Research Letters

OPEN

Relationship of birthing site to the clinical features of early childhood atopic dermatitis

Keywords: asthma, atopic dermatitis, birthing mode, Caesarean section, food allergies, infantile hemangiomas

To the Editor,

Data on early features of AD and comorbidities (2 years or less) are not available in the US, particularly the effect of birthing mode (BM), Caesarean section (CS) versus vaginal delivery (VD) on comorbidities.[1] It is known that CS is a risk factor for atopic dermatitis (AD),[2] which has been posited to relate to the microbiome; VD has been posited to have protective benefits. We sought to identify the initial clinical presentation and comorbidities of AD in the first two years of life, with correlation to CS versus VD. An IRB-exempt questionnaire was given to parents of AD patients aged ≤2 years with questions about BM, initial AD location, and comorbidities.[3]

Questionnaires (n = 152) were gathered in an outpatient pediatric dermatology practice: CS (n = 41), VD (n = 107), and 4 were excluded for no BM data. There appear to be effects of BM on the early life course in AD for young children (2 years of age and younger) (Table 1). The majority of cases began in the first 6 months of life: 0–2 months (n = 52, 35.1%), 3–4 months (n = 48, 32.4%), 5–6 months (n = 23, 15.5%). It was statistically more common for VD than CS to have a family history of AD (P < .001). The face was universally the most common initial AD location (49% VD; 60% CS), and the chest was more common in CS (P < .03). Seborrheic dermatitis (SD) (P = .24), asthma (P = .13), and food allergies (FA) (P = .44) were more than twice as likely in CS compared with VD, but the chi-squared test did not demonstrate significance. Milk and egg were the leading allergens in CS, and tree nuts/peanuts were more common in VD, but the differences were not statistically significant.

Overall asthma cases were too few to comment on, but trended toward greater risk in CS. There is a trend toward tree nut/peanut allergies being more prevalent in VD and milk and eggs in CS, suggesting that both subgroups may be amenable to food reintroduction.[4]

This study supports limited differences between BM in AD in the first 2 years of life. Our study supports SD as the most common AD comorbidity of early childhood. It has been proposed that SD and AD lie on a clinical spectrum and that *Malassezia* may be a common trigger.[5] The statistically greater amount of family history of AD in VD versus CS suggests that the CS BM has an inherent risk of AD triggering even when family history is lacking. Our data corroborate findings of a Swedish population–based study demonstrating greater AD risk in association with CS.[6] Limitations of the study include a lack of non-AD controls, lack of survey validation, the need for a broader age range of children, and a larger cohort to tease out the effects of BM on childhood life course. In conclusion, our survey cohort identified greater familial risk in VD, identifying independent risk of CS. In addition, SD was identified as being more prevalent than prior reporting. Future work should focus on the potential benefit of SD care for AD prevention and potential additional comorbidities, including infantile hemangiomas.

Conflicts of interest

The authors made the following disclosures: N.B.S. has done research or advised for Dermavant, L'Oréal, Incyte, Pelthos, Primus, Regeneron, and Verrica. H.M.M. has no conflicts of interest to declare.

Funding

None.

Study approval

This study was reviewed and granted IRB-exemption.

Author contributions

HMM: Designed the study. NBS: Administered the study. NBS and HMM: Performed statistical review.

What is known about this subject in regard to women and their families?

- Birthing mode Caesarean section (CS) has mixed data that suggests an increased risk of the infant child developing atopic dermatitis (AD) over vaginal delivery (VD)
- The role of birthing mode on comorbidity formation in children with AD is poorly understood.

What is new from this article as messages for women and their families?

- CS is associated with less family history than VD, supporting the possibility of CS as an independent AD risk factor.
- Seborrheic dermatitis appears to be the leading comorbidity in children with AD aged 2 years and younger.

Written work prepared by employees of the Federal Government as part of their official duties is, under the U.S. Copyright Act, a "work of the United States Government" for which copyright protection under Title 17 of the United States Code is not available. As such, copyright does not extend to the contributions of employees of the Federal Government.

