



eISSN 2036-7406

Dermatology Reports

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Please cite this article as:

Veraldi S, Schianchi R, Nazzaro G, Aromolo IF. Why do cat flea infestations often occur on the upper limbs and trunk? Fleas do not fly... Dermatol Rep 2025 [Epub Ahead of Print] doi: 10.4081/dr.2025.10593

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Submitted 02/09/25 - Accepted 12/10/25

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Why do cat flea infestations often occur on the upper limbs and trunk? Fleas do not fly...

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Key words: cat; cat flea; *Ctenocephalides felis felis*; papular urticaria.

Contributions: SV, acquisition, analysis, and interpretation of data, and writing; IFA and RS, acquisition, analysis, and interpretation of data, and editing; GN, acquisition, analysis, and interpretation of data, conceptualization, and supervision. All authors made a substantive intellectual contribution. All the authors have read and approved the final version of the manuscript and agreed to be held accountable for all aspects of the work.

Conflict of interest: the authors have no conflict of interest to declare.

Ethics approval and consent to participate: the study was conducted in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national), with the Helsinki Declaration of 1975, as revised in 2000, and with the Taipei Declaration. In accordance with the guidelines of our institution's ethics committee, and given the nature of the study, formal approval was not required.

Consent for publication: the patients gave their written consent to use their personal data for the publication of this report and any accompanying images.

Availability of data and materials: anonymized data will be shared upon reasonable request from any qualified investigator for purposes of replicating procedures and results. All data generated or analyzed during this study are included in this published article.

Dear Editor,

Some species of fleas belonging to the genera *Ctenocephalides*, *Pulex*, and *Xenopsylla* can infest human skin.¹⁻³ Multiple, isolated or clustered, roundish, erythematous, pruritic papules are the most typical clinical presentation of flea infestation.¹⁻¹⁴ These lesions are very often located on the legs and ankles, as fleas are wingless but have powerful hind legs that allow them to leap up to 30 cm from the ground.¹

We present 9 cases of cat flea (*Ctenocephalides felis felis*, Siphonaptera: Pulicidae) infestation located on the upper limbs and trunk, discussing the reason for these locations.

Nine Caucasian patients, 5 males and 4 females, with an age ranging from 6 to 54 years (mean age: 43.3 years) were admitted with a clinical diagnosis of suspected entomodermatitis. All patients complained of severe itching. Dermatological examination revealed dermatitis involving the arms, breasts, abdomen, and flanks in all cases, characterized by multiple, isolated or clustered, roundish, erythematous papules (Figure 1). The medical history indicated that all patients owned cats and were accustomed to watching television with their cats on their laps, which justified the locations of the lesions. A clinical diagnosis of cat flea infestation was made, and specimens of live or dead adult cat fleas were found in the beds, couches, and armchairs of 7 patients. In addition, a few dead larvae were identified, and both live and dead adult fleas, as well as occasional dead larvae, were also collected from cat kennels.

Enzyme-linked immunosorbent assay (ELISA) for specific IgE to *Ctenocephalides felis felis* was performed in 2 patients (husband and wife): the woman had high levels of specific IgE, whereas the man had levels within normal ranges.

All patients were successfully treated with hydrocortisone butyrate cream (2 applications/day) and hydroxyzine (25 mg/day) for 5-10 days. All cats were simultaneously and successfully treated with topical products containing fipronil and permethrin. Pest control was carried out in patients' houses by means of deltamethrin. Follow-up (up to six months) was possible in 6 out of 9 patients and yielded negative results.

Papular urticaria is the most common clinical manifestation of cat flea bites. It is characterized by erythematous, papular, urticarial, and pruritic lesions.^{4-8,10-14} Other reported skin reactions include maculopapular rashes^{8,11} and, more rarely, bullous lesions.¹⁵ Important outbreaks of cat flea infestations have been documented in families,⁷ childcare facilities,⁵ student hostels,¹¹ homeless populations, and hospitals.¹²

Immuno-allergological studies were carried out in individuals with suspected cat and/or cat flea allergy.¹⁶⁻¹⁸ In particular, cat flea-specific IgE antibodies were measured in serum samples from

patients with suspected cat allergy using the radioallergosorbent test (RAST). Results showed that 46% of patients were RAST-positive for both cat and cat flea antigens, while 9% were RAST-positive only for cat flea antigens. These results showed that some patients with cat allergy had specific IgE to both cats and cat fleas, whereas others with suspected cat allergy had specific IgE to cat fleas only.¹⁶

