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Current epidemiology of tinea corporis and tinea cruris causative species: Analysis of data from a major commercial laboratory, United States

Daria Zarzeka, MPH[a], **Kaitlin Benedict, MPH**[a], **Maryann McCloskey**[a], **Shawn R. Lockhart, PhD**[a], **Shari R. Lipner, MD, PhD**[b], **Jeremy A. W. Gold, MD, MS**[a]

[a]Mycotic Diseases Branch, Centers for Disease Control and Prevention, Atlanta, Georgia

[b]Department of Dermatology, Weill Cornell Medicine, New York, New York.

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To the Editor:

Tinea corporis and cruris are common dermatophytoses receiving renewed attention given the emergence of severe, antifungal-resistant cases.[1,2] US data on causative species are outdated and geographically limited.[3] Updated data could inform treatment guidelines and surveillance efforts. Therefore, we described fungal culture results from patients with suspected tinea corporis or cruris.

Using data from Labcorp, a major US commercial laboratory, we analyzed results from fungal cultures ordered March 1, 2019 to March 1, 2023 among patients whose reason for testing was tinea corporis or cruris. For each tinea type, we examined fungal culture results by patient demographic characteristics, ordering clinical specialty, and species.

In total, 15,563 and 2026 culture results were analyzed from patients with suspected tinea corporis and cruris, respectively (Table I). In the corporis group, median patient age was 30 years (interquartile range = 12–56); 51.4% were male. In the cruris group, median patient age was 46 years (interquartile range = 30–63); 76.8% were male. In both groups, most culture results were from South or Northeast residents and ordered by dermatologists.

Percent positivity was 22.6% (3510/15,563) in the corporis group and 26.1% (529/2026) in the cruris group, without substantial variation by demographic characteristics or ordering

Correspondence to: Jeremy A.W. Gold, MD, MS, Mycotic Diseases Branch, Centers for Disease Control and Prevention, 1600 Clifton Rd Northeast, Mailstop H24-10, Atlanta, GA 30329, JGold@cdc.gov.

Conflicts of interest

Dr Lipner has served as a consultant for Ortho-Dermatologics, Moberg Pharmaceuticals, Eli Lilly, and BelleTorus Corporation. Authors Zarzeka, Benedict, and McCloskey, Drs Lockhart and Gold have no conflicts of interest to declare.

Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the CDC.

specialty (Table II). Among positive results, in the corporis group, most were dermatophytes (55.6%, 76.1% of which were *Trichophyton* with species-level identification, mostly *Trichophyton tonsurans* [49.5%] and *Trichophyton rubrum* [40.3%]), then yeasts (20.2%, 58.5% of which were *Candida* species), nondermatophyte molds (16.5%), and unspecified fungus (7.7%).

In the cruris group, yeasts were most common (43.9%, 80.2% of which were *Candida* species), then dermatophytes (36.9%, 84.6% of which were *Trichophyton* with species-level identification, mostly *T rubrum* [77.6%] and *Trichophyton tonsurans* [14.5%]), nondermatophyte molds (10.2%), and unspecified fungus (9.1%). In both groups, *Trichophyton soudanese, Trichophyton violaceum*, *Trichophyton interdigitale*, and *T verrucosum* were identified, each composing <5% of *Trichophyton* with species-level identification.

This is the largest US study of tinea corporis and cruris culture results to date. Our low positivity rates (≤26.1%) were similar to a 1999 to 2002 U.S. study (26.3%) that included 505 body or groin site cultures.[3] This might reflect the insensitivity of fungal cultures. Alternatively, some patients might have had nonfungal skin conditions (eg, psoriasis), reinforcing the importance of a broad differential and diagnostic testing (eg, potassium hydroxide preparation, polymerase chain reaction) given the inaccuracy of visual diagnosis.[4] The previous study found *T rubrum* was the predominant dermatophyte[3]; however, that study aggregated body/groin results, making comparison difficult with our study, where *T tonsurans* predominated in the corporis group and *T rubrum* predominated in the cruris group. Yeasts were common among positive culture results, especially for the cruris group (43.9%), potentially representing colonization or infection. *Trichophyton soudanense* and *T violaceum*, species primarily associated with immigration in the United States from certain African countries,[5] remain uncommon.

Study limitations include representativeness and lack of information on the emerging dermatophyte *Trichophyton indotineae*, whose differentiation from other Trichophyton species requires advanced molecular testing available only at select reference laboratories.[2]

This study updates tinea corporis and cruris epidemiology. Continued monitoring is needed in an era of emerging resistance.

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Table I.

