

Case Reports

Myiasis due to *Parasarcophaga argyrostoma*— first recorded case in Britain

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Summary

A case is described of a 79-year-old man in whom a gangrenous toe was invaded by maggots of the flesh fly *Parasarcophaga argyrostoma*. This is the first recorded case of myiasis by this fly in Britain.

Human cutaneous myiasis, in which maggots of dipteran flies opportunistically develop in a living host, is often considered something of a novelty in temperate countries because it is encountered relatively infrequently. Myiasis in animals, particularly sheep, has been much better documented and cases of human involvement are more likely in the vicinity of sheep strike.^{1,2} In recent years there appears to have been an increase in human myiasis, not only in sheep-breeding areas but also in urban environments where the condition is less familiar.

Between the late summer of 1989 and the autumn of 1990 12 British cases were reported to the Medical Entomology Centre and several other general enquiries received on the subject. These mostly concerned flies that normally breed in carrion or excrement becoming attracted to open wounds, often with suppuration, or insanitary conditions of neglect. The principal species involved were the blue bottle blowfly, *Calliphora vicina*, the green bottle blowfly, *Lucilia sericata*, and the common housefly, *Musca domestica*.

However, as the species of fly involved can affect the approach to treatment and prognosis it is often necessary to extract some live maggots for specialist identification and if necessary rearing to adult flies.

In this paper we describe a case involving a potentially pathogenic species of fly not previously recorded as a cause of myiasis in northern Europe.

Case study

A 79-year-old man was admitted to Hemel Hempstead General Hospital on 10 July 1990 with a painful

gangrenous left fourth toe that had developed acutely during the previous 4 days. He had mild heart failure and swelling of the ankles to the mid calves. The arterial pulses of both feet and of the left popliteal artery were absent. An arteriogram showed complete obstruction of the left popliteal artery at the knee but with adequate distal perfusion.

The patient's history included a transient ischaemic episode due to embolism of the left foot and a cerebrovascular attack 4 weeks and 9 months before, respectively, together with recurrent ulceration caused by vasculitis over the past 10 years. He had no signs of Raynaud's disease and did not have diabetes or syphilis.

The patient was initially treated conservatively and the gangrenous toe was expected to auto-amputate. After 2 weeks it was decided to perform a left femoro-popliteal bypass operation. In the interim, maggots were found infesting the gangrenous toe and the adjoining tissue sinuses.

Specimens were removed with forceps and sent for identification on 1 August and the bypass operation was performed on 3 August, during which the gangrenous toe

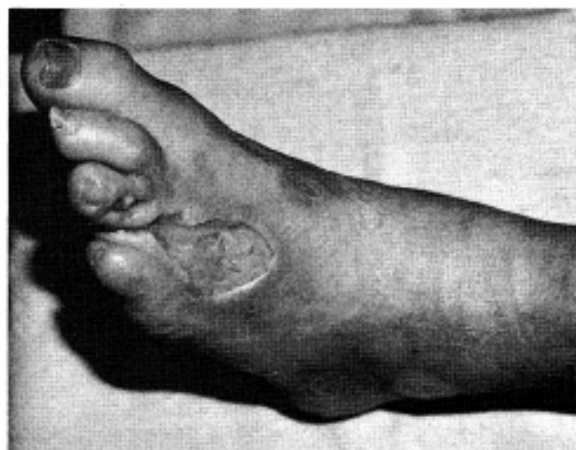


Figure 1. Partially healed ulcer showing the extent of the debrided area from which maggots were removed.

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was amputated, and the infected area widely debrided to ensure complete removal of the maggots.

Apart from developing a methicillin resistant staphylococcal infection of the toe stump which required isolation the patient made an uneventful post-operative recovery although the debrided area was slow to heal (Fig. 1).

Identification

Five active, living maggots 7-mm long were removed from the patient. They were identified as larvae of the family Sarcophagidae by the characteristic posterior spiracles sunken into a deep cavity in the last abdominal segment³ (Fig. 2). There are no satisfactory keys for identification of these larvae so it is necessary to rear them to adults for confirmation of genus and species.

Four maggots were transferred to a standard fly rearing medium, supplemented with dried ox blood, and incubated at 25°C. Two of the larvae grew fully and developed to adult flies, one male and one female, 4 weeks after receipt of the maggots. The other two larvae produced dwarf pupae which failed to complete their development.

Adults of the family Sarcophagidae, and especially the genera *Sarcophaga* and *Parasarcophaga*, are large grey and black flies (up to 16 mm) with a striped thorax and the abdomen spotted or with a tessellated shifting pattern. The eyes are generally reddish. Identification of females is difficult unless taken *in copulo*.

