

Potential urogenital myiasis caused by *Psychoda* sp. (Nematocera: Psychodidae). First case reported in Spain

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ABSTRACT

A 35-year-old woman from Alcoi (Alacant, Spain), found a dozen strange wormlike organisms moving about in the water in the bathtub of her home whilst she was having a bath. The woman had a miscarriage two weeks before and still presented occasional bleeding in the urogenital area, which caused the woman to be extremely worried, relating the presence of the larvae with the miscarriage as the possible origin. The organisms were identified, at Department of Parasitology at University of València, as larvae and exuvia belonging to *Psychoda* genus, subfamily Psychodinae (Nematocera: Psychodidae). The potential presence of the larvae, although not demonstrated, in the urogenital system of the woman may have been due to, for example, the use of a public lavatory, where a moth fly laid its eggs attracted by the woman's occasional bleeding. The present accidental myiasis case cannot be certified and has to be reported as potential. This case, together with previous reports, suggests that *Psychoda* larvae have to be recognized as an accidental cause of urogenital and gastric myiasis.

Key words: Moth fly, *Psychoda* sp., urogenital myiasis, Alcoi, Spain.

RESUMEN

Una mujer de 35 años, residente en Alcoi (Alacant, España), encontró una docena de extraños gusanos libres en el agua mientras se bañaba en la bañera del domicilio. La mujer había abortado dos semanas antes y aún presentaba un sangrado puntual en la zona urogenital, lo cual causó en ella gran preocupación al relacionar la presencia de las larvas como el origen del aborto. Los "gusanos" fueron identificados, en el Departament de Parasitologia de la Universitat de València, como larvas y mudas pertenecientes al género *Psychoda*, subfamilia Psychodinae (Nematocera: Psychodidae). La probable, pero no demostrada, presencia de larvas en el sistema urogenital de la mujer podía haberse debido a la oviposición de un mosquito polilla durante el uso de un baño público, por ejemplo, atraída por el sangrado puntual de la

Received: 28 July 2011. Accepted: 27 September 2011.

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mujer, el cual conllevaría presencia bacteriana y de materia orgánica en descomposición. El presente caso de miasis accidental queda sin certificar, debiéndose calificar de potencial. Este caso, junto a los previamente reportados, sugiere la necesidad reconocer la capacidad de las larvas de *Psychoda* como causantes accidentales de miasis urogenitales y gástricas.

Palabras clave: Mosquito polilla, *Psychoda* sp., miasis urogenital, Alcoi, España.

INTRODUCTION

Human myiasis are frequently caused by larvae of cycloraphan diptera, but may sometimes also be caused by other dipteran larvae, such as brachyceran and nematoceran (Harwood & James, 1979). Myiasis due to larvae of the suborder Nematocera are produced by species belonging to the genus *Psychoda* (moth fly), although mainly being described as pseudomyiasis, in which a genuine parasitisation has not been certified, but merely the accidental discovery of larvae, in particular urogenitally. However, genuine myiasis caused by *Psychoda* spp. larvae have been reported from China (Chin, 1965; Whang & Liu, 2006; Zhou *et al*, 2008), Japan (James, 1947; Zumpt, 1965), Turkey (Dincer *et al*, 1995; Taylan-Ozkan *et al*, 2004; Güven *et al*, 2008), the UK (Patton & Evans, 1929), Chile (Donoso-Barros & Cambiazo, 1950) and Argentina (Mariluis *et al*, 2007), including urogenital cases as well as gastric cases, in children and women.

Larvae of *Psychoda* occur in filter beds and settling tanks of sewage-treatment and water-treatment plants, where they feed on algae, fungi, bacteria, and protozoa. They also may be present in and around homes and buildings, where they emerge from breeding sites. Resting sites include buildings, drains, sewers, cesspools, septic tanks, sewage treatment plants, and other humid, protected sites (Rutledge & Gupta, 2002).

MATERIAL AND METHODS

A 35-year-old woman from Alcoi (Alacant, Spain), found a dozen strange wormlike organisms moving about in the water in the bathtub of her home whilst she was having a bath, once together with her infant daughter and on other occasions by herself. The absence of larvae during the bath

of other relatives made her think about a potential intestinal or urogenital expulsion of parasites from her body. However, she was not able to obtain any medical explanation or information about the origin or identification of the wormlike organisms neither at any local nor regional health centre.

RESULTS

The woman contacted the Department of Parasitology at University of València (DPUV), where the wormlike organisms (Figure 1) were identified as larvae and exuvia belonging to *Psychoda* genus, subfamily Psychodinae (Nematocera: Psychodidae), following the key of Zumpt (1965) and the description of Rutledge & Gupta (2002). In general, these larvae are subcylindrical or fusiform, about 6 mm long, with nine segments (3 thoracic and 6 abdominal), with secondary annulations, which bear tergal plates, and with a poor development of spines. Larvae have a grey colour, except the well developed head, dorsal plates, and the siphon, at the end of the abdomen, which are dark.

The woman had a miscarriage two weeks before and still presented occasional bleeding in the urogenital area, which caused the woman to be extremely worried, relating the presence of the larvae with the miscarriage as the possible origin.

The bath was filled with water several times to observe the possible emergence of larvae from the tubes of the bath, especially from those of the hydro-massage system, not having been used for several years. Nevertheless, she found two more dead larvae when turning on the device. DPUV suggested carrying out enemas or having a bath with lukewarm water in a relative's home to confirm the possible presence of more larvae, which could not be verified, and consequently parasitisation was considered to have ceased.



Figure 1. *Psychoda* sp. larva. A) General view. B) Head and thoracic segments. C) Dorsal view of abdominal segments. D) Siphon. Bar, 0.5 cm A); 250 μ m B), C) and D).

DISCUSSION

Analysing the facts made it possible to establish two hypotheses: 1) the larvae were situated inside the hydro-massage device and gained access to the bath when filled with water on various occasions; 2) the larvae were expelled from the woman's urogenital area every time she took a bath. The first hypothesis seems more logical, although some questions cannot be easily clarified, e.g. how did the larvae and eggs gain access to the hydro-massage device and how did they survive in dryness for such a long period? The second hypothesis may explain the presence of the larvae only then when the woman was having a bath, and that some larvae entered the hydro-massage system and died due

to dryness after emptying the bath. The potential presence of the larvae, although not demonstrated, in the urogenital system of the woman may be due to, for example, the use of a public lavatory, where a moth fly female laid its eggs attracted by the woman's occasional bleeding, which usually brings about the presence of bacteria and of organic material in decomposition.

P. alternata and *P. albipennis* have been reported as responsible of gastric myiasis in Japan (James, 1947; Zumpt, 1965), respectively, urogenital myiasis in the UK (Patton & Evans, 1929), China (Chin, 1965) and Turkey (Dinçer *et al*, 1995; Taylan-Ozkan *et al*, 2004; Güven *et al*, 2008) in humans, and both species include Europe in their area of distribution. However, given the difficulty

in identifying the analysed larvae at specific level, they are reported as *Psychoda* sp., although only *P. albipennis* has been related with urogenital myiasis. Moreover, the present accidental myiasis case cannot be certified and has to be reported as potential. This case, together with previous reports, suggests that *Psychoda* larvae have to be recognized as an accidental cause of urogenital and gastric myiasis.

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