The role of adenoid immune phenotype in polysensitized children with allergic rhinitis and adenoid hypertrophy

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Abstract

Background: There has been increasing interest in elucidating the relationship between adenoid hypertrophy (AH) and allergic rhinitis (AR). However, the impact of aeroallergen sensitization patterns on children concurrently experiencing AH and AR remains unclear. **Methods:** Patients aged 2-8 years (January 2019 to December 2022) with nasal symptoms were assessed for allergies, adenoid size and respiratory viral infection history. The levels of serum total immunoglobulin E (IgE) and specific IgE and flexible nasal endoscopy were performed. We analyzed the relationship between AH and sensitization patterns and lymphocyte subpopulations in adenoid samples using flow cytometry. **Results:** 5281 children were enrolled in our cohort. 56.5% of children was diagnosed with AR and 48.6% with AH. AR was more prevalent in AH children compared to nAR. Compared to non-sensitized, those with AR polysensitized to molds had a higher prevalence of AH (adjusted OR 1.61, 95%CI 1.32-1.96) and a greater occurrence of two or more respiratory viral infections, particularly in cases with adenoidectomy. In AH-AR children, adenoid tissues showed reduced frequencies and corrected absolute counts of regulatory T cells (Tregs), activated Tregs, class-switched memory B cells (CSMB), natural killer (NK) T cells and NK subpopulations compared to AH-nAR children. Polysensitization in AH-AR children correlated with lower CSMB frequencies. **Conclusion:** Polysensitivity to molds significantly increased the risk of AH in children with AR. Adenoids of AR children demonstrated less number of B cells, NK cells and Treg cells with an effector/memory phenotype, which was closely linked to sensitization models and respiratory viral infection, particularly concerning CSMB.

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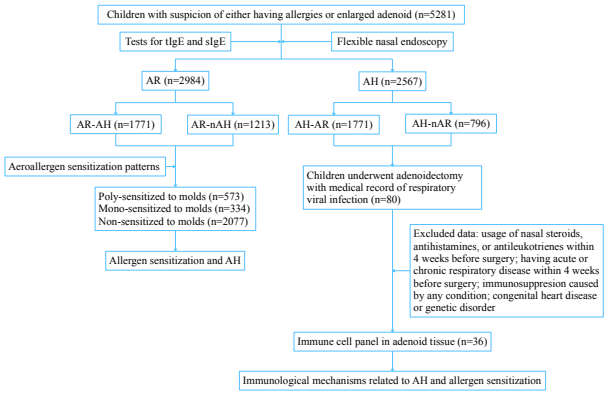