International Journal of Women's Dermatology (2026) 12:e294

Received: 8 December 2025; Accepted 29 May 2026

Published online 26 August 2026

DOI: 10.1097/JW9.0000000000000294

Table 1

Demographics and noted trends in presentation sites and comorbidities

	VD	CS	Relative risk ratio (chi-squared test)
Demographics			
Age 0–1	63 (58.9%)	25 (60.9%)	0.97
Age >1–2	44 (41.1%)	16 (39.0%)	1.05
Family history of AD	84 (76.6%)	8 (19%)	3.92 (P < .001)*
Presentation sites of atopic dermatitis			
Scalp	14%	9.7%	1.44 (P = .37)
Face	49.5%	60.9%	0.81 (P = .27)
Arms	26.2%	31.7%	0.83 (P = .22)
Legs	37.3%	24.4%	1.53 (P = .48)
Chest	13.1%	29.3%	0.45 (P < .03)*
Back	14.9%	14.6%	1.02 (P = .93)
Stomach	5.6%	9.8%	0.57 (P = .21)
Initial number of sites (average)	1.62	1.78%	0.91 (P = .87)
Comorbidities			
Asthma	0.9%	2.4%	0.375 (P = .13)
Food allergies	11.2%	29.3%	0.382 (P = .44)
Cradle cap	24.3%	56.1%	0.433 (P = .24)
Diaper dermatitis	28%	29.3%	0.956 (P = .86)
Molluscum contagiosum	5.6%	0%	– (P = .053)
Bacterial infection requiring antibiotics	13.1%	14.6%	0.897 (P = .41)
Most common food allergens			
Milk	7.5%	14.6%	0.52 (P = .20)
Egg	8.4%	14.6%	0.58 (P = .23)
Tree nut	11.2%	7.3%	1.53 (P = .51)
Peanut	11.2%	4.8%	2.33 (P = .26)
Comorbid illnesses			
Infantile hemangioma	11.2%	2.4%	4.67 (P = .13)
Ear infection	2.8%	4.8%	
Perioral dermatitis	2.8%	2.4%	58 (P = .75)

*Statistically significant $P < .05$.

Patient consent

Not applicable.

Data availability

Data are accessible on request.

References

1 Böhme M, Svensson A, Kull I, Wahlgren CF. Hanifin's and Rajka's minor criteria for atopic dermatitis: which do 2-year-olds exhibit? J Am Acad Dermatol 2000;43(5 Pt 1):785–92.

2 Rapin A, Rehbinder EM, Macowan M, et al. The skin microbiome in the first year of life and its association with atopic dermatitis. Allergy 2023;78:1949–63.

3 Davis DMR, Drucker AM, Alikhan A, et al. American Academy of Dermatology Guidelines: awareness of comorbidities associated with atopic dermatitis in adults. J Am Acad Dermatol 2022;86:1335–6.e18.

4 Halken S, Muraro A, de Silva D, et al; European Academy of Allergy and Clinical Immunology Food Allergy and Anaphylaxis Guidelines Group. EAACI guideline: preventing the development of food allergy in infants and young children (2020 update). Pediatr Allergy Immunol 2021;32:843–58.

5 Alexopoulos A, Kakourou T, Orfanou I, Xaidara A, Chrousos G. Retrospective analysis of the relationship between infantile seborrheic dermatitis and atopic dermatitis. Pediatr Dermatol 2014;31:125–30.

6 Mubanga M, Lundholm C, Rohlin ES, Rejnö G, Brew BK, Almqvist C. Mode of delivery and offspring atopic dermatitis in a Swedish nationwide study. Pediatr Allergy Immunol 2023;34:e13904.

Harry M. MeisterMPhil[a],

Nanette B. SilverbergMD, MPH[b]

[a] *MRC Cognition and Brain Science Unit, University of Cambridge, Cambridge, UK*

[b] *Department of Dermatology and Pediatrics, Icahn School of Medicine at Mount Sinai, New York, New York*

* Corresponding author.
E-mail address: Nanette.silverberg@mountsinai.org (N.B. Silverberg).