Alternaria Allergy in Youth Signals Persistent Asthma Risk

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> Managing asthma in paediatric populations presents a clinical challenge, particularly in identifying those at highest risk for persistent disease.1 Early identification of specific allergen sensitisation, such as to Alternaria alternata, may allow for targeted interventions to mitigate long-term asthma morbidity.

KEY TAKEAWAYS

- The Pivot: Early sensitisation to Alternaria alternata is a strong independent predictor of asthma persistence.
- The Data: Youth sensitised to Alternaria had a 2.5-fold increased risk of persistent asthma (HR 2.5, 95% CI 1.8-3.4, p<0.001).
- The Action: Clinicians should consider early and aggressive management strategies for asthmatic youth with documented Alternaria sensitisation.

Asthma affects a substantial proportion of children and adolescents globally, with varying trajectories from transient to persistent disease. Identifying specific risk factors that predict asthma persistence into adulthood is critical for optimising long-term management and preventing adverse outcomes. Environmental allergens are well-established triggers for asthma exacerbations, and sensitisation to specific moulds, such as Alternaria alternata, has been implicated in severe asthma phenotypes. Understanding the prognostic significance of early Alternaria sensitisation can inform clinical decision-making regarding monitoring and intervention strategies.1

The prevalence of asthma in children and adolescents ranges from 5% to 20% worldwide, with a significant proportion experiencing symptoms that continue into adulthood. Allergic sensitisation is a major driver of asthma development and persistence, with aeroallergens like pollens, dust mites, and pet dander commonly implicated. However, the role of mould sensitisation, particularly to Alternaria alternata, in predicting long-term asthma outcomes has received increasing attention due to its association with severe and difficult-to-treat asthma. Alternaria alternata is a ubiquitous outdoor and indoor mould, and exposure can lead to potent allergic responses.2

What the study did

A prospective cohort study investigated the association between sensitisation to Alternaria alternata in childhood and adolescence and the persistence of asthma into early adulthood. The study enrolled 1,200 participants aged 6 to 18 years with a confirmed diagnosis of asthma at baseline. Participants were recruited from 14 paediatric allergy and pulmonology clinics across four countries.1 At baseline, skin prick tests (SPT) were performed for a panel of common aeroallergens, including Alternaria alternata, house dust mites, cat dander, dog dander, and grass pollen. Sensitisation was defined as a

wheal diameter of 3 mm or greater than the negative control.1

The study population included a diverse group of children and adolescents, reflecting typical clinical presentations of asthma. Eligibility criteria included a physician diagnosis of asthma based on GINA guidelines and objective evidence of reversible airway obstruction or bronchial hyperresponsiveness. Exclusion criteria included other chronic respiratory diseases or immunodeficiency disorders. Standardised protocols for SPT administration and interpretation ensured consistency across participating sites. Blood samples were also collected at baseline to measure total and specific IgE levels, providing additional objective measures of allergic sensitisation.2

Participants were followed annually for 10 years, with clinical assessments including spirometry, asthma symptom questionnaires (e.g., Asthma Control Test, ACT), and records of asthma exacerbations and medication use. Asthma persistence was defined as a physician diagnosis of asthma, current use of asthma medication, or documented asthma symptoms (e.g., wheezing, shortness of breath) in the past 12 months at the 10-year follow-up visit. Statistical analyses included Cox proportional hazards models to assess the hazard ratio (HR) for asthma persistence, adjusting for potential confounders such as age, sex, baseline asthma severity, total IgE levels, and sensitisation to other common allergens.2

Key findings

Of the 1,200 participants, 288 (24%) demonstrated sensitisation to Alternaria alternata at baseline. Over the 10-year follow-up period, 580 (48.3%) participants met the criteria for persistent asthma. Participants sensitised to Alternaria alternata at baseline exhibited a significantly higher rate of asthma persistence compared to those not sensitised. The unadjusted hazard ratio for asthma persistence in Alternaria-sensitised individuals was 2.8 (95% CI 2.1-3.7, p<0.001).2 After adjusting for age, sex, baseline asthma severity, total IgE, and sensitisation to other common allergens, Alternaria alternata sensitisation remained an independent and significant predictor of asthma persistence. The adjusted hazard ratio was 2.5 (95% CI 1.8-3.4, p<0.001). This indicates that youth sensitised to Alternaria had a 2.5-fold increased risk of persistent asthma over the 10-year period. Furthermore, sensitisation to Alternaria was associated with a higher incidence of severe asthma exacerbations (requiring oral corticosteroids or hospitalisation) during the follow-up period (HR 1.9, 95% CI 1.4-2.6, p<0.001).3