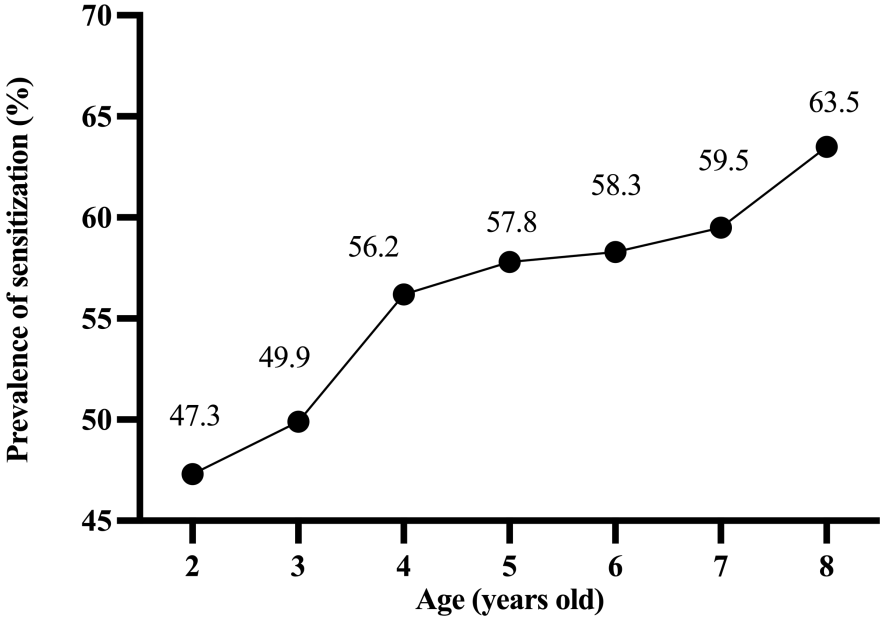

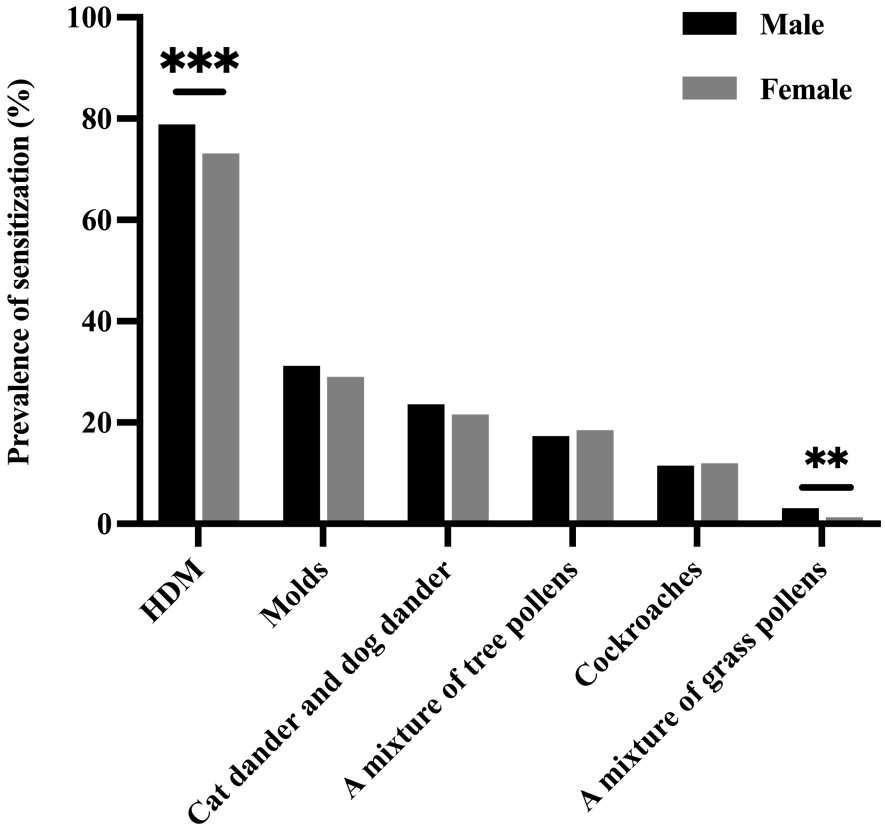

