

## Chronic ulcerative paronychia: a possible further clinical manifestation of mucocutaneous lupus erythematosus in four dogs

*Chronische ulceratieve paronychia: een mogelijke klinische presentatie van mucocutane lupus erythematosus bij vier honden*

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### ABSTRACT

In this study, the signalment, clinical signs, histopathological findings and treatment outcome of four dogs with chronic ulcerative paronychia, that presented clinical and microscopic characteristics of the mucocutaneous variant of canine chronic cutaneous lupus erythematosus are described. The Greyhounds in the case series had a symmetric claw fold involvement, either exclusively or as major clinical presentation.

### SAMENVATTING

In de voorliggende studie worden het signalement, de huidletsels, de histopathologische bevindingen en behandelingsresultaten bij vier honden beschreven met chronische ulceratieve paronychia, die klinische en microscopische kenmerken vertoonden van de mucocutane variant van chronische cutane lupus erythematosus bij de hond. Bij de greyhounds in deze casusreeks werd een symmetrische nagelriemaandoening vastgesteld, hetzij exclusief of als belangrijkste klinische presentatie.

### INTRODUCTION

The currently recognized variants of canine chronic cutaneous lupus erythematosus (canine CCLE) include exfoliative lupus erythematosus (ECLLE), mucocutaneous lupus erythematosus (MCLE), facial discoid lupus erythematosus (FDLE) and generalized discoid lupus erythematosus (GDLE). These variants share their chronic or recurrent nature of cutaneous lesions and are unified by a lupus-specific histopathology, i.e. a lymphocytic-rich interface dermatitis with basal keratinocyte damage (apoptosis, vacuolation) (Olivry et al., 2018).

The historical, clinical, histopathological and therapeutic features of MCLE have been reported in dogs by reviewing 21 cases (Olivry et al., 2015). To be included in that study, cases had to fulfil the following four criteria: (i) a more-than-two-month history of skin lesions (justifying their chronic or recurrent nature),

(ii) the presence of erosions or ulcers predominating at mucosae or mucocutaneous junctions (any), (iii) the presence of a lupus-specific histopathology, and (iv) the lack of complete remission following the use of antibiotics according to the standard of care (i.e. appropriate types of antibiotics, dosage and duration). German and Belgian shepherd dogs (and their crosses) were overrepresented with a slightly higher representation of female over male dogs. Most animals had two or more regions involved, in decreasing order of frequencies: on anal/perianal regions (60%), genital/perigenital (57%), oral/perioral area (48%), ocular/periocular skin (29%), and nasal/perinasal (19%). Current treatment recommendations favored for a reactive therapy with oral prednisolone and oclacitinib, and a proactive therapy with oclacitinib combined with the lowest doses of prednisolone needed (Olivry, 2023).

The purpose of this study is to report the signal-



**Figure 1.** Right hind foot of the Spanish Greyhound. Ulceration of a claw fold that expanded outward to adjacent digital skin.



**Figure 2.** Fore limbs of the Irish Greyhound. Note the involvement of multiple claw folds with striking swelling of affected toes. Note that dew claw folds are not affected.



**Figure 3.** Second toe of the right fore limb of the Irish Greyhound. Note severe ulceration of the claw fold and marked digital swelling. The claw has a normal aspect.

ment, clinical signs, histopathological features and treatment outcome of four dogs with chronic ulcerative paronychia that had clinical and microscopic characteristics of canine CCLE.

## MATERIALS AND METHODS

### Inclusion criteria

To be included in the present study, cases required ulceration of the claw fold either exclusively or with mucocutaneous regions involved and they had to fulfil the same four criteria of the original study of 21 cases (Olivry et al., 2015). In addition, in dogs with a travelling history to Southern Europe, leishmaniosis had to be excluded by serum protein electrophoresis and serological tests.

Data on signalment, clinical signs (symmetry, mucocutaneous regions and other body areas involved, type of skin lesions) and treatment outcome for each case were collected and analyzed.

### Histological examination

Claw fold with adjacent skin biopsy material was available for three dogs. Histopathological features were evaluated.

## RESULTS

### Signalment

Four selected dogs were identified as purebred. There were two neutered male Greyhounds (one Irish, one Spanish), there was one intact male German shepