Comorbid Conditions Associated with External Auditory Canal Dermatitis: A Retrospective Matched Case–Control Study

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Introduction

- **External auditory canal (EAC) dermatitis** is a common inflammatory condition managed across otolaryngology, dermatology, and primary care; yet its comorbidity profile remains poorly characterized, and existing evidence is limited to small dermatology-focused case series.[1,2]
- Although often attributed to local irritation, moisture, or device use, chronic and treatment-refractory disease may reflect underlying dermatologic or allergic conditions that can drive recurrence and treatment failure.[1,2]
- We hypothesized that EAC dermatitis is associated with distinct dermatologic and atopic comorbidity profiles compared with matched controls.

Objectives

- To characterize the dermatologic and allergic comorbidity profiles of patients with EAC dermatitis compared with matched controls.
- To evaluate audiologic findings and treatment utilization in EAC dermatitis patients relative to matched controls.

Methods

- **Study Design:** Retrospective matched case–control study; 2010-2025; Loyola University Medical Center
- **Cases:** 680 patients with EAC dermatitis identified via ICD-9/10 codes and clinical note review.
- **Controls:** 680 patients without EAC dermatitis matched 1:1 by age, sex, race, and encounter timing
- **Data:** Comorbidities via automated informatics pull; audiologic data and management variables via manual chart review
- **Statistical Analysis:** Conditional logistic regression stratified by matched pair

Results

- The study included 680 matched case-control pairs; groups were well-balanced on all demographic variables (Table 1)
- **Eczema was the only comorbidity independently and significantly associated with EAC dermatitis** (OR 3.64, 95% CI 2.47–5.35; p<0.001). Allergic rhinitis and prior ear surgery were not significantly associated (Table 2).
- Hearing loss type and distribution mirrored those of matched controls across all age groups, with sensorineural hearing loss increasing predictably with age in both groups (Figure 1).
- Cases were significantly more likely to receive topical steroids (65.0% vs. 26.9%), otic antibiotics (56.2% vs. 26.3%), and antifungals (44.6% vs. 21.6%; all p < 0.001) (Figure 2).

Table 1: Demographics and Clinical Comorbidities of EAC Dermatitis Cases and Matched Controls

Characteristic	Cases (n = 680)	Controls (n = 680)
Age, mean (SD)	51.7 (19.7)	51.7 (19.7)
Female sex, n (%)	465 (68.4)	465 (68.4)
Race/Ethnicity, n (%)		
White	480 (70.6)	486 (71.5)
Black or African American	74 (10.9)	71 (10.4)
Hispanic or Latino	87 (12.8)	78 (11.5)
Asian	16 (2.4)	12 (1.8)
Other or Unknown	23 (3.4)	33 (4.9)
Smoking status, n (%)[a]		
Never	350 (63.6)	342 (64.7)
Former	147 (26.7)	134 (25.3)
Current	49 (8.9)	51 (9.6)
Charlson Comorbidity Index, mean (SD)	2.4 (2.8)	2.5 (3.0)
Eczema, n (%)	128 (18.8)	41 (6.0)
Allergic rhinitis, n (%)	89 (13.1)	80 (11.8)

Table 2: Conditional Logistic Regression: Association of Skin/Atopic Conditions and Prior Ear Surgery with EAC Dermatitis

Characteristic	OR (95% CI)	P-Value
Skin and Atopic Conditions		
Eczema	3.64 (2.47–5.35)	<0.001
Allergic rhinitis	1.13 (0.82–1.56)	0.461
Ear Surgery History		
Prior ear surgery	0.78 (0.46–1.32)	0.355