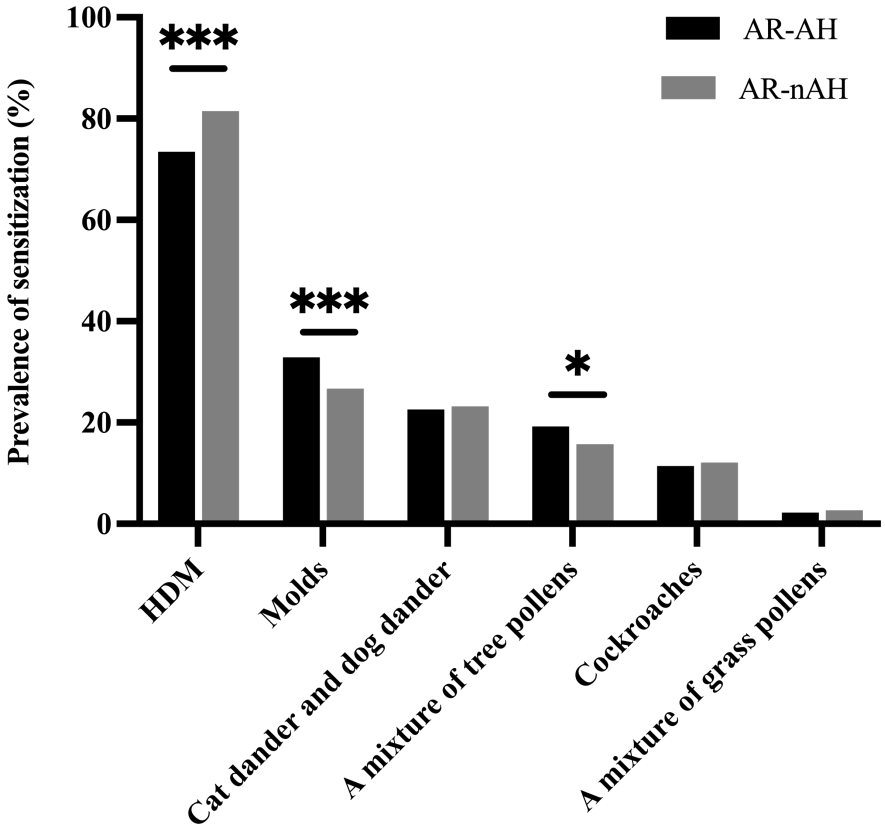

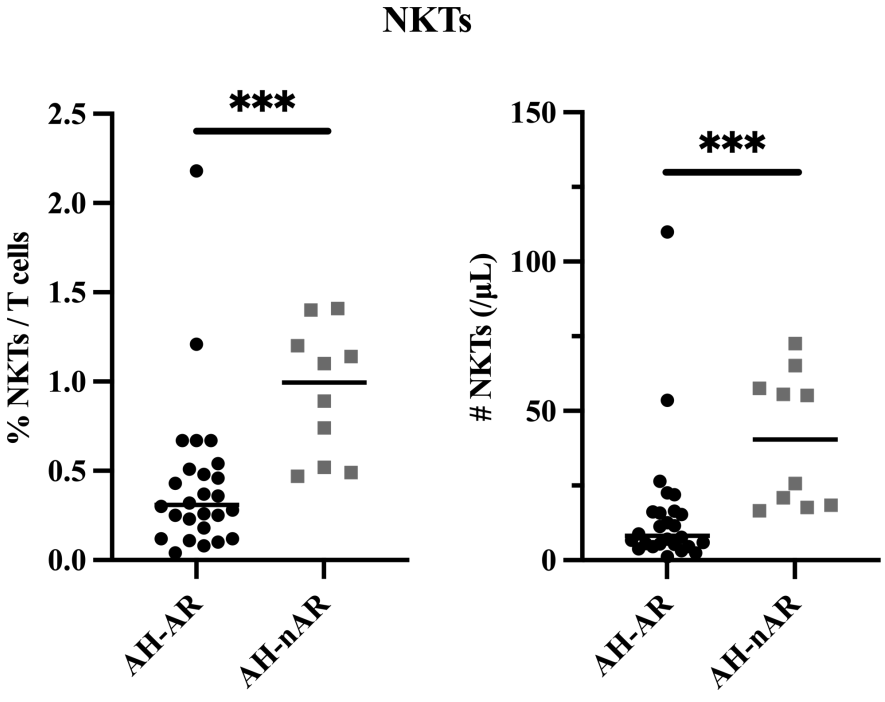

