

Vacation Fun! A Cutaneous Toe Infestation From Walking On The Beaches In Brazil

By Krisha Borromeo MD FPCP DPCGM; Samira Abukar BSc DCh
and Carol Ott MD FRCPC

How to cite: Borromeo K, Abukar S, Ott C. Case Report: Vacation Fun! A cutaneous toe infestation from walking on the beaches in Brazil. *Wound Care Canada*. 2023;21(1): 10-13. DOI: <https://doi.org/10.56885/TGHW8761>

A 52-year-old female came to the wound care clinic concerned about a growth on the fourth toe of her right foot. It appeared two weeks prior and had increased in size. It was firm and did not cause any pain.

She considers herself to be a healthy person who runs daily. She has no significant past medical history other than a recently treated wart on her hand. There had been no recent change in footwear. She recently was on a trip to Brazil with her family

where she spent time walking on the beach.

On examination, there was a small 4x4mm lesion with the height of 3mm on the fourth toe of the right foot (see Figure 1). It consisted of a callus cap with verrucous tissue underneath. Pedal pulses were present bilaterally. 10g mono-filament testing was conducted and showed intact sensation at all 10 sites of the foot.

The lesion was excised with a scalpel and sent to pathology for evaluation, which lead to the definitive diagnosis.



Question For The Reader

What would be the differential diagnoses for the etiology of this toe lesion?

Differential diagnoses for this foot issue are considerable, but keeping in mind her recent travel and history of a wart on her hand, would include: ¹⁻⁵

1. Verrucae (wart)
2. Myiasis (the infection of a fly larva (maggot) in human tissue)
3. Pyogenic infection/abscess
4. Foreign body
5. Acute paronychia
6. Cutaneous larva migrans
7. Dermoid cysts
8. Dracontiasis
9. Melanoma
10. Deep mycosis
11. Bites or stings of other injurious arthropods.¹⁻⁵

Diagnosis

A histology report showed there were arthropod body parts including an exoskeleton, tracheal rings, a striated muscle and eggs in varying stages of development. The morphology of the arthropod parts was consistent with tungiasis – an infestation by the flea *Tunga penetrans*.

Introduction:

Tungiasis is a neglected ectoparasitic disease from the burrowing of the female *Tunga penetrans* (also called sand flea, jigger, nigua, chica, pico, pique, or suthi) into exposed skin (see Figure 2), typically the periungual region of the feet and heels.⁶ It is endemic in Latin America, the Caribbean, and sub-Saharan Africa, and can be observed in travelers returning from these regions.⁷

Depending on the burden of the disease, secondary bacterial infections, tetanus, and gangrene may result. It is also a zoonotic disease, with a variety of animal reservoirs such as cats,



Figure 1: Growth on the 4th digit of the right foot.

dogs, horses, rats, and pigs living in contaminated soil or sand.⁷ The life cycle of this parasite is shown below (see Figure 2). After penetration, the flea undergoes hypertrophy and the abdominal sections can be enlarged up to 1 cm.⁶

Presentation:

Once the adult gravid flea burrows painlessly into the skin, it matures and evolves from a 1 mm red-brown macule into a 10 mm pearly white nodule with a central dark punctum.⁸ Engorgement is due to egg production and causes swelling, erythema, pruritus and pain. Egg release and its death trigger inflammation, resulting in a black-crust papule which heals as a punched-out scar.⁸

Diagnosis:

Aside from eliciting a travel or exposure history, a dermoscopy is a convenient tool to identify typical features, such as dark central pores (a hallmark of tungiasis corresponding to the anogenital and respiratory opening), whitish oval structures

