

# PREVENTION AND TREATMENT OF FLY STRIKE IN RABBITS

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**DANIEL CALVO CARRASCO** discusses the environmental conditions in which myiasis in rabbits can arise, as well as the various management and therapy options available

## Summary

Fly strike (myiasis) is a common condition seen in rabbits in Wales and the south of England. It is a highly seasonal pathology and is mainly caused by green bottles (*Lucilia sericata*) in northern European countries. The prognosis will vary with the degree of the lesions, but – with appropriate care – is not necessarily a fatal disorder. Different factors will predispose to fly strike in rabbits; the perineal area of the affected rabbits is usually targeted due to their moist conditions, secondary to faecal or urinary contamination often involving damp areas on the skin of the affected animals. Affected animals can be critical in a few hours and treatment can be challenging. Prevention of this disease should be our aim, fighting the predisposing factors at the same time as actively avoiding it by using prophylactic products.

Treatment for myiasis should start by evaluating the status of the patient. In shocked animals, we should prioritise and treat the hypothermia and hypovolaemia first. Affected patients will require intensive care, including fluid therapy, systemic antibiotics, analgesia and assisted feeding, at the same time as the parasitosis is resolved and the wounds managed.

## Key words

myiasis, fly strike, rabbits, maggots

## **FLY strike is a common condition seen in domestic rabbits, although it rarely happens in their wild relatives.**

Green bottles (*Lucilia sericata*) are the most common cause of fly strike in the UK and northern European countries – mainly in sheep, but also affecting other species such as our domestic rabbit. Green bottles are seasonal, emerging in April/May after winter and growing in number over the summer (Wall and Cruickshank, 2002).

The incidence of fly strike has a direct correlation with the numbers of green bottles, which are strongly influenced by regional patterns of temperature and rainfall (Pitts and Wall, 2005). The last generation of adults will enter dormancy between September and October (Pitts and Wall, 2005).

## **Prevalence and predisposition**

The prevalence of fly strike in south-west England and Wales has been estimated as high as 94 per cent (Bisdorff and Wall, 2006) within the small animal and mixed practices. Therefore, nearly every practice in the UK is likely to see affected rabbits over the warmer summer months.

There are a number of conditions that will predispose our patients to suffer such an unpleasant condition. Flies are attracted to lay under wet conditions; the perineal area of the affected rabbits is usually targeted due to their moist conditions, secondary to faecal or urinary contamination.

Many authors consider this a secondary complication of a pre-existing condition (incontinence or inability to groom). These could be classified in three large groups, leading to (Cousquer, 2006):

- urine scalding (*Encephalitozoon cuniculi*) – CNS lesions, kidney failure, vertebral damage, urolithiasis, cystitis and inactivity;
- diarrhoea (coccidian; predominantly in young rabbits; inappropriate diets) – low fibre, high carbohydrates, iatrogenic dietary changes or dysbiosis post-antibiotic therapy, other medications causing dysbiosis, bacterial enteritis; and
- lack of caecotroph ingestion – dental disease, arthritis, pain and obesity (Cousquer, 2006).

Other pathologies that can create optimal conditions for fly oviposition are ocular discharge, abscesses or skin folds (Varga, 2013). In many cases, there will be a combination of different factors that require to be addressed to prevent further episodes of myiasis. Overall, overweight rabbits are most commonly affected (Varga, 2013).

While all veterinary surgeons are familiar with this condition, one still encounters many rabbit owners whose opinion is that prevention is not necessary, as either the rabbit lives indoors, or they are very fastidious about hygiene and would surely know and treat any issue quickly enough.

Sadly, the reality is even an animal as large as a sheep can succumb to myiasis within 24 hours of maggots being laid, so detecting and treating a rabbit subsequent to myiasis is, as we all know, at best painful, debilitating and expensive, but more commonly fatal by effect or client choice. In either situation, the rabbit will inevitably suffer.

The Animal Welfare Act 2006 makes it quite clear that not only is every animal owner or keeper obliged to prevent unnecessary suffering or cruelty, but section nine obliges him or her to provide “good practice” in respect of husbandry. While “good practice for rabbit husbandry” is not defined in law, surely all colleagues would agree that “fly strike prevention” would form an essential recommendation.

Now annual (rather than biannual) rabbit vaccines are a reality, some colleagues have raised concerns in respect to not seeing and having the opportunity to examine rabbits often enough, in respect of checking for dental pathology and ensuring general welfare needs are met. While we routinely inform our clients about preventive medicine in dogs and cats, we should not fail to do the same for rabbits, as well as all other pets of any species.

## **Prevention and treatment**

Rabbit preventive medicine should start with adequate client education regarding diet, housing and hygiene, as well as basic physical examination of his or her pet. Daily routine inspections must be encouraged; rabbits have historically been predominantly chosen as “children’s pets” and, all too frequently, are neglected. Thankfully, this is less often the case.

