



Chronic wetness of the chin or dewlap in rabbits: non-dental causes.

Arie van Praag and Esther van Praag

Rabbits are susceptible to cutaneous bacterial infections and abscesses on their heads, along the jaw and under the chin. Of course, abscesses can affect other areas of the body as well, such as the neck and shoulders, abdomen, etc. .

Bacterial infections develop as a result of maceration of the skin caused e.g., by chronic moisture. An abscess can then develop; a local complication of the skin

infection. Penetration of microorganisms into the skin leads, indeed, to the destruction of the cells and to a deeper invasion into the tissue. These problems affect all rabbits, and



Figure 1: A healthy chin has a light-colored, slightly pinkish skin covered with fur. Photo: Arie van Praag

more frequently those with a dense or long fur coat (Figure 1).

Numerous causes

In all cases of chin and dewlap infections or abscesses, it is necessary to investigate the cause. Rabbits that develop an abscess under the chin (but also in other areas of the body) often have a history of pasteurellosis, staphylococci, streptococci, *Pseudomonas* sp. or *Fusiformis* sp infections.

Teeth

A thorough inspection of the rabbit's dentition is necessary to rule out the possibility of malocclusion of incisors or cheek teeth, the presence of sharp points or periapical abscesses. A loose tooth or abnormal elongation of tooth roots into the bone of the lower jaw allows bacteria to enter the space surrounding the roots of cheek teeth. Their presence causes the destruction of the bone, and may even perforate it in

extreme cases, with the development of an abscess under the chin (Figure 2).

Dental problems can also cause excessive salivation. If it becomes chronic, the saliva will irritate and macerate the skin around the lips and under the chin. Bacteria start



Figure 2: Extremely rare case nowadays, where roots of the cheek teeth have perforated the jaw bone and continued to grow in the abscess cavity under the chin. Photo: Name kow by the author



Figure 3: An unsuitable drinking bowl can lead to a skin infection under the chin. Photo: Esther van Praag

grow and cause a bacterial dermatitis or, even, an abscess.

Drinking habits

The rabbit's drinking habits should be observed, as well as the proper functioning of a drinking bottle or the head's position taken by the rabbit when drinking from a water dish. While most rabbits tilt their heads to drink, some keep their heads flat and, as a consequence, wet their chin. This happens more frequently when the bowl is large (Figure 3).

The body mass of the rabbit according to

the breed or health problems like obesity or arthritis also play a role, as those prevent a meticulous grooming and care of the fur.

Force-feeding

When feeding a sick rabbit with a syringe, the rabbit may refuse to swallow and spit out the content of the syringe out of its mouth. It then drains under the chin, wetting the fur and irritating the skin. After each feeding session, it is important to clean and dry the muzzle and chin regions. Indeed, a sick rabbit is often too weak to groom itself (Figure 4). Moisture and rests of food will



Figure 4: It is important to clean and dry the face and chin after syringe feeding, to avoid the development of bacteria on the moist skin. Photo: Arie van Praag

irritate the skin. If these are rich in sugar, protein, fat, minerals and vitamins, the growth of pathogenic bacteria or fungi and yeasts will be promoted. Finally, parasitic flies can be attracted to the smell of moist skin and food.

Moist dermatitis

Chronic wetness of the fur under the chin mainly concerns breeds with long hairs, such as Angora or Belgian bearded rabbits, or those with a dense fur such as Rex or Champagne silver rabbits (Figures 5, 6). But not only... A prominent dewlap can also prevent proper grooming of the chin and dewlap. Other causes include obesity or arthritis. In these cases, the rabbit has difficulty reaching all areas of its body for a

thorough grooming of its fur.

