autoimmune connective tissue disorders (systemic lupus erythematosus and dermatomyositis), photodermatoses, immunobullous disorders, refractory lepra reactions and vasculitides. Azathioprine and its analogues interfere with DNA synthesis by inhibition of enzymes of purine synthesis, thereby affecting proliferation of cytotoxic T-cells and also by suppression of cytokines release by helper T-cells which dampens the immune response [10].

### Conclusion

Authors found that Azathioprine is an antimetabolite drug having wide range of dermatological indications. Alopecia Areata (AA) is an autoimmune condition that can be well managed with Azathioprine.

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