The Human Bot Fly & Other Flies That Cause Myiasis

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Outline

Introduction

What is Myiasis?

The Infestation of animal tissue with Dipteran larvae (i.e. maggots)

Occurs predominantly in the tropics and subtropics of Africa and the Americas

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**Dermatobia hominis:**
The Human Bot Fly

- Taxonomy:
  - Phylum- Arthropoda
  - Class- Insecta
  - Order- Diptera
  - Family- Oestridae
  - Genus- Dermatobia
  - Species- *D. hominis*

The Human Bot Fly Life-cycle

- Females “glue” their eggs onto the body of an arthropod (usually a fly or mosquito)
- Eggs drop off the mosquito (or fly) during a blood meal
- Eggs hatch in response to heat and larvae burrow into the epidermis
- Larvae then undergo 3 distinct developmental stages (instars) within the host

Three Larval Instars of *D. hominis*

- The first instar is subcylindrical with concentric rows of small backward facing spines encasing the larval body
- The second instar has a pyriform (tapered) shape with 6 posterior spiracles becoming more visible as black dots in the middle of the lesion
- The third instar is the form that emerges from the lesion and is a fusiform shape (can be as long as 2cm)
Life Cycle cont.

- Third instar larvae emerges, falls to the ground and pupates in the soil
- Pupate develops further into mature, adult Bot Fly
Distribution of *D. hominis*

Vectors for *D. hominis*

- Mosquitoes and other flies that require a blood meal are all possible vectors for The Human Bot Fly’s eggs.

Vectors Cont.

- This method of depositing eggs on a different insect for dispersal/ transmission is known as PHORESIS.
The Tumbu Fly

- *Cordylobia anthropophaga*
- Limited to tropical Africa
- Life-cycle is very similar to *D. hominis* with the exception of its vector
- Eggs are laid on inadequately washed linens
- Larvae penetrate the skin (via oral hooks) without causing pain and begin development

Lund's Fly

- *Cordylobia rodhaini*
- Limited to rain forests of tropical Africa
- Humans are typically accidental hosts

Species of Cordylobia
New World Screwworm Fly
- *Cochliomyia hominivorax* (hominivorax=maneater)
- Was once widely distributed throughout South and Central America along with the Southern states of the U.S.
- Eggs are laid in close proximity to open wounds or body orifices
- Called Screwworms for the screw-like appearance of the body

Old World Screwworm Fly
- *Chrysomyia bezziana*
- Widely distributed across Africa, Asia, and Australia
- Also deposit their eggs in close proximity to open wounds or body orifices
- Have been known to burrow into bone

Wohlfahrtia Species
- *W. magnifica*: Southeastern Europe, Russia, China, and North Africa
- *W. vigil* and *W. opaca*: North America
- Unique in that eggs are not deposited, but rather 1st instar larvae are deposited in or around the eyes, ears, mouth, and nose (can also occur around wounds)
Prevention/Treatment

- *D. hominis*
- The Tumbu Fly and Lund's Fly
- New World and Old World Screwworm Flies

Honorable Mentions/Current Applications

- *Auchmeromyia luteola*
- *Gasterophilus intestinalis*
- *Oestus ovis*
- *Rhinoestrus purpureus*
- *Hypoderma* Genus
- Maggot Debridgment Therapy
Literature Cited

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