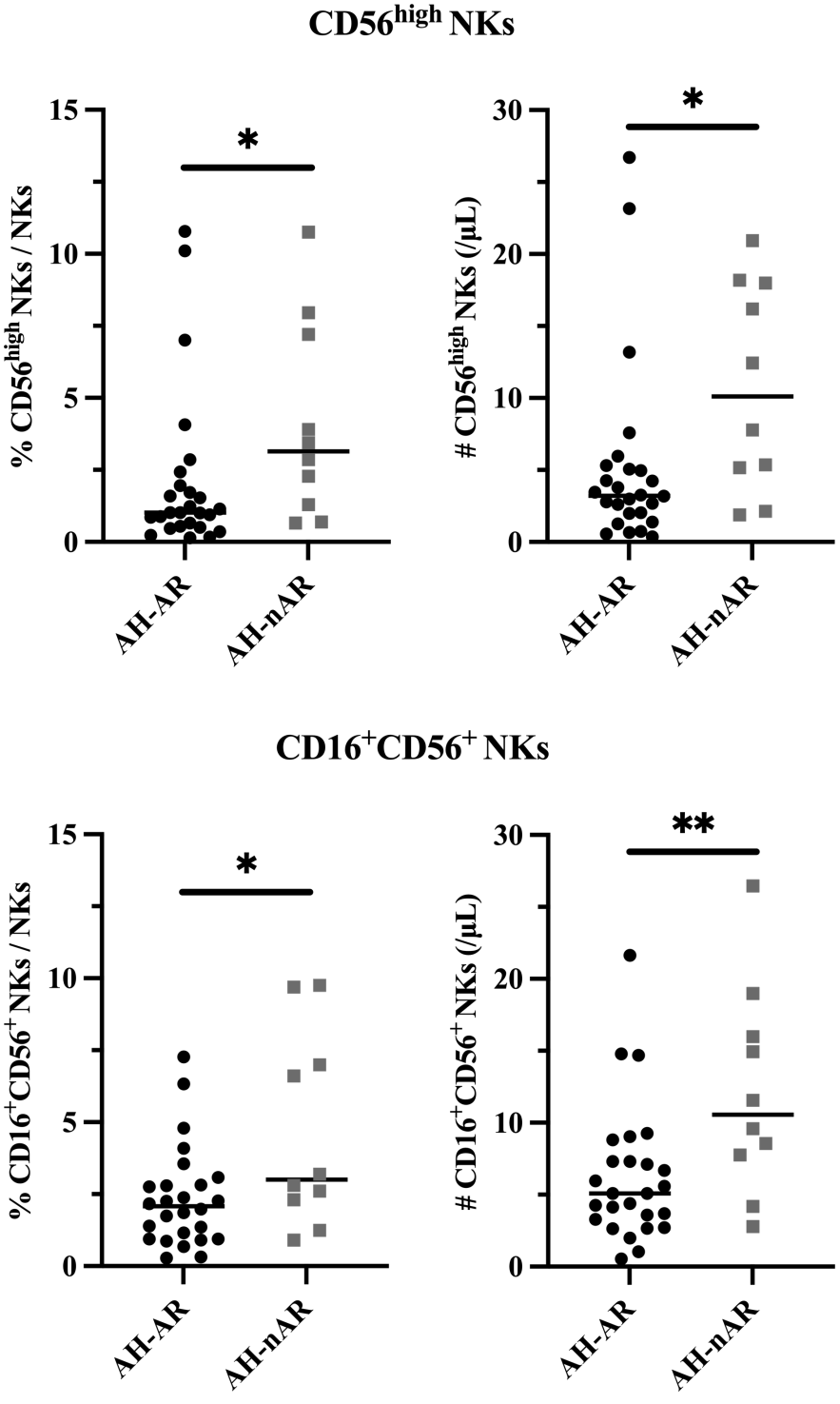

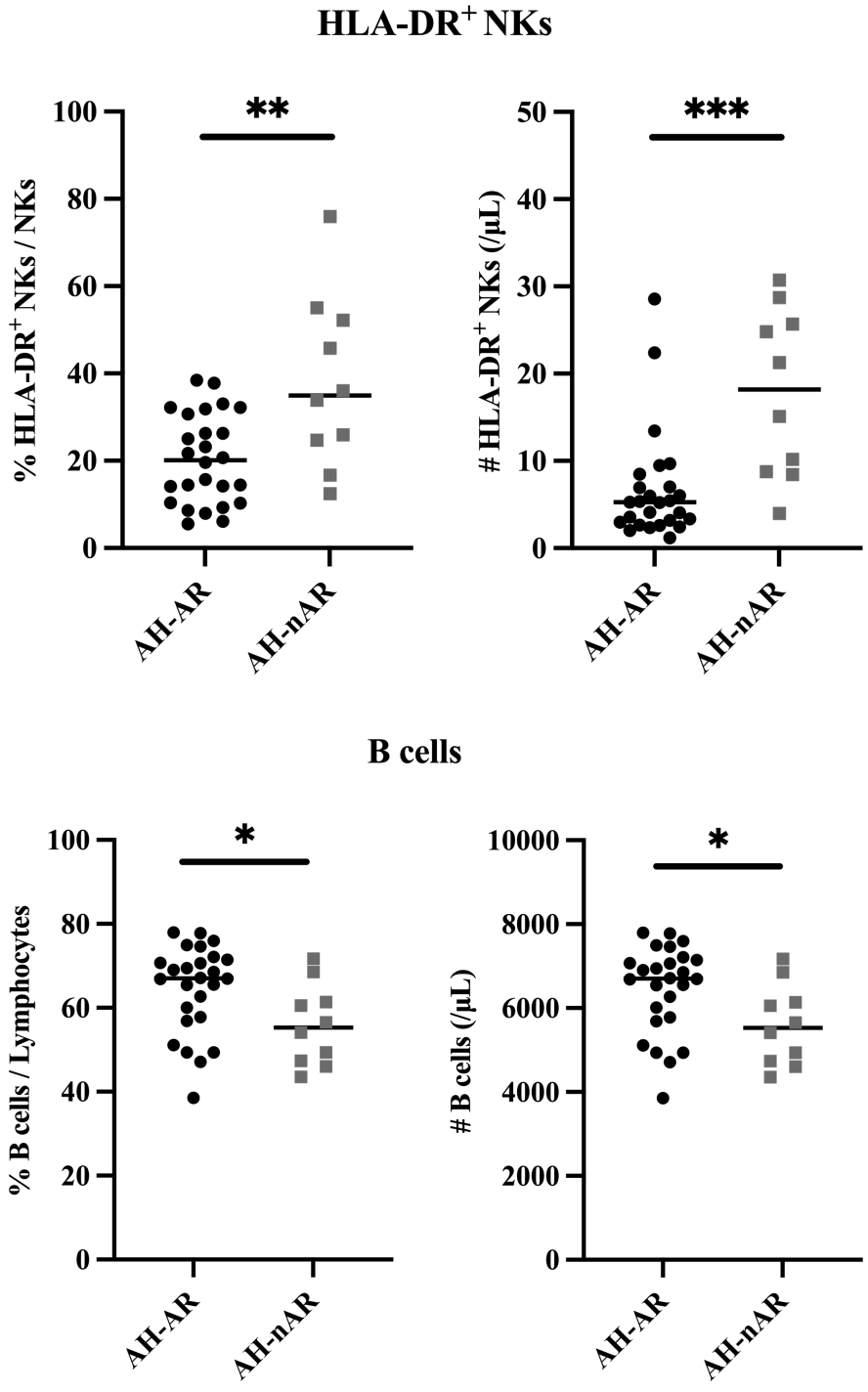