As previously discussed, the underlying cause for “skin soiling” should be addressed to prevent recurrence. The author strongly recommends the use of products that will either repel flies landing at all, or stop the eggs from hatching if egg laying has occurred, considering one single episode of diarrhoea or unconsumed caecotroph could lead to this undesirable situation within hours.

There are different options licensed in the UK to prevent myiasis (some of which may also be adequate for therapy post-myiasis). Permethrin/ cypermethrin can be found in licensed products for rabbits (Xenex Ultra; Zeromet; F10 Germicidal Wound Spray with Insecticide), although these may need to be applied every one to two weeks.

Ivermectin can also be found in a licensed form for rabbits (Animec Maxi/Micro; Pharmaq one per cent 5ml; Xeno 50-Mini/200/450); however, this is not designed for prevention of fly strike.

Another licensed product – cyromazine (Rearguard) – is the author’s choice due to its longer period of action (10 weeks), with two applications (May and mid July) covering the high risk period (May 1 to October 1).

In rabbits that require regular washes (due to genital soiling), an alternative product is necessary,

such that weekly applications (after washes) can be applied. In such cases, we use F10 Germicidal Wound Spray with Insecticide. Fipronil is contraindicated in rabbits, as adverse reactions have been reported.

Presenting clinical signs of fly strike vary significantly, depending on the “life cycle stage” at which the animal is presented. Prior to eggs hatching, the only signs relate to the primary condition, which has resulted in soiling. At this stage the risk of myiasis can be easily missed.

Once the larvae have commenced attacking the skin, in a relatively short period a large area of skin and deeper tissue may be affected. The infested rabbit will show lethargy and depression, dehydration, toxic shock and a characteristic putrid smell that is generally evident as the patient enters the consulting room. Sometimes larvae are observed, although often undetected by the owners.

Myiasis treatment can be challenging; often, the clinician focus is removal of larvae and wound management. The only product licensed for myiasis treatment is F10 Germicidal Wound Spray with Insecticide, which may be applied directly to wounds. However, effective fluid therapy at “shock levels”, effective analgesia and systemic antibiotics are all essential; practices providing such therapies demonstrated a better outcome (Bisdorff and Wall, 2006).

Fluid therapy requirements will vary depending on the actual state of the patient. Initial bolus of fluid will consist of 10ml/ kg to 15ml/kg of crystalloids (Hartmann’s) combined with 5ml/kg of hypertonic fluids given over 10 minutes.

These boluses could be repeated until initial crisis is resolved; overall shock fluid requirement is 100ml/kg in the first hour.

If placement of an IV catheter is unsuccessful, an intra-osseous catheter may be considered as an alternative. A relatively easy placement may be achieved in the proximal tibia.

An assessment of the actual level of dehydration should be conducted and a fluid rate for the next 24 hours, including maintenance, dehydration and ongoing losses (relatively high due to the possible extended skin lesions) calculated and administration planned.

Hypothermia may also be a consequence of toxic and circulatory shock, and should be addressed. An incubator or a way of “active warming” is recommended, but temperature should be monitored as hyperthermia may readily occur in the summer months; as rabbits have minimal ability to achieve increased heat loss, hyperthermia rapidly results in distress, with potentially fatal consequences.

Initial myiasis treatment typically consists of F10 Germicidal Wound Spray with Insecticide of all affected and surrounding areas, concurrent opioid analgesic (buprenorphine, morphine, fentanyl),

typically combined with sedatives (midazolam, medetomidine) – especially if it is to be hospitalised in proximity to cats or dogs. Sedation may also minimise stress associated with IV catheter placement and removal of all larvae and eggs, together with appropriate wound management.

Rabbit-friendly broad-spectrum antibiotics may be provided pending culture and sensitivity results. The possibility of clostridia species infections has been stipulated as a possible cause of sudden death after surgery (Hess and Tater, 2012) and, therefore, the use of penicillin G may be considered. Other options include enrofloxacin (licensed for oral or SC administration) or co-trimoxazole.

The pain, toxæmia and stress associated with myiasis is likely to lead to secondary stasis, so appropriate medication should be provided to manage this risk.

Syringe feeding with a herbivore critical care diet (for example, Oxbow Animal Health Critical Care) is essential. In cases where rabbits are too poorly or stressed to accept syringe feeding, nasogastric tube placement and feeding with Lafeber's Emeraid Herbivore critical care diet is recommended (this will easily pass down a 5Fr tube and contains 325 fibre – all be it, soluble fibre). Prokinetics will be provided (ranitidine, metoclopramide). NSAIDs should also be commenced as soon as the hydration status is assured.

## Summary

Above all, with appropriate advice from our profession, this horrible condition should be a disease of the past. It is our belief that "Prevention (May 1 to October 1)" is an essential and legal requirement for all pet rabbits. It will only be achieved by firm, timely recommendations from our profession.

- Please note some drugs in this article are not licensed for use in rabbits and are used under the cascade.

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Animals can succumb to myiasis within 24 hours of maggots being laid.



F10 Germicidal Wound Spray with Insecticide can be applied at the wounds of any affected animal.