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Self-injurious behavior in rabbits and does

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Rabbits may develop a self-injurious behavior and hurt themselves severely. Lactating females can, in turn, hurt their newborn kits by chewing or excessively licking their ears and their limbs.

Self-injurious behavior of body regions is observed in rabbits suffering from specific pathologies, in does (adult female rabbits) with a very strong maternal instinct (Figure 1) as well as in individuals belonging to inbred rabbit colonies. It is,

Figure 1: Young, healthy and active Harlequin rabbit lacking ears after excessive licking by the doe (Photo: Jean-Pierre Stettler).

therefore, important to establish the origin of self-injurious behavior, instead of concluding that the reason is a behavioral problem of the rabbit.

Pathologic causes

Some diseases or the presence of skin parasites or foreign bodies lead to pruritus and excessive grooming of the affected region by the rabbit. It will scratch, bite skin or limbs, or rub the affected area excessively until bleeding. Skin lesions may be impressive, but most heal well after a correct diagnosis and starting an appropriate treatment. The causes of self-injurious behavior are various and include:

- *Presence of a foreign body*. The presence of a cereal grain, a strand of hay in the fur, thorns, barbs, or stinging hairs of insects (e.g. processionary caterpillars) in the nostrils, ear pinna, or between digits can induce irritation, inflammation and pain.
- *Contact dermatitis*. Inflammation of the skin after contact with an allergenic or irritant substance such as urine or a non-diluted disinfectant solution.
- *Atopic, auto-immune or hyper-sensibility reaction*. This type of reaction is difficult to evaluate. It may, for instance, be induced by an injected drug, e.g., the mixture of ketamine/xylazine. The latter triggered a skin reaction three days after injection in rabbits.
- *Bacterial or fungal dermatitis* (Figure 2A).
- *Ectoparasites*. Skin infestation by ectoparasites causing cheyletiellosis (*Cheyletiella parasitovorax*, *Leporacus gibbus*, and harvest mite) or by *Sarcoptes scabiei* lead to skin irritation and itching (Figure 2B).
- *Hormonal origin*. Itching can lead to self-mutilation of the skin. This behavior is observed more often in late summer and may be relate to hormonal changes or autumnal molting. Indeed, dormant hair follicles are stimulated during the fall shedding. Their activation allows a rabbit to get a dense and warm winter coat.
- *Neurological trauma of the skin and the brain*.
- *Thrombosis*. It leads to a bad blood circulation of the blood, e.g. after frost of the ear pinna, of a limb or a digit, with a feeling of stinging, tinnitus (paresthesia) and pain.

A  B 

Figure 2: Fungal infection affecting the digits and pads (A) and digits infested by *Sarcoptes scabiei* (B) (Pictures: Pamela Alley and I. Aizenberg).

Self-injurious behavior

Self-injurious impulsive behavior may relate to boredom or to a genetic predisposition in some rabbit breeds. In a German breeding station, self-injurious behavior has thus been observed in approximately 12% of spotted rabbits belonging to the same line with a 15 year's old history of inbreeding. Rabbits of this colony were selected to create smaller sized animals that possess an enhanced resistance to bacterial infections.

Spontaneous self-injurious behavior has been observed in these rabbits, independently of their housing conditions. Their living environment was very different (cage free, alone or in groups), kept as pet rabbit, selected for breeding, or used as laboratory animals (Figure 3). The behavior was observed more often in late summer and fall (possible, but not established cause: hormonal imbalances). Changes in the living conditions did not affect or decrease the self-injurious behavior on the front limbs, digits and pads under the feet; it was concluded that this abnormal behavior is the result of a hereditary predisposition. Although pathogen agents of bacterial, fungal, or parasitic origin as well as neurological causes have been ruled out, it is interesting to note that the presence of the mite *Glycyphagus domesticus* was discovered in the straw and hay provided to these animals. This mite can cause ear infections or contact dermatitis in rabbits if left untreated. Can the presence of this parasite be the cause of the observed self-injurious behavior, acting as an allergen in this specific group of bred rabbits selected through inbreeding ?