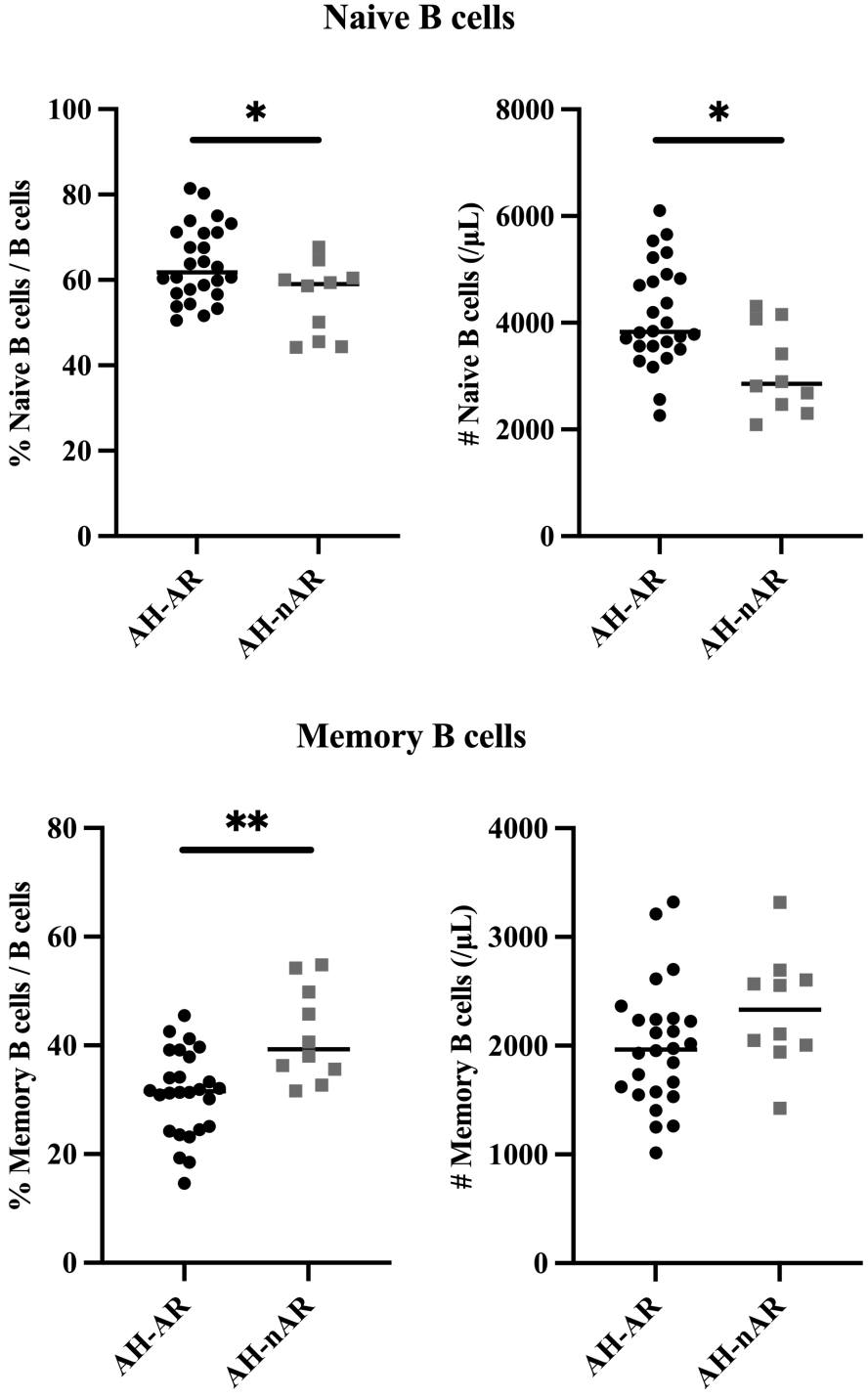

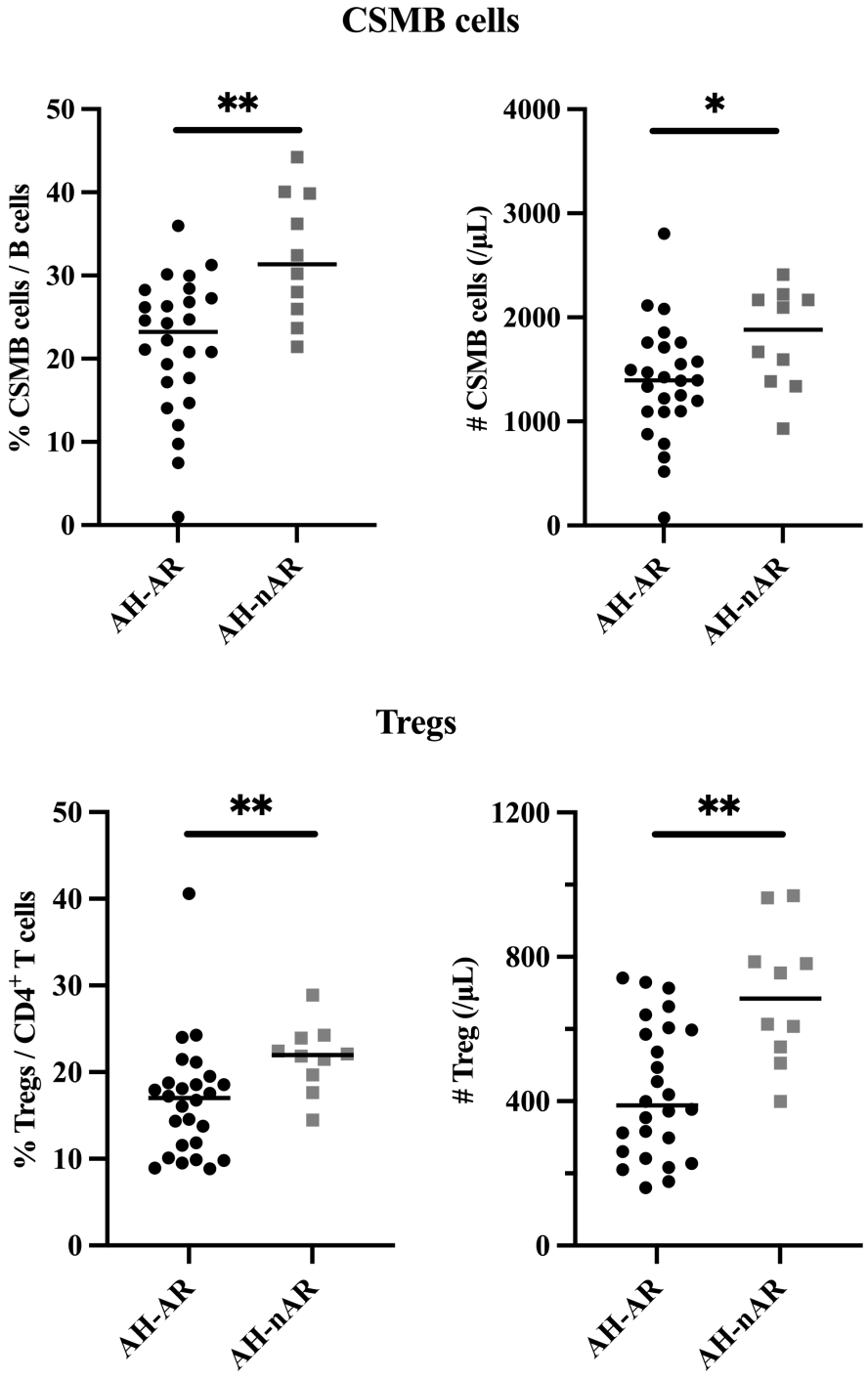

