

## *Myiasis (fly-strike) in Rabbits*

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Warning: this file contains pictures that may be distressing for people.

Myiasis is observed more frequently during the hot humid summer months and is related to numerous insects that lay their eggs in the skin of mammals. Rabbits suffer in particular from the blowflies *Lucilia sericata*, *Calliphora* sp., the grey flesh fly *Wohlfahrtia* sp., the common screwworm fly *Callitroga* sp., and from the botfly *Cuterebra* spp, which is seen in the USA only. A maggot attack is linked to poor hygiene, with rabbits kept on litter soiled with urine and excrements, or poor-cleaned litter pans. A particular attention must also be given to rabbits suffering from dental (malocclusion, removal of incisors) or digestive diseases, from obesity, that have untreated infected wounds, or that are disabled (fracture of the spine, limb, arthritis, spondylosis). Indeed, these rabbit are unable to groom the regions around the anus and above the tail properly, or eat their cecal feces. The later contaminate the perianal region and other parts of the body, and the smell will inevitably attract flies.

These flies lay eggs in the skin soiled with feces or diarrhea, on skin irritated by urine or in untreated infected wounds. The larvae that emerge from the hatched eggs will immediately start burrowing themselves through



[http://www.city.nagoya.jp/10eisei/ngyeiken/insect/d\\_callip/ls.htm](http://www.city.nagoya.jp/10eisei/ngyeiken/insect/d_callip/ls.htm)

Left to Right: *Lucilia sericata* fly, larvae and pupa.



the skin, in the flesh of the host animal. A consequence is septicemia and shock, which lead to the rapid death of the rabbit.

The first signs of myiasis are discovered in the perianal region; at later stages, the larvae migrate along the back and sides of the rabbit.

Prevention of myiasis can be done by addressing the causes of fecal or urine contamination of the skin, and by keeping the rabbit in a clean hygienic environment. Daily inspection of the perianal region is necessary in rabbits prone to suffer from digestive disorders, that are obese or that are disabled. The fur should be combed with a flea-comb, in order to detect the eventual presence of eggs and/or maggots. The windows of the



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Rescued rabbit with bite wound heavily infected by fly maggots. In spite good medical care and signs of recovery, the rabbit has died.

apartment or the cage of the rabbit can furthermore be covered with a mosquito net, in order to avoid the insects to have contact with the rabbit.

The use of prophylactic solutions is not recommended as adverse fatal effects have been observed in rabbits (Frontline). Some veterinary professionals use the prophylactic product Dicyclanil (Novartis), which protects sheep against the blowfly *Lucilia* spp. The product is not registered for use in rabbits, and a safe use in rabbits can thus not be guaranteed.

#### Clinical symptoms

The early stages of myiasis are often subclinical. With time, a rabbit becomes depressed, weak, loses



weight and shows paresis. At this stage, the infection becomes visible; the larvae are about 1 cm long and their hind part protruding from the respiratory hole (spiracle) in the skin.

In a severe case, alopecia is observed. The skin is inflamed, injured with signs of necrosis, and is often accompanied by the smell of ammonia. The later is excreted by the larvae, in order to cause cell death and decomposition and will intoxicate the rabbit.

Aberrant migration of the larvae is possible. Migration into the trachea has been observed. This leads to the formation of a laryngeal edema, blocking the air supply to the lungs. It may be accompanied by concurrent accumulation of mucus and swelling of the esophagus.



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Paralyzed rabbit and contamination of the skin by feces (arrows).

### Diagnosis

The history of the rabbit and the clinical signs are generally sufficient for a proper diagnosis.

### Treatment

The hair is delicately clipped away around the infected area and each larva is removed individually and entirely with the aid of forceps, to prevent skin irritation or the development of an allergic reaction. The wounds are cleaned with a sterile saline solution, an antiseptic solution (e.g. povidone-



iodine or chlorhexiderme). There is no need to use an insecticidal solution, if all the maggots have been removed.

Aberrant migration brings the larvae deep under the skin or in vital organs. Three options are available here:

- Injection of ivermectin (400 µg/kg, SC). The rabbit must be closely monitored as the dying larvae excrete a toxin that can be fatal to animals, including rabbits. Although controversial, corticosteroids are sometimes given to the affected animal, in order to reduce the swelling.
- Injection of doramectin (0.5 mg/kg, SC).
- Surgical removal, under anesthesia, in case of aberrant migration or infection by *Cuterebra* sp..

Use of antibiotics is indicated, if the myiasis infection is severe. They help fight a secondary bacterial infection of the wounds and prevent sepsis, which can be fatal in rabbits.

The administration of non-steroidal pain medication is necessary (e.g. meloxicam, carprofen).

When the affected rabbit has stopped to eat, it must be hand-fed and given SC fluid therapy, in order to avoid the onset of fatal hepatic lipidosis and dehydration. Depending on the situation, the affected rabbit can furthermore be administered appetite stimulants, or gut motility medication (e.g. cisapride, metoclopramide).

Bathing the rabbit with antiseptic or insecticide solution is *not* indicated. This procedure is stressful for the rabbit, and often ends in a panic reaction as soon as the fur is wetted or death by heart-arrest. A jump out of the bathtub has led to broken limbs or fracture of the spinal cord. If this method is nevertheless chosen, the rabbit should be dried with a towel and a hair-dryer or placed under a heat lamp. The heat will indeed bring the remaining worms to the surface of the skin, from where they can be easily discarded.

If a rabbit is heavily affected by myiasis, euthanasia should be considered.

### Acknowledgement

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### Further Information

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