Identification to species as *Parasarcophaga argyrostoma* Robineau-Desvoidy was made from the characteristic structure of the genitalia of the male (Fig. 3) together with the distribution of the setae on the thorax and femora of the middle and hind legs.⁴

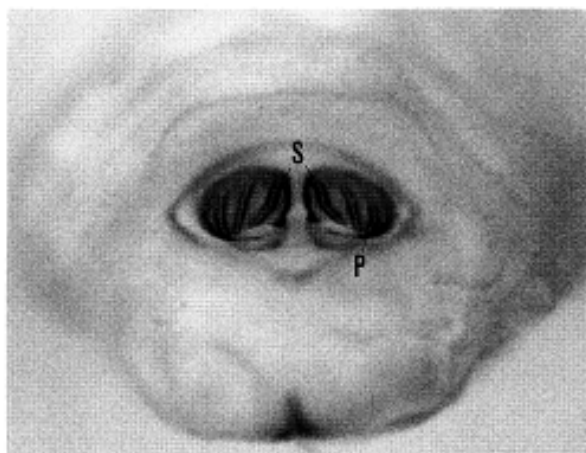


Figure 2. Posterior view of a third instar maggot of *Sarcophaga argyrostoma* showing the characteristic spiracles with an incomplete peritreme (P), lacking a ventral button, and three nearly vertically aligned slits (S).

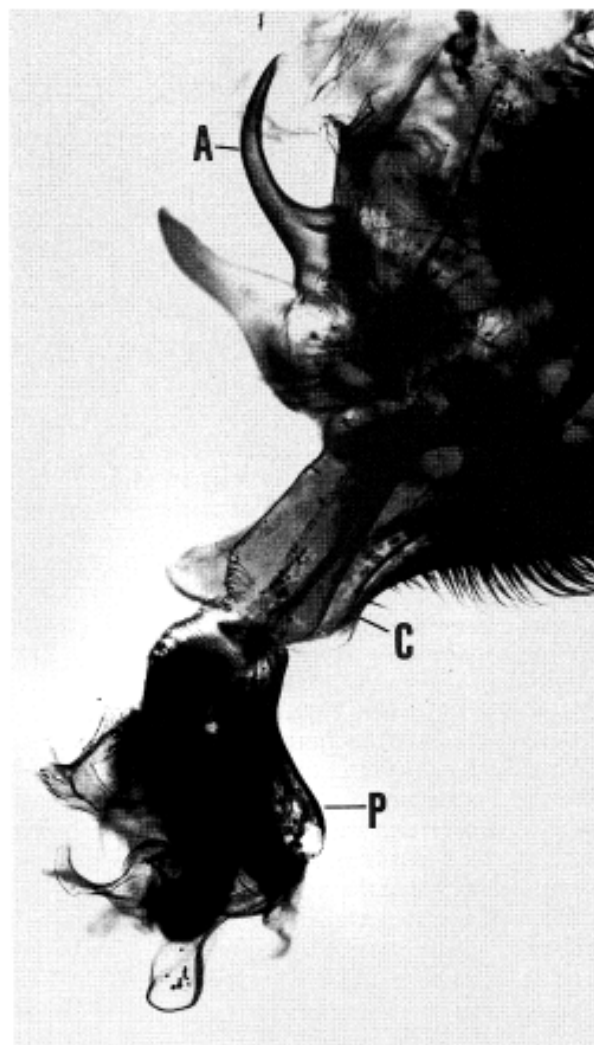


Figure 3. External genitalia of the male *Sarcophaga argyrostoma* showing the superior forceps (A), and cerci (C) and the distinctive phallosome (P).

Discussion

Flies of the family Sarcophagidae have been reported to breed in a wide variety of animal tissues, both living and dead, together with faecal and other inert matter. Some species are reputed to be specific in their choice of breeding site whereas others are not selective.⁵ In general relatively little is known about them.

Parasarcophaga argyrostoma appears to be relatively non-selective and larvae have been found in faeces,⁶ cadavers^{6,7} and animal⁸ and human myiasis.^{9,10} As with other flies of the family, it is viviparous and the females lay active first instar larvae. They are mostly attracted to carrion exposed in sunlight and as such can be primary invaders of carcasses.⁵⁻⁷ Previous cases of myiasis with

this species have not been recorded outside Mediterranean climatic zones either in animals or humans and this case probably occurred because of the warm conditions prevailing at that time.

The occurrence of long periods of warm weather in summer increases the risk of myiasis in patients with long-term necrotic conditions² but in many cases blowfly or housefly eggs may be removed from the site when dressings are changed, before larvae have had time to hatch and penetrate the wound. However, in the case of fleshfly species invasion by larvae may be very rapid. *Parasarcophaga argyrostoma* has been described as one of the most serious agents of facultative myiasis as the larvae develop rapidly causing extensive tissue damage and are difficult to remove from a wound without surgical intervention.¹¹

In consequence we feel that the discovery of the myiatic habit in this species in Britain should be viewed with some concern and underlines the importance of specialist identification of invasive maggots in cases of myiasis at the earliest opportunity.

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