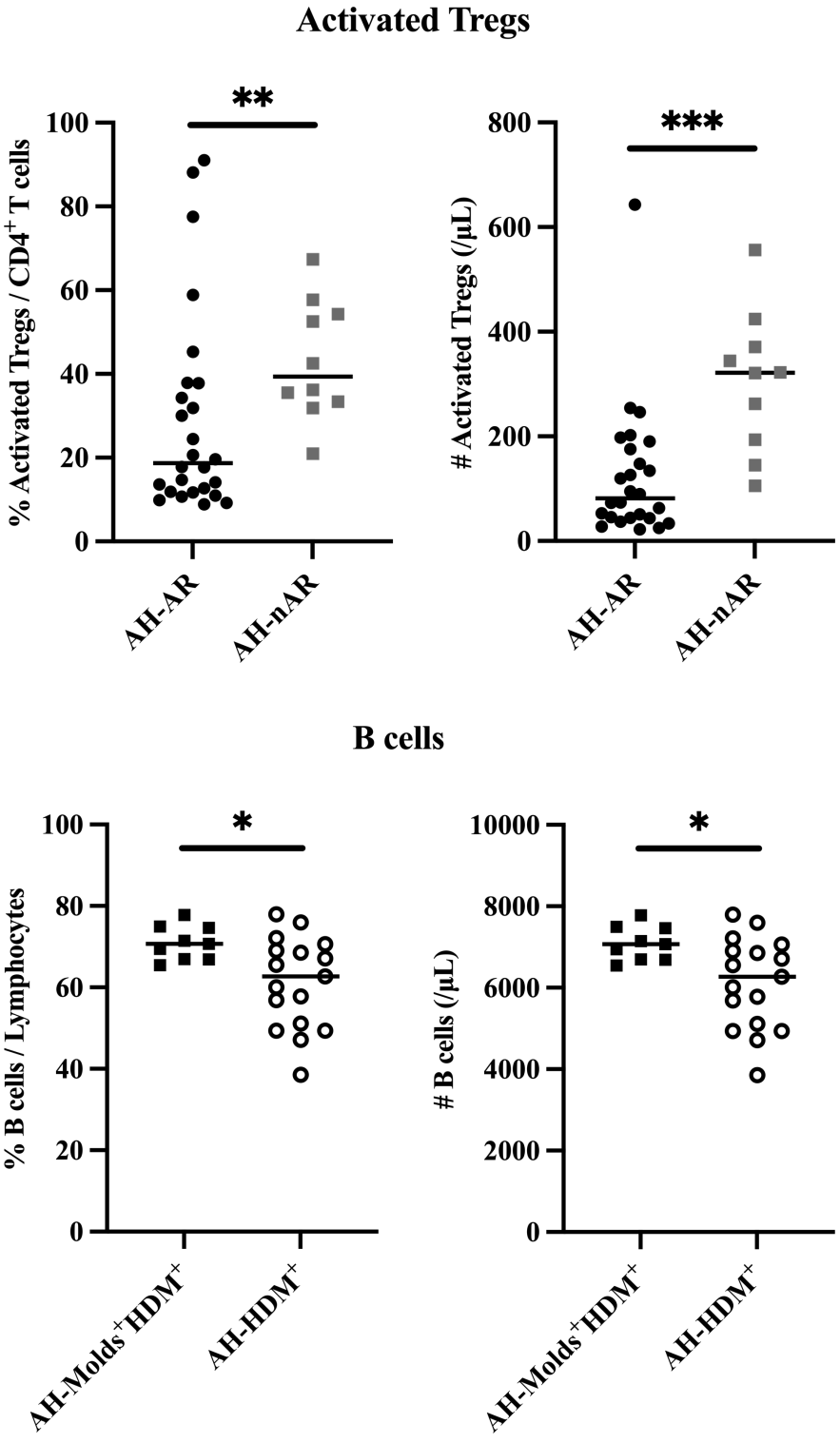

