



## A Paediatric Case of Severe Allergic Conjunctivitis with Underlying Alopecia Areata

Ahmad Syazrin Abdullah Bin Azlan\*, Nurliza Binti Khaliddin

Menara Selatan University Malaya Medical Centre, 59100 Kuala Lumpur, Malaysia

\*Corresponding Author's Email: [ahmadsyazrin1610@gmail.com](mailto:ahmadsyazrin1610@gmail.com)

### Abstract

**Background:** Allergic conjunctivitis (AC) represents one of most the common condition presented in a paediatric age group. It is usually underdiagnosed and undertreated, especially in the non-verbal group of patients. However, in some cases the presenting age can become the reason patients were undertreated, coupled with a lack of verbal complain and parents' role in the management, can lead to a poorer prognosis. **Case:** A 7-year-old girl who is under investigation for alopecia areata and failure to thrive was referred at the age of 5-year-old after non-improving of bilateral eye redness and tearing. Initially presented, to a different medical centre, at age of 4-month-old with complaint of only tearing. Examination under anaesthesia shows she has bilateral eye (BE) allergic conjunctivitis and BE cornea scarring after multiple visit and under treatment **Conclusion:** However, in some cases the presenting age can become the reason patients were undertreated, coupled with lack of verbal complain and parents' role in the management, can lead to a poorer prognosis.

**Keywords:-** Paedeatric Allergy; Conjunctivites; Underlying Alopecia

### Introduction

Allergic conjunctivitis (AC) represents one of most the common condition presented in a paediatric age group. It is usually underdiagnosed and undertreated, especially in the non-verbal group of patients. AC represent about 30% of children, ([Leonardi et al., 2015](#) and [Barton et al., 2022](#)) in which tearing is the one of the most common complains among others, either by the parents or the patient. AC commonly associated symptoms are rhinitis and asthma which can add to the discomfort, disrupting daily activity of the patient.

However, in some cases the presenting age can become the reason patients were undertreated, coupled with lack of verbal complain and parents' role in the management, can lead to a poorer prognosis. Even patients presented with intense and persistent symptoms, treatment were frequently not appropriate. ([Leonardi et al., 2015](#) and [Barton et al., 2022](#)) In which could be cause by an underlying autoimmune condition, where early detection could help to improve patient's condition, of which in this article was alopecia areata (AA). ([Leonardi et al., 2015](#) and [Kridin et al., 2020](#)).

### Case Study

A 7-year-old girl who is now under investigation for alopecia areata and failure to thrive was referred at the age of 5-year-old after non-improving of bilateral eye redness and tearing. Initially presented, to a different medical center, at age of 4-month-old with complaint of only tearing and was treated conservatively. She later represented at the age of 1 year old to a different hospital for persistent symptoms, to which the patient underwent EUA, and she was diagnosed with bilateral eye (BE) AC and BE cornea scarring.

She was medically treated at first but after a series of defaulted appointments and medications, they represented at age of 5 with complains of worsening of eye rubbing, progressive hair loss and poor weight gain to a private paediatric clinic. Patient was then referred to our center paediatric team for further investigation and re-referred to ophthalmology for the continuation of care for BE allergic conjunctivitis.

For 2 years since age of 3-year-old, patient was self-medicating which unfortunately did not elevate the symptoms, and the constant rubbing and redness had cause debilitating discomfort to even to go to school due to tearing and severe glaring. Her developmental milestone is otherwise up to her age.

Since her referrals, she was investigated for autoimmune diseases and her symptoms involve only hair loss, poor weight gain, and BE redness and tearing. There was no prolonged fever, recurrent ulcer, skin abnormalities, or hematuria. Dietary history was unremarkable as the patient eats a balanced diet of what was served and had no intolerance to food.

The examination was difficult but noted her to have a vision of BE 6/36 with K Picture, RE Exotropia and photophobia. The anterior segment shows BE with 360 cornea vascularization, papillae but not cobblestone in appearance, and cornea scarring with PEES. She was diagnosed as acute on chronic BE AC and was started on topical Prednisolone 1%, Opatidine, Cyclosporine 0.1% and lubricating gel. Symptoms greatly improve and after a few initial visits with tapering dose of steroid.

Further examination deems difficult, so she underwent EUA, which reveal BE paracentral corneal scarring with deep and superficial vascularization, hazy cornea centrally, moderate posterior subcapsular cataract with normal IOP.

A year later she underwent LE Lens aspiration, IOL implant and RE pannus diathermization, which followed by RE Lens aspiration and IOL implant and pannus diathermization. Primary post-capsulotomy was not done due to poor visualization of the posterior capsule, a year later due to PCO, RE anterior vitrectomy and capsulotomy was done by our own vitreoretinal surgeon. Post-operative vision improved to BCVA RE 3/60 and LE 6/24 and patching was started for this patient.

## Discussion

AA is not a rare occurrence; it is a common dermatologic condition that affects up to 2% of populations ([Kridin et al., 2020](#)). Its non-scarring hair loss and presentation can range from patchy, circumscribe, total hair loss (alopecia totalis) or can even include body hair loss (alopecia universalis). While there are number of cases that had been reported, the underlying pathogenesis of the disease is still not well understood, this includes the definitive treatment for the disease. Although it is known that the immune attacks the hair follicle due the disruption of the follicle's immune privilege, it is still unknown on how the inflammatory pathway responses resulting to the immune attack. Traditionally the TH1-IFN- $\gamma$ -related cytokine and chemokine were found responsible for initiation and maintenance of AA, multiple new studies suggest on Janus kinases than down regulate the TH1-IFN- $\gamma$  and other associated markers. This downregulate includes the TH2, IL-9, phosphodiesterase 4 and TH17/IL-23 which suggest the involvement of the TH2 immune pathway. TH2 key cytokines that involve were the IL 4 and IL 3, were also found in atopic disease such as atopic dermatitis, allergic rhinitis, allergic conjunctivitis, and asthma, which possibly means a share immunological background. ([Xing et al., 2014](#) and [Lee et al., 2019](#)).

AA can present throughout the age spectrum, Khalaf et al presented that of 51, 410 age and gender-matched patients the mean age was 34.1 years old and 39% were females, with no difference of in ethnicity background ([Barton et al., 2022](#)). the studies also evaluated that allergic conjunctivitis is he more common association symptoms and most robust presentation, making up 23% of all AA cases followed by allergic rhinitis(16%), asthma(7.8%) and allergic dermatitis(3.9%) ([Leonardi et al., 2015](#) and [Kridin et al., 2020](#)).

In another report by Virginia et al. states that numbers of paediatric case presented is also considerably significant, but this group of patients are the one to be susceptible to systemic and psychosocial consequences of AA. This led to the importance to identifying AA with its comorbidities and initiating

treatment. The challenge for this case was the patient presented in a chronic form of the disease where, due to the age factor and the rarity of the presenting symptoms. Parents awareness and active role also be a contributing factor in failed to halt the progress of the disease. Thankfully patient represented at a later age where symptoms were more pronounced that reevaluation were done proper management executed.

### Conclusion

In paediatric AC, there is fine line that separates between, undertreating and over treating. It is best to follow through a patient that has an ambiguous a persistent recurrent presenting illness and keeping the diagnosis open for investigation. Parental education should also be a part of the management as they are the main key factor in child recovery.

### Conflicts of Interest

The authors declare that they have no conflict of interest.

### Acknowledgment

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