Figure 1: Hearing Loss by Age Group – EAC Cases vs. Controls

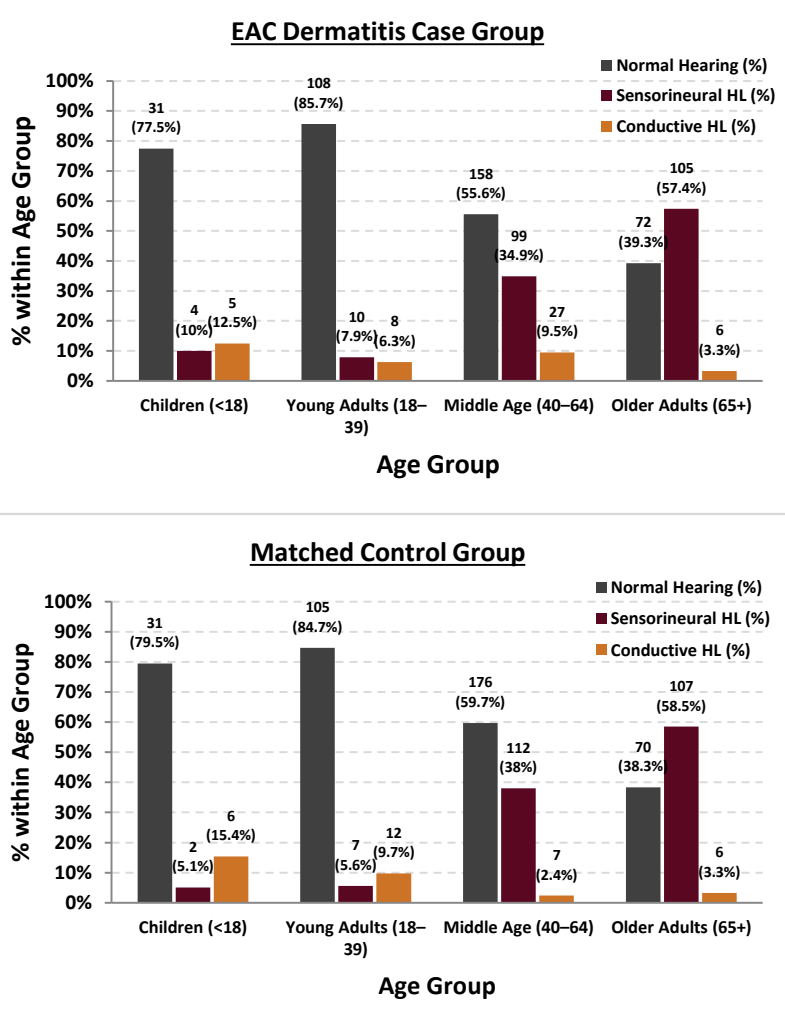
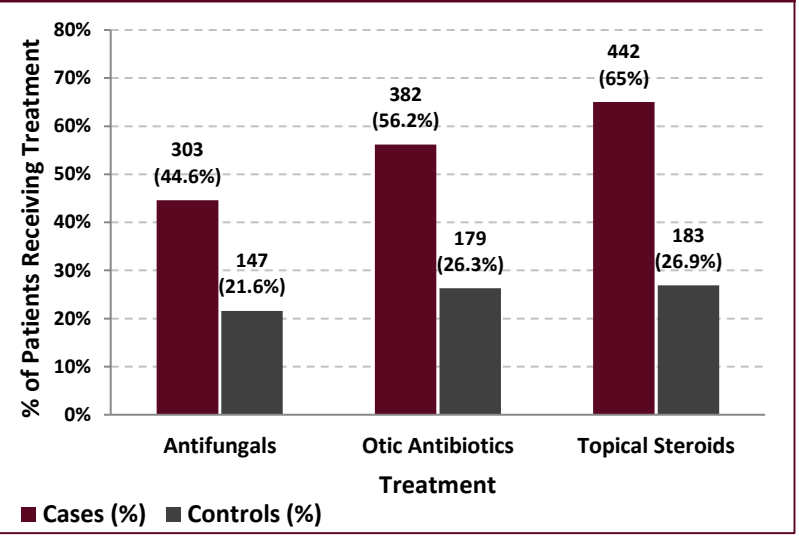


Figure 2: Treatment Comparison – EAC Cases vs. Controls



Discussion and Conclusion

- The specific association with eczema, independent of allergic rhinitis or prior ear surgery suggests an atopy-driven, skin-specific mechanism for chronic EAC dermatitis.
- Hearing loss followed expected age-related patterns, and high treatment utilization reflects the multi-modal management demands of treatment-refractory EAC dermatitis.
- **Conclusion:** Our findings support routine consideration of atopic skin disease in the ENT evaluation of patients with persistent EAC dermatitis.
- **Clinical Implication:** Otolaryngologists should maintain a high index of suspicion for EAC dermatitis in patients presenting with chronic or recurrent external ear symptoms, particularly when comorbid atopic conditions such as eczema are present.

References

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