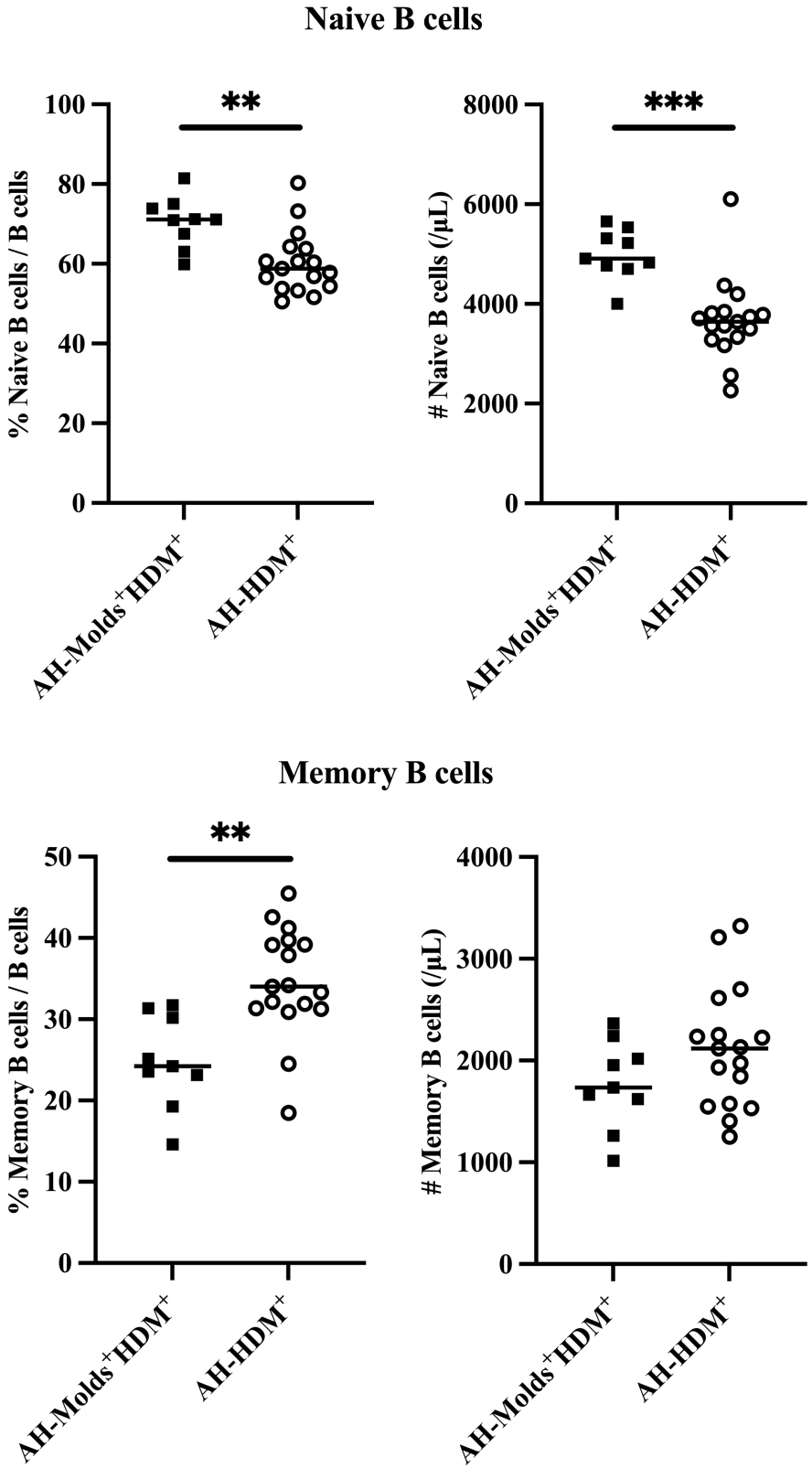

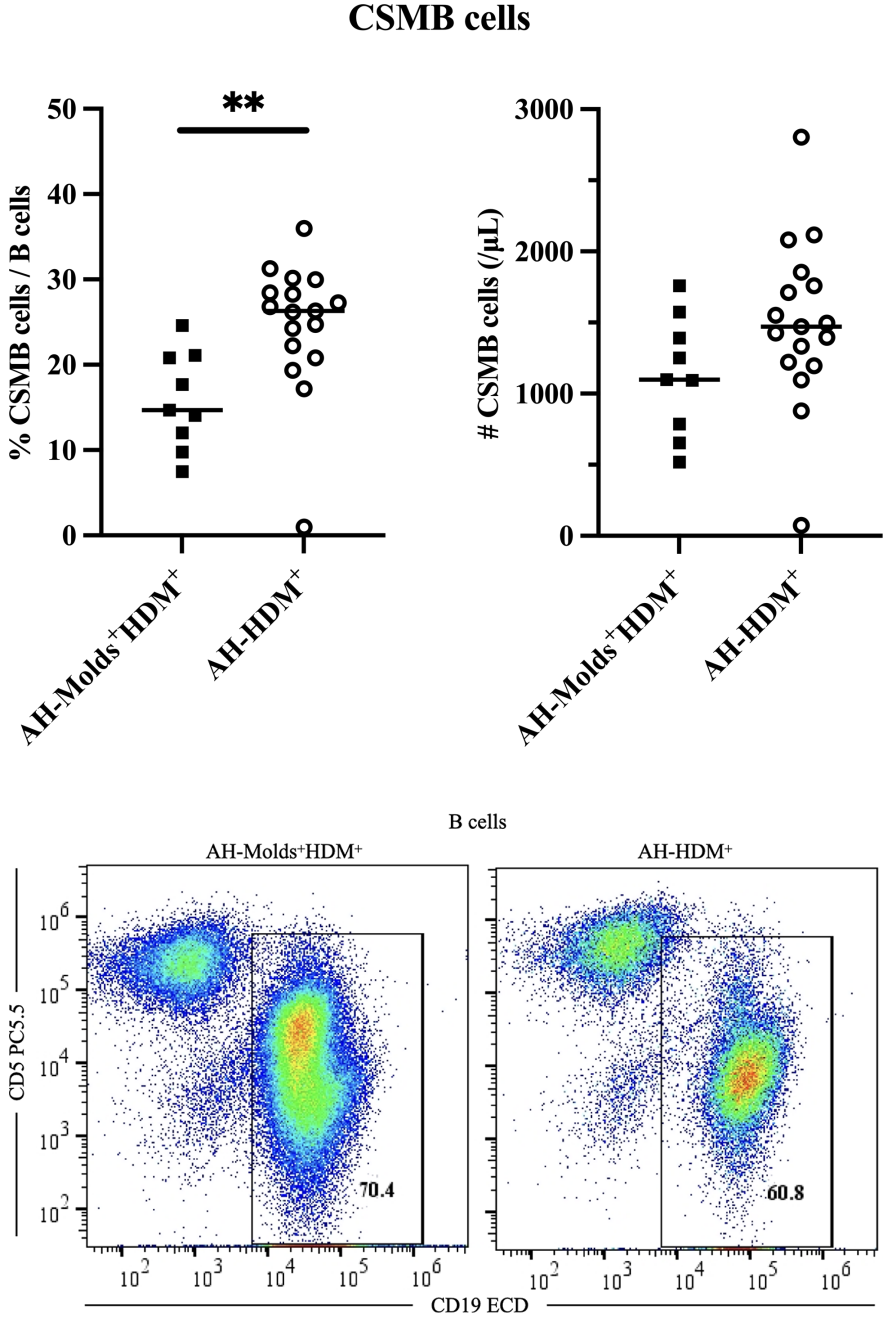