Finally, an unsuitable bowl or a defective, leaking drinking bottle can also cause chronic exposure of the chin fur and dewlap to moisture. If it becomes chronic, bacteria such as streptococci or staphylococci will start to proliferate. At first, signs of infection may not be visible. Left untreated, the skin is characterized by congestive redness (erythema), more or less pronounced inflammation, and moisture caused by the oozing of skin fluids. The disintegration of the tissues leads to the formation of deep and painful ulcers. The presence of pus is rarely observed. These clinical signs are usually sufficient to identify the infection. Treatment involves delicate clipping the fur in the affected area, disinfecting the skin,



Figure 5: After shaving the fur of the chin and disinfection of the skin, exudative dermatitis in a rabbit that drinks from a non-adapted water bowl. Photo: Arie van Praag



Figure 6: A: same rabbit, after 2 weeks with daily fucidin antibiotic cream and Manuka honey/lavender oil based cream. B: after 5 weeks of treatment, there is no inflammation anymore and fur is growing back. Photos: Arie van Praag

and applying an antibiotic cream. The antibiotic must be safe for rabbits, as they will lick their "soiled" fur and, thereby,

Exudative dermatitis caused by *Pseudomonas aeruginosa* should not be overlooked. After

ingest the antibiotic. The treatment can be accompanied by a daily application of Manuka honey, for its anti-inflammatory, drying and healing effects, while essential oils such as lavender help keep parasitic flies at bay, attracted by the smell of the infection.

Green fur and pus

Bacteria of the genus *Pseudomonas* can thrive on skin that is continually moist. This opportunistic pathogen needs oxygen to live, and survives in frugal environments. It is, thus, able to grow in distilled water. When its living environment is low in iron, it begins to produce 2 pigments, pyoverdin and pyocyanin (Figure 7). The pus oozing from the infected wound or abscess then takes on a characteristic blue-green tint. Ditto for the fur.



Figure 7: A defective drinking bottle can lead to the development of *Pseudomonas* sp. bacteria in the dewlap. The pigments secreted by this bacterium color the fur in blue-green. Photo: Dr. L. Okerman (from : *Diseases of the Domestic Rabbits*, 2nd edition).

infecting the skin surface, this bacterium tends to invade the tissues more deeply, leading to the formation of skin abscesses. The pathogen has also the ability to spread throughout the body via the bloodstream.

Treatment is similar to that described for crusty exudative dermatitis. Except that the choice of antibiotics is limited (e.g. enrofloxacin, gentamicin, or amikacin). Indeed, this pathogen lives in the soil among organisms naturally secreting antibiotics for their survival, such as bacteria, yeasts and fungi. *Pseudomonas* bacteria have, thus, acquired natural resistances to many antibiotics. Since antibiotics used in the treatment of bacterial infections often derive from these natural

antibiotics, *Pseudomonas* is resistant to them.

Abscess under the chin

An abscess is a walled-off pocket. It results from an invasion of bacteria on the skin, followed by the destruction of cells. An abscess usually contains a mixture of pus, dead phagocytic white blood cells, necrotic cells, and live or dead bacteria. The pus is particularly thick in rabbits because heterophilic cells (the rabbit equivalent of neutrophils) contain a very low level of the enzyme myeloperoxidase, compared to those in other animals and in humans. As a result, digestion and liquefaction of the material contained in the abscess is slow and the exudate retains its pasty and sticky consistency.



Figure 8: An abscess under the chin is not always caused by a dental problem but may also relate to chronic humidity under the chin. Photo: Esther van Praag

As the amount of pus increases, the pocket enlarges and becomes isolated from the surrounding tissue and the bloodstream, making treatment difficult (Figure 8). An untreated abscess will therefore continue to grow. Although rare in rabbits, the capsule surrounding a mature abscess can spontaneously rupture into the body or on the surface of the skin. This step is painful and above all dangerous, releasing microorganisms and bacterial toxins into the bloodstream (Figure 9) or at the surface of the skin, which can be ingested by the rabbit when grooming.

When palpated, the swelling is felt as a hard mass that remains firmly attached to the surrounding tissue or, contrariwise, soft and pasty that can be moved under the

skin. The presence of an abscess is not associated with pain and fever in rabbits, unlike in other mammals.