Neonatal mutilations

The development of the maternal instinct in wild and domestic rabbits is a complex process that is controlled by hormones. It includes the building of a nest with the gathering of straw and hay and hair plucked from the abdomen of the doe, as well as the inhibition of cannibalistic behavior with maiming and consumption of protruding body parts or, rarely, the entire body of the

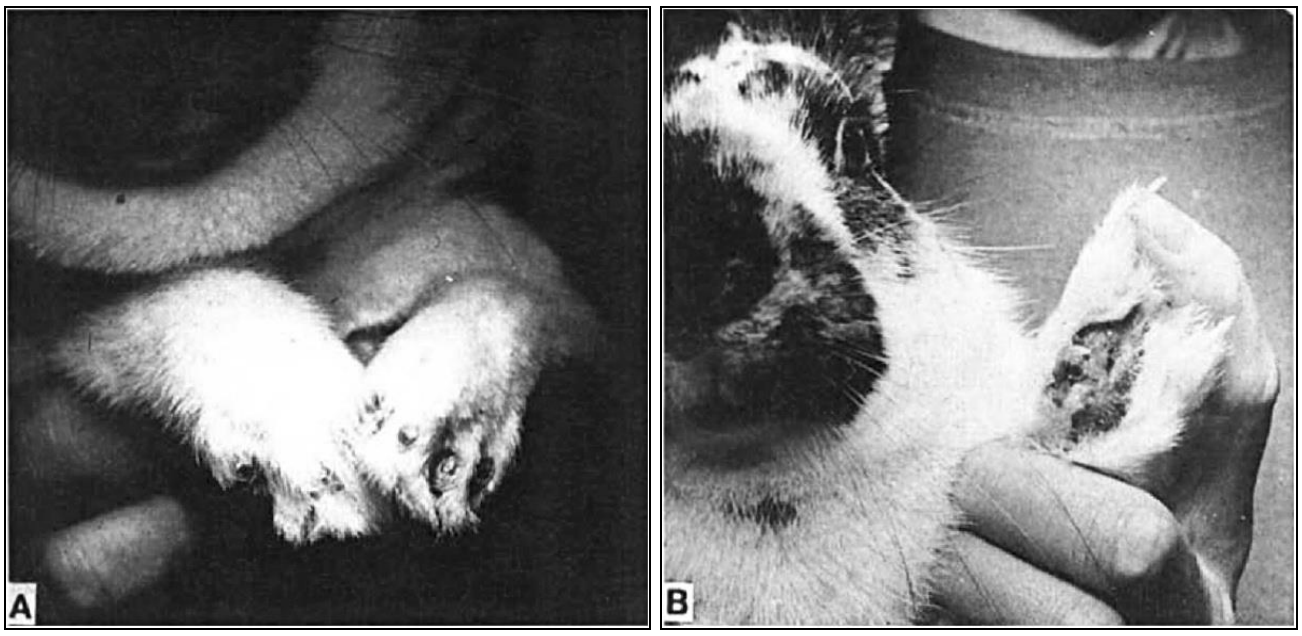

Figure 3: Self-injurious behavior of some rabbits on the front limbs (Photos : F. Iglauer, C. Beig, J. Dimigen, S. Gerold, A. Gocht, A. Seeburg, S. Steier and F. Willmann. Hereditary compulsive self-mutilating behaviour in laboratory rabbits. Lab Anim 1995;29:385-393).

newborn (Figure 4).

Does that just gave birth to newborn are very sensitive to changes in their environment (unusual noises) and to the presence of rodents, predators or strangers. The stress caused by their presence and/or the survival instinct of the doe can bring her to eat her offspring. This behavior occurs more often during the night when predators break in or hunt around the hutch or barn, less so during the day. Lack of food (too little, too low in calories or deficient in minerals or vitamin B) and/or water are a further cause for mutilation and cannibalistic behavior.

In some bred lines of rabbits, females are very nervous or present a reduced maternal instinct with a tendency to ignore or eat their newborn kits. In these cases, the building of a nest is often neglected and it contains only little or no straw or hair at all. It also happens that a doe takes her kits out of the nest and spreads them out all over the hutch. If this happens, chances of survival are slim (hypothermia).

A doe will eat the placenta of each newborn immediately after giving birth. While cleaning the kit, she may accidentally nibble an ear, tail and/or limbs of a newborn and injure him/her (Figure 4, 5, 6, 7). A female rabbit with an excessive maternal instinct may accidentally injure her kits through excessive biting or licking. The extent of the mutilations and the number of youngsters affected by the cannibalistic behavior of lactating females vary: only one up to several or all newborn may be affected.