It is possible that Cte f2, a recombinant salivary antigen of *Ctenocephalides felis*, has a role in patients with papular urticaria.¹⁸ Differential diagnosis of papular urticaria due to cat flea bites includes skin infestations caused by: i) *Cimex lectularius* (bedbugs), which cause 2-4 roundish, erythematous, pruritic papules or wheals, typically arranged in a single row; a characteristic and unpleasant odor is noted when bedbugs are crushed; dogs and cats are usually absent from the home environment;^{2,3} ii) *Sclerodermus domesticus*: which produces roundish, erythematous papules, accompanied by a more or less severe burning sensation or pain; this infestation is considered an occupational disease in antiquarians and restorers;¹⁹ and iii) *Cheyletiella* sp.: which causes erythematous papules and wheals, sometimes tiny vesicles, accompanied by severe itching; scratch lesions are not rare.¹

In summary, cat flea infestation of the upper limbs and trunk occurs more frequently than previously acknowledged. Its diagnosis is based on: i) a careful medical history; ii) the appearance of roundish, erythematous papules, accompanied by severe itching; iii) the presence of cats in the houses and the way the patient interacts with them; and iv) the presence of fleas, larvae, and eggs in beds, couches, armchairs, and kennels.

Patient perspective

I was relieved that the treatment worked quickly and effectively and that the itching disappeared within a few days. Once the cause was identified, I took the necessary preventive steps at home and with my cat to ensure the problem wouldn't recur.

References

1. Veraldi S, Süß L. [Cutaneous manifestations caused by arthropods]. Roma: Medizioni, 2022, 11-20.
2. Veraldi S, Carrera C, Schianchi R. Entomodermatitis. J Eur Acad Dermatol Venereol 1998;11:S239.
3. Veraldi S, Carrera C, Schianchi R. Skin manifestations caused by insect stings and bites. J Eur Acad Dermatol Venereol 1999;12:S260.
4. Hunter KW Jr, Campbell AR, Sayles PC. Human infestation by cat fleas, *Ctenocephalides felis* (Siphonaptera: Pulicidae), from suburban raccoons. J Med Entomol 1979;16:547.
5. Corpus LD, Corpus KM. Mass flea outbreak at a child care facility: case report. Am J Public Health 1991;81:497-8.
6. Beck W, Clark HH. [Differential diagnosis of medically relevant flea species and their significance in dermatology]. Hautarzt 1997;48:714-9.
7. Naimer SA, Cohen AD, Mumcuoglu KY, Vardy DA. Household papular urticaria. Isr Med Assoc J 2002;4:911-3.
8. Noor Hayati MI, Jeffery J, Anisah N, Yusof S. Maculopapular rashes caused by cat flea *Ctenocephalides felis* (Siphonaptera: Pulicidae) bites in a university student. Trop Biomed 2002;19:131-4.
9. Brouqui P, Raoult D. Arthropod-borne diseases in homeless. Ann NY Acad Sci 2006;1078:223-35.
10. Lee HL, Krishnasamy M, Jeffery J, Paramasvaran S. Notes on some ectoparasites received by the Medical Entomology Unit, Institute for Medical Research. Trop Biomed 2006;23:131-2.
11. Chin HC, Ahmad NW, Lim LH, et al. Infestation with the cat flea, *Ctenocephalides felis felis* (Siphonaptera: Pulicidae) among students in Kuala Lumpur, Malaysia. Southeast Asian J Trop Med Public Health 2010;41:1331-4.
12. Leelavathi M, Norhayati M, Lee YY. Cat flea infestation in a hospital: a case report. Korean J Parasitol 2012;50:79-82.
13. Youssefi MR, Rahimi MT. Extreme human annoyance caused by *Ctenocephalides felis felis* (cat flea). Asian Pac J Trop Biomed 2014;4:334-6.
14. Lozano AM, López JF, Zakzuk J, García E. Urticaria papular y sus agentes causales en Colombia. Biomédica 2016;36:632-45.
15. Izri A, Akhoundi M. Bullous arthropod reaction secondary to *Ctenocephalides felis*. JAMA Dermatol 2025;161:208-9.

16. Rolfsen W, Schröder H, Tibell C, Tibell M. Detection of specific IgE antibodies towards cat flea (*Ctenocephalides felis felis*) in patients with suspected cat allergy. *Allergy* 1987;42:177-81.
17. Trudeau WL, Fernández-Caldas E, Fox RW, et al. Allergenicity of the cat flea (*Ctenocephalides felis felis*). *Clin Exp Allergy* 1993;23:377-83.
18. Sabogal P, Lozano A, Mercado D, et al. Cellular and humoral responses to Cte f 2, a cat flea allergen, in children with papular urticaria. *Int Arch Allergy Immunol* 2019;179:89-101.
19. Veraldi S, Serini SM, Alberti Violetti S. *Sclerodermus domesticus* infestation: an occupational disease in antiquarians and restorers. *Dermatitis* 2010;21:221-2.

Figure 1. Widespread papular-erythematous lesions due to cat fleas on the arm (a), breasts (b), and flanks (c,d).