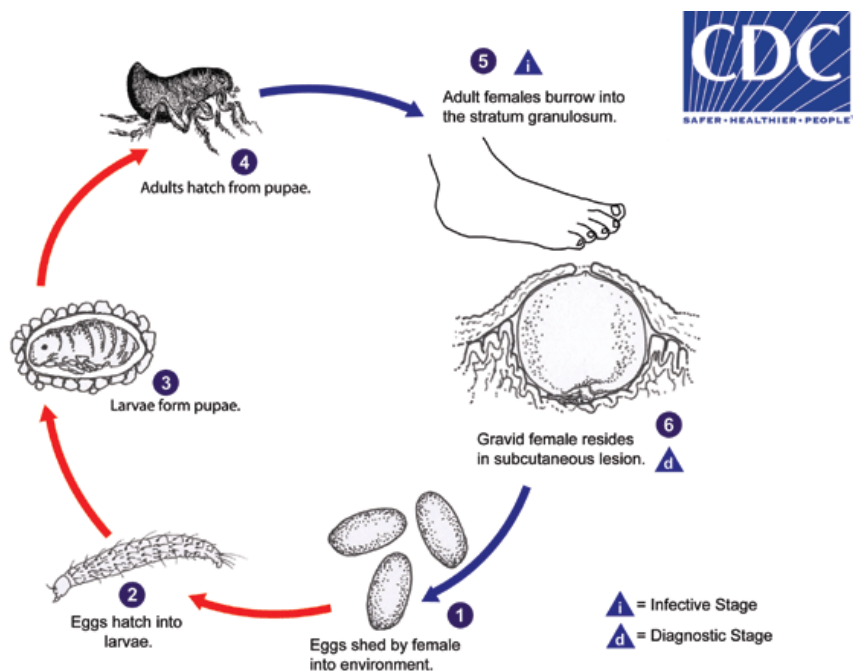


Figure 2: Life Cycle of the Female *Tunga penetrans*.
Source: <https://www.cdc.gov/dpdx/tungiasis/index.html>

(eggs), silver dendritic fibres (trachea), wriggling reddish tubules (midgut filled with host blood), and blue-black or grey-blue blotches (hematin in the gastrointestinal tract).⁹ Extraction of the flea is both diagnostic and therapeutic and no laboratory or imaging studies are typically indicated other than a histological examination of the excised tissue if a skin biopsy is done.⁸⁻¹⁰

Treatment:

If left untreated, tungiasis is a self-limiting disease, generally concluding with the end of the flea's life cycle in approximately six weeks, leading to involution and expulsion from the skin through exfoliation.⁸ Preferred treatment is the sterile removal of the entire flea as soon as possible with topical wound care to prevent complications such as secondary bacterial infection, cellulitis, and blood-borne diseases.⁸ Tetanus vaccination should be up to date.⁸ Clinical trials that evaluated the efficacy of targeted application of topical products, such as dimethicone-based compounds have shown benefit in disseminated cases as these agents act to occlude the parasite's

trachea. While oral ivermectin is not effective, topical ivermectin shows promise.⁸

Prevention:

Travelers walking on tropical beaches are advised to wear closed-toe shoes and to do frequent inspections of their feet. Twice daily application of a plant-based lotion (such as Zanzarin, containing coconut oil, jojoba oil, and aloe vera) was also shown in randomized controlled trials to lower infestation intensity in resource-poor settings.¹⁰

Outcome

Once the area was debrided it proceeded to heal with no issues (see Figure 3). The patient had received a recent tetanus shot.

Prevention for future concerns was discussed with the patient as she will likely return to Brazil for future vacations.

Our clinic staff had a debriefing session on this diagnosis, which is very unusual for our area. We discussed the need for asking patients about recent travel history. 📌



Figure 3: Once the infection was removed, the patient went on to heal.

Krishna Borrromeo, MD FPCP DPCGM is a Fellow in Geriatric Rehabilitation at the University of Toronto and a geriatrician in the Philippines.

Samira Abukar, BSc DCh is a chiropractist practising at Women's College Hospital Wound healing clinic and Queen Square Family Health Team, Toronto, ON.

Carol LB Ott, MD FRCPC is a geriatrician practising wound care and geriatrics in Toronto Baycrest and Women's College Hospital and Assistant Professor at the University of Toronto.

