AB-Negative Blood Group and Severe Skin Allergy: A Case Report with Small Cohort Analysis

Rutvi P. Italiya[1], Darshan Haraniya[2], Gopal Chauhan[3]

[1] AB-negative, Female, Age 26 — Case patient
[2] B-positive — Study partner
[3] O-positive — Study partner

Abstract

Background: ABO and Rh blood groups may influence immune-mediated conditions including skin allergies. AB-negative is an extremely rare phenotype and its relationship with dermatological hypersensitivity remains underexplored.

Case Presentation: We report a 26-year-old AB-negative female with severe sensitive skin allergy, systemic involvement including allergic rhinitis, atopic dermatitis, chronic dermatitis, and chronic spontaneous urticaria.

Cohort Analysis: In a small population sample (n=50, all Rh positive), only 3% exhibited similar allergic responses to environmental triggers (dry weather, oily skin, stress).

Results: The index case had severe allergy (high score, 35–32 on severity scales). Among the Rh-positive cohort, prevalence of skin allergy remained low (3%).

Conclusion: Rare AB-negative blood group may represent a higher-risk subgroup for skin allergy. Further multicentric studies are warranted.

Introduction

Allergic skin conditions such as atopic dermatitis, contact dermatitis, and chronic spontaneous urticaria are influenced by genetic, environmental, and immunological factors. ABO and Rh blood groups have been studied as possible modulators of allergic disease prevalence, with varying results. While O group is often implicated in respiratory allergy, data on AB-negative individuals are nearly absent. This case highlights an AB-negative patient with severe multisystemic skin allergy and contextualizes findings with a small Rh-positive cohort.

Case Report

Name: Rutvi P. Italiya
Age/Sex: 26 years, female
Blood Group: AB-negative
Skin allergy: Yes; type: sensitive
Severity: High (proxy scores 32–35)
Systemic history: allergic rhinitis, atopic dermatitis, chronic dermatitis, chronic spontaneous urticaria
Exposures/Covariates: dry atmosphere, oily skin, stress/tension

Cohort Study (n=52)

Population: 50 random Rh-positive individuals + 2 study partners (B+ and O+).
Prevalence: Only 3% (≈2/50) reported skin allergy triggered by same environmental stimuli.
Blood group distribution: Majority B+ (20/52) and O+ (29/52).
Allergy types in affected: sensitive skin and atopic dermatitis, both high severity.

Figures

Figure 1. Allergy prevalence in study population (n=52).

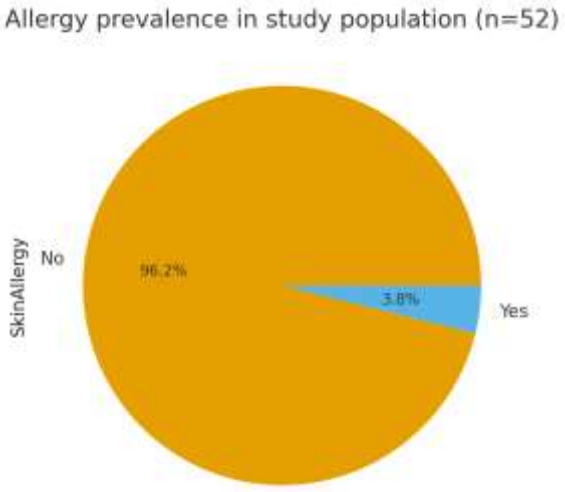


Figure 2. Blood group distribution in study population.

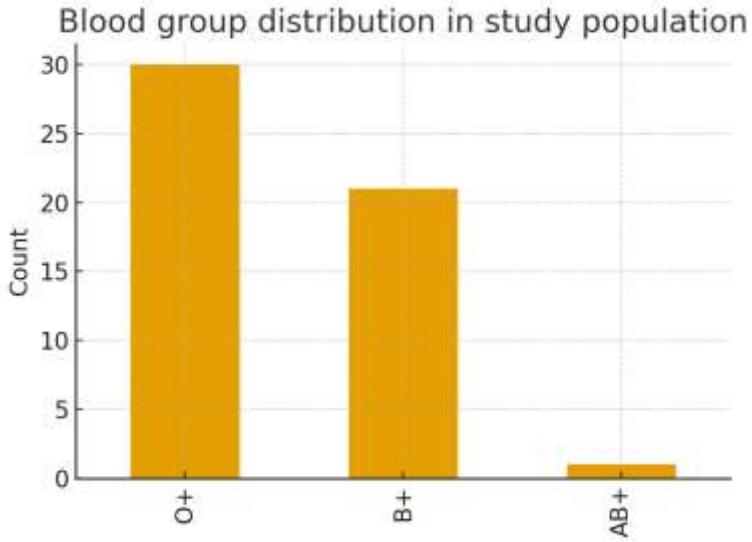
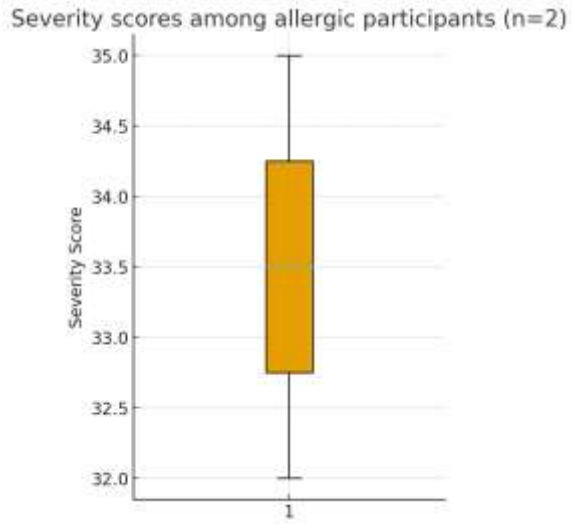


Figure 3. Severity scores among allergic participants (n=2).



Discussion

Frequency: AB-negative <1% of Indian population; rare phenotype limits large-scale studies.

Mechanism: ABO antigens modulate epithelial glycosylation, barrier function, and IgE signaling. Environmental factors (dry/oily atmosphere, stress) amplify allergic response.

Comparison with literature: Scoping reviews note associations of A and O groups with allergic rhinitis and dermatitis; no prior report focusing on AB-negative with severe skin allergy.

Implications: Case indicates possible heightened risk among AB-negative individuals, though causality cannot be established with single patient + small cohort.

Conclusion

This case demonstrates severe skin allergy with multisystem involvement in an AB-negative female, contrasted with low allergy prevalence in a Rh-positive sample. The findings emphasize need for multicentric, large-scale research to clarify rare blood group–allergy relationships.

References

1. Dahalan N et al. Association of ABO blood groups with allergic diseases: a scoping review.
2. Turkish multicenter study: ABO/Rh and allergic rhinitis.
3. Indian Journal of Dermatology. Atopic dermatitis and ABO association.
4. Nelson B et al. Blood groups and allergic rhinitis.
5. Mechanistic review of ABO and allergy pathways.