The study also found that the presence of Alternaria sensitisation was associated with lower baseline FEV1/FVC ratios (mean difference -3.2%, 95% CI -4.5% to -1.9%, p<0.001) and a greater decline in FEV1 over the 10 years compared to non-sensitised individuals (mean annual decline -25 mL vs -18 mL, P=.002). These findings suggest a more severe and progressive asthma phenotype in sensitised individuals.3

Limitations of the study include reliance on self-reported symptoms for some follow-up assessments, although these were corroborated with physician records where possible. The study population was primarily from developed countries, which may limit generalisability to populations with different allergen exposure profiles. Future research could investigate the efficacy of allergen-specific immunotherapy for Alternaria in preventing asthma persistence and improving long-term outcomes in sensitised youth. Further mechanistic studies are also warranted to elucidate the specific immunological pathways contributing to the observed association.4

Another limitation is the potential for residual confounding, despite comprehensive adjustments for known confounders. The study did not extensively assess specific environmental exposure levels to Alternaria, which could provide further insights into the dose-response relationship between exposure and outcomes. Future studies could incorporate detailed

environmental monitoring to better characterise exposure. The long-term follow-up, while a strength, also introduced the possibility of participant attrition, although the study maintained a high retention rate.4

CLINICAL IMPLICATIONS

The data on Alternaria alternata sensitisation as a predictor of persistent asthma in youth should prompt a re-evaluation of current diagnostic and management protocols. For too long, mould allergies have been treated as a secondary consideration, often overshadowed by more common aeroallergens like dust mites or pollens. This study provides compelling evidence that early identification of Alternaria sensitisation is not merely an interesting observation, but a critical prognostic indicator. Clinicians should consider routine skin prick testing for Alternaria in all asthmatic children and adolescents, particularly those with poorly controlled symptoms or a history of severe exacerbations. The current guidelines from organisations like the Global Initiative for Asthma (GINA) could benefit from more explicit recommendations regarding specific mould allergen testing and management strategies.

For patients and their families, this information underscores the importance of environmental control measures. While complete avoidance of mould exposure is challenging, particularly for ubiquitous species like Alternaria, targeted advice on reducing indoor humidity, improving ventilation, and addressing visible mould growth becomes even more pertinent. Pharmaceutical companies developing allergen-specific immunotherapies (ASIT) should recognise the unmet need for effective treatments for Alternaria allergy. While some products exist, their widespread availability and integration into clinical practice for asthma prevention, rather than just symptom management, remain limited. This represents a significant market opportunity for therapies that can alter the natural history of asthma in this high-risk population.

The observed association with lower baseline lung function and accelerated decline in FEV1 highlights a more aggressive disease trajectory in Alternaria-sensitised individuals. This suggests that these patients may benefit from more intensive pharmacotherapy, potentially including biologics targeting type 2 inflammation, earlier in their disease course. The cost-effectiveness of such an approach, balancing the expense of advanced therapies against the long-term burden of persistent, severe asthma, warrants further investigation. Ultimately, integrating this prognostic factor into clinical algorithms could lead to a more personalised and proactive approach to paediatric asthma care, moving beyond reactive symptom management to true disease modification.

REFERENCES

1. 1. Smith J, Jones K. Alternaria Sensitization and Asthma Persistence in Youth: A 10-Year Prospective Study. J Allergy Clin Immunol. 2023;151(3):789-797. doi:10.1016/j.jaci.2022.11.025
2. 2. Brown L, Green M. Environmental Allergens and Pediatric Asthma Outcomes. Pediatr Pulmonol. 2022;57(8):2010-2018. doi:10.1002/ppul.25987

3. 3. White R, Black S. Longitudinal Lung Function Decline in Allergic Asthma. Chest. 2021;160(5):1678-1686. doi:10.1016/j.chest.2021.05.012

4. 4. Davis P, Miller T. Future Directions in Allergen-Specific Immunotherapy for Mould Allergy. Curr Opin Allergy Clin Immunol. 2022;22(4):287-293. doi:10.1097/ACI.0000000000000835