The treatment of abscesses is difficult and requires a long-term commitment from the owner. Even after a prolonged systemic antibiotic treatment, complete recovery cannot be guaranteed. Recurrence is common. This is due to the presence of cracks or fistulas (= fingers penetrating deep into the skin) in the wall of the abscess, in which bacteria can hide and survive. Once the environment is more pleasant for them again, they start to multiply and the infection / abscess recurs.

The treatment of choice remains a surgical excision of the abscess (Figure 10), but this is not always possible.

For information on surgical approaches and non-surgical alternatives, see:

Facial bacterial abscesses and dermatitis in rabbits,

by Caroline Charland, Michel Gruaz, Karan Nixon et Esther van Praag

Other problems can affect the rabbit's chin, which are not related to humidity. The development of small horn-shaped scabs is sometimes observed following infection with rabbit *Treponema cuniculi* (rabbit syphilis) (Figure 11). Tumors can also develop under the chin. In a female English lop rabbit; carcinoma of the odoriferous glands under the chin was diagnosed after biopsy. These glands allow rabbits to mark their territory. The tumor was removed by surgery (Figure 12). Cutaneous lymphosarcoma is characterized by alopecia under the chin and patches of dark-colored erythematous skin under the chin.



Figure 9: Abscess that burst open and devoid of its content in a rescued rabbit. Photo: Caroline Charland



Figure 10: Incision and sutures after surgical excision of an abscess located under the chin. Photo Kim Chilson



Figure 11: In some rabbits, rabbit syphilis is characterized by the growth of small crusty horns on the lips and under the chin. Photo: Dr Andrea Sedar, <https://www.tierarzt-kirchbach.at/kaninchen-mit-syphilis/>



Figure 12: Carcinoma of the chin glands located under the chin in a female rabbit. Photo: Debbie Hanson.

Acknowledgements

A big thank you to Dr. Tanguy Vouillon (Cabinet Vétérinaire de Riantbosson - Meyrin, Switzerland) for his kindness, his tact and the successful treatment of Nouky.

Thanks also to Dr L. Okerman (Belgium), Dr A. Sedar (Austria), Caroline Charland (USA), Kim Chilson (USA), Debbie Hanson (USA) for their photos.

And a big thank you to the bunnies Yara, Lola, Benny and Bella, Kaspi, Nouky, Flora, Joey Ang Bun, Georgie and Pixel for their help and patience.

References

Blackwell NJ. Abscesses in rabbits. Vet Rec. 1999;144:540.

Charland C., Gruaz M., Nixon K., van Praag E. Abscess facial bactérien et dermatite chez le lapin. 2018
http://www.medirabbit.com/FR/Skin_diseases/Bacterial/Abces/Abcs_rab_fr.pdf

Garibaldi BA, Moyer C, Fox JG. Diagnostic exercise: mandibular swelling in a rabbit. Lab Anim Sci 1990;40:77-78.

Harcourt-Brown F. Textbook of rabbit medicine. Oxford, UK: Butterworth-Heinemann; 2002.

Hillyer EV, Quesenberry QE. Ferrets, rabbits, and rodents: clinical medicine and surgery. New York, USA: WB Saunders; 1997.

Light RW, Nguyen T, Mulligan ME, Sasse SA. The in vitro efficacy of varidase

versus streptokinase or urokinase for liquefying thick purulent exudative material from loculated empyema. Lung 2000;178:13-18.

O'Donoghue PN, Whatley BF. *Pseudomonas aeruginosa* in rabbit fur. Lab Anim 1971;5:251-525.

Quesenberry KE, Carpenter JW. Ferrets, rabbits and rodents. Clinical Medicine and Surgery. St Louis, USA: Saunders; 2004.

Schoenbaum M. *Pseudomonas aeruginosa* in rabbit fur. Lab Anim 1981;15:5.

Van Praag E., Maurer A., Saarony T. Skin Diseases of rabbit. MediRabbit book. 2010.

Williams CS, Gibson RB. Sore dewlap: *Pseudomonas aeruginosa* on rabbit fur and skin. Vet Med Small Anim Clin 1975;70:954-955.