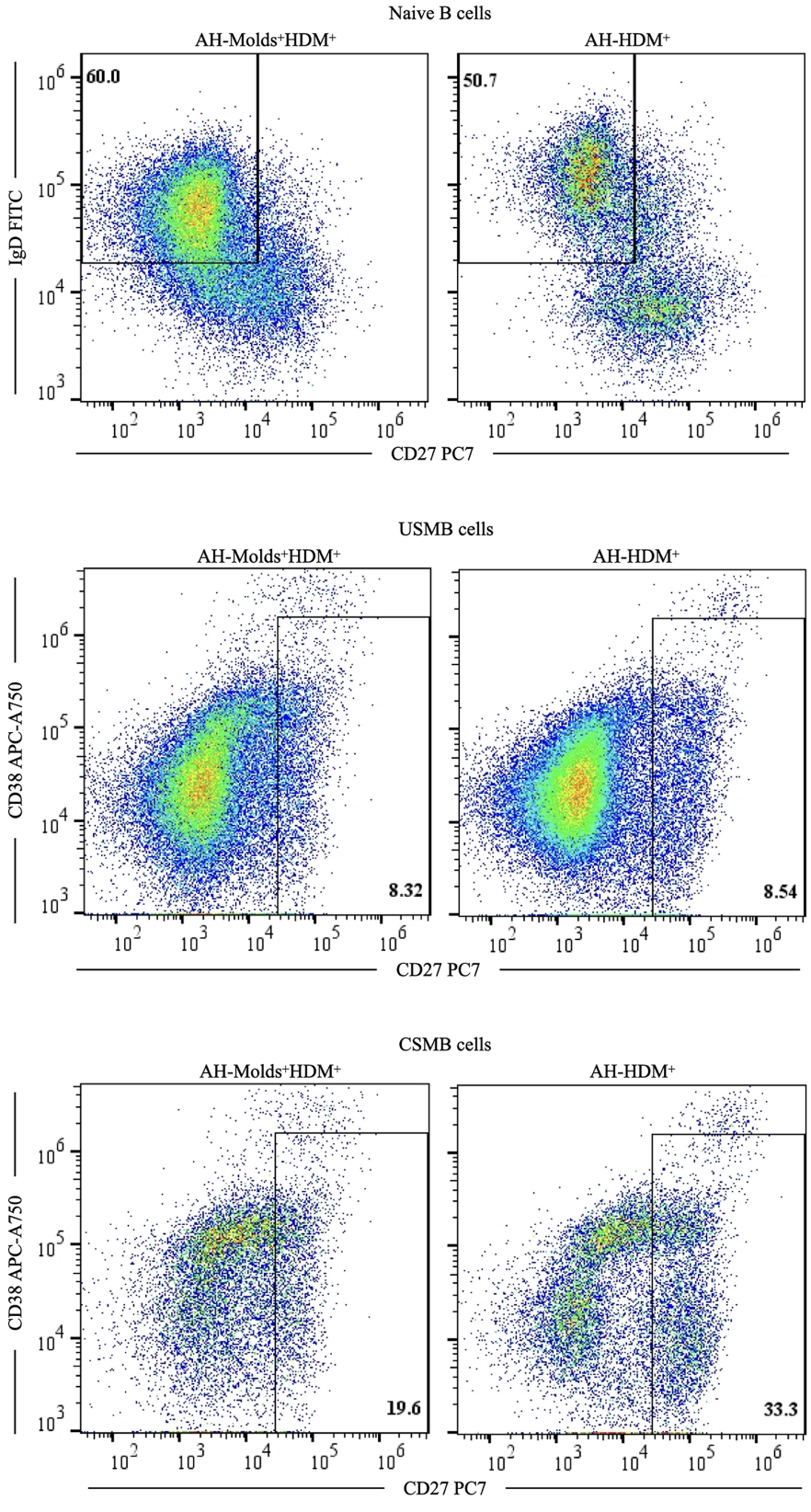

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