Fungal culture results from persons with suspected tinea corporis or tinea cruris, United States, March 1, 2019 to March 1, 2023 *

	Tinea corporis		Tinea cruris	
Characteristic	***N* = 15,563**	**%**	***N* = 2026**	**%**
Age group, y				
0–17	5644	36.6	221	11.1
18–44	4374	28.4	740	37.3
45–64	3053	19.8	611	30.8
≥65	2344	15.2	414	20.8
Unknown †	148	—	40	—
Sex				
Male	7831	51.4	1521	76.8
Female	7412	48.6	459	23.2
Unknown †	320	—	46	—
US census region				
South	6741	43.3	835	41.2
Northeast	6707	43.1	837	41.3
West	1124	7.2	257	12.7
Midwest	991	6.4	97	4.8
Physician type				
Dermatology	9380	69.0	1293	71.6
Pediatrics	2362	17.4	90	5.0
FM, GP, or IM	1251	9.2	253	14.0
Other	601	4.4	170	9.4
Unknown †	1969	—	220	—
Fungal culture results				
Negative/no fungal growth	12,053	77.4	1497	73.9
Positive for fungus	3510	22.6	529	26.1
Dermatophytes	1953	55.6	195	36.9
Trichophyton (species specified) ‡	1486	76.1	165	84.6

Characteristic	Tinea corporis		Tinea cruris	
	N = 15,563	%	*N* = 2026	%
T rubrum	599	40.3	128	77.6
T tonsurans	736	49.5	24	14.5
Other *Trichophyton* species	151	10.2	13	7.9
Unspecified *Trichophyton* species and other dermatophytes	467	23.9	30	15.4
Nondermatophyte molds	578	16.5	54	10.2
Dematiacious molds	318	55.0	26	48.1
Other	260	45.0	28	51.9
Yeasts[§]	710	20.2	232	43.9
Candida species	415	58.5	186	80.2
Unspecified yeast	96	13.5	23	9.9
Other	199	28.0	23	9.9
Unspecified fungus	269	7.7	48	9.1

FM, Family medicine; *GP*, general practitioner; *IM*, internal medicine.

[*] Labcorp, a major US commercial laboratory, sends data to Centers for Disease Control and Prevention's National Syndromic Surveillance Program (https://www.cdc.gov/nssp/index.html), which is a collaborative electronic health data sharing effort among Centers for Disease Control and Prevention, health departments, and academic and private sector partners. Logical Observation Identifiers Names Codes 17947–3, 17948–1, 17949–9, 18482–0, 42804–5, 42805–2, and 51723–5 were used to identify fungal culture results. The study period represents the widest range of available data at the time of analysis.

[†] Excluded from the denominator for frequency calculations.

[‡] Among all *Trichophyton* results identified to the species level, 5.5% were *Trichophyton mentagrophytes;* other uncommon (<5%) *Trichophyton* species identified were *T soudanese, T violaceum, T interdigitale*, and *T verrucosum.* Among all dermatophyte species, the most common *non-Trichophyton* genus was *Microsporum.*

[§] Among *Candida* results from patients with suspected tinea corporis, the most frequent species were *Candida parapsilosis* (*n* = 183, 44.1%), *Candida albicans* (*n* = 152, 36.6%), and *Candida lusitaniae* (*n* = 14, 3.4%). Among *Candida* results from patients with suspected tinea cruris, the most frequent species were *C albicans* (*n* = 134, 72.0%) and *C parapsilosis* (*n* = 35, 18.8%). Among the "other" yeast results the most common results were species from the genera *Rhodotorula* (65.8%) and *Malassezia* (18.6%) for patients with suspected tinea corporis and *Rhodotorula* (65.2%) for patients with suspected tinea cruris.

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Table II.

Percent positivity among fungal culture results from persons with suspected tinea corporis or tinea cruris, United States, March 1, 2019 to March 1, 2023

Characteristic	Tinea corporis (*N* = 15,563)	Tinea cruris (*N* = 2026)
Age group, y		
0–17	1413/5644 (25.0)	54/221 (24.4)
18–44	778/4374 (17.8)	178/740 (24.1)
45–64	667/3053 (21.8)	179/611 (29.3)
≥65	617/2344 (26.3)	109/414 (26.3)
Sex		
Male	1904/7831 (24.3)	404/1521 (26.6)
Female	1541/7412 (20.8)	112/459 (24.4)
US census region		
South	1728/6741 (25.6)	235/835 (28.1)
Northeast	1310/6707 (19.5)	200/837 (23.9)
West	257/1124 (22.9)	62/257 (24.1)
Midwest	215/991 (21.7)	32/97 (33.0)
Provider type		
Dermatology	2044/9380 (21.8)	328/1293 (25.4)
Pediatrics	623/2362 (26.4)	20/90 (22.2)
FM/GP/IM	285/1251 (22.8)	71/253 (28.1)
Other	122/601 (20.3)	48/170 (28.2)
Total	3510/15,563 (22.6)	529/2026 (26.1)

FM, Family medicine; *GP*, general practitioner; *IM*, internal medicine.