References

1. Frank S, Feldmeier H, Heukelbach J. Tungiasis: More than an exotic nuisance. *Travel Med Infect Dis.* 2003;1: 159-166.
2. Heukebach J, De Oliveira FA, Hesse G, Feldmeier H. Tungiasis: A neglected health problem of poor communities. *Trop Med Int Hlth.* 2001;6: 267-272.
3. Wardhaugh AD, Norris JF. A case of imported tungiasis in Scotland initially mimicking verrucae vulgaris. *Scot Med J.* 1994;39: 146-147.
4. Golough R, Spiler M. A paraungual tumor? No, just tungiasis. *Radiol Oncol.* 2000;34: 35-39.
5. Sanusi ID, Brown EB, Shepard TG, Graften WD. Tungiasis: Report of one case and review of the 14 reported cases in the United States. *J Amer Acad Derm.* 1989; 20: 941-944.
6. Heukelbach J. Tungiasis. *Rev Inst Med Trop Sao Paulo.* 2005;47(6): 307-313.
7. Centers for Disease Control and Prevention. <https://www.cdc.gov/dpdx/tungiasis/index.html>. Website accessed 29/05/2003.
8. Abrha S, Heukelbach J, Peterson GM, et al. Clinical interventions for tungiasis (sand flea disease): A systematic review. *Lancet Infect Dis.* 2021;21(8): e234-e245.
9. Kosumi H, Iwata H, Miyazawa H, et al. Dermoscopic features of tungiasis. *J Eur Acad Dermatol Venereol.* 2018;32(8): e313-e314.
10. Eisele M, Heukelbach J, Van Marck E, et al. Investigations on the biology, epidemiology, pathology and control of Tunga penetrans in Brazil: Natural history of tungiasis in man. *Parasitol Res.* 2003;90: 87-99.

THE LATEST EDITION OF

Limb Preservation JOURNAL

AVAILABLE ONLINE TO READ OR DOWNLOAD

Feature articles include:

- Inlow's 60-second Diabetic Foot Screen: Update 2022
- Understanding Barriers and Solutions to the Delivery of Best Practices in Diabetes-related Foot and Wound Care
- Decreasing the Incidence of Post-Operative Complications Following Minor Level Amputations
- Promoting Foot Care and Footwear in the Community: A Case Study

READ NOW ONLINE AT WOUNDSCANADA.CA



+ The ALLEVYN LIFE Difference

Clinicians rated ALLEVYN LIFE Dressings as better than previous dressings for ease of use, adhesion, and wear time¹

Smith+Nephew

ALLEVYN[®] LIFE
Foam Dressing

Breathable



Film layer provides a bacterial barrier

Innovative



EXUMASK[®] Change Indicator helps patients and caregivers own the recovery process⁶ while providing high patient satisfaction through fewer dressing changes^{2,3,4}

Hyper-absorbent



Lock-away core helps minimize leakage of fluid without causing maceration⁷

Protective



Hydrocellular foam cushions, absorbs exudate

Gentle and secure



Silicone adhesive wound contact layer can be repositioned⁵ and may reduce trauma to the wound during dressing changes

Shaping 
what's possible
in wound care

Would you like to receive a sample of ALLEVYN LIFE?



Scan or click to request your today.

For detailed product information, including indications for use, contraindications, precautions and warnings, please consult the product's Instructions for Use (IFU) prior to use.

References: 1. *Krönert GT, Roth H, Searle RJ. Efficiency in wound care: The impact of introducing a new foam dressing in community practice. EWMA Journal. 2016;16(2):7-12. 2. Cutting of ALLEVYN variants. Data on File Report DS/14/318/R-January 2015. 3. Data on File Report DS/15/025/R – May 2016, L. Daubney. Physical Testing ALLEVYN LIFE Gen2. 4. SECURA Protective Ointment [Instructions for Use]. 5. Schutt SC, Tarver C, Pezzani M. Pilot study: Assessing the effect of continual position monitoring technology on compliance with patient turning protocols. Nurs Open. 2017; 207, 1-8. 6. Forni C, D'Alessandro F, Gallerani P, et al. Effectiveness of using a new polyurethane foam multi-layer dressing in the sacral area to prevent the onset of pressure ulcer in the elderly with hip fractures: A pragmatic randomised controlled trial. Int Wound J. 2018; 15(3):383-390. 7. Rossington A, Drysdale K, Winter R. Clinical performance and positive impact on patient wellbeing of ALLEVYN Life. Wounds UK. 2013;9(4):91-95.

Advanced Wound Management
2280 Argentia Road, Mississauga,
Ontario, Canada. L5N-6H8

www.smith-nephew.com
T 1-800-463-7439
F 1-800-671-9140

®Trademark of Smith+Nephew
™All trademarks acknowledged
©2023 Smith+Nephew, Inc.
CA75225 05/23