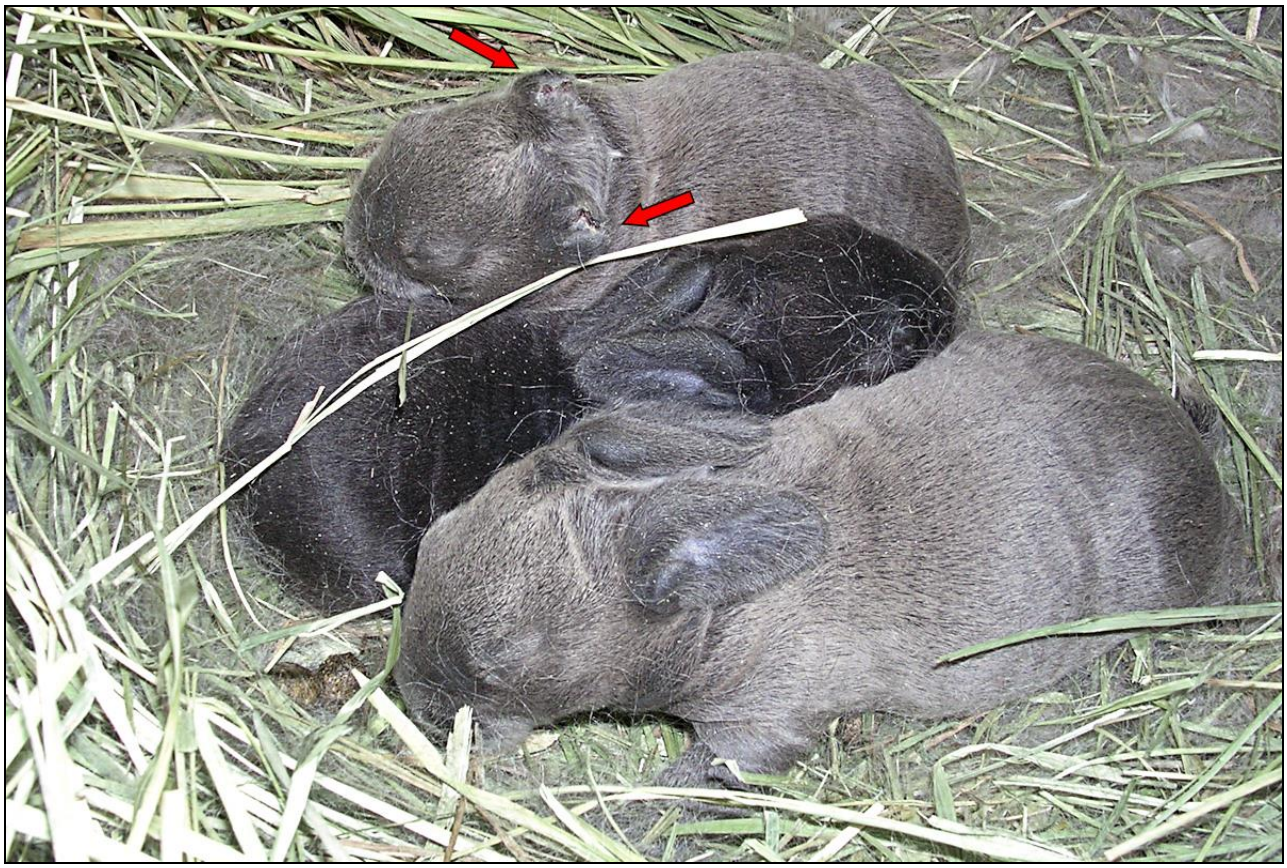

Figure 4: Nest of rabbits aged a few days old. One presents mutilated ears (arrow) (Photo: Pamela Alley).

Figure 5: One of the rabbit kits in Figure 4 has been severely mutilated by the doe. Details of the mutilation on the head, ears, forelimb and hind limb. This rabbit survived the lesions and has grown into an adult rabbit (Photos: Pamela Alley).

Figure 6: The degree of mutilation of the ear pinna varies from one victim to another. Few have a remainder, like here, with this Harlequin rabbit (Picture: Michel Gruaz).

Boredom can be easily resolved by providing possibilities that increase the curiosity of rabbits, to enable exercise and investigation of their living environment and by giving stimulating toys (cardboards, tunnels, branches to eat, hay, straw).

If a genetic predisposition is found, the administration of psychotic drugs may help stop self-harming. In some rabbits, the behavior was brought under control after the administration of a tranquilizer (e.g. haloperidol, 0.2-0.4 mg/kg, bid) or other drugs with less side effects.

Treatment

Treatment depends on the causes that lead to the self-injurious behavior. In many cases, the administration of anti-parasitic or anti-mite agents resolved the problem, even when the presence of skin parasites had been ruled out by during the examination and by the skin scraping test.

Castration of a male rabbit helps eliminate sexual frustration and avoids false pregnancies in females. Neutering also helps stop unwanted behavior in male rabbits such as marking of their territory and urine squirting on furniture and walls.

Figure 7: Young Harlequin rabbit of Figure 1 whose ear pinnae have been fully amputated: head and dorsal view (Picture: Jean-Pierre Stettler).

In lactating females, it is imperative to check if the amount of food is sufficient for her needs, if it contains all the required vitamins, mineral, and proteins, and if sufficient fresh drinking water is available. A change of hutch or a move to a quiet room with her litter may help stop the mutilating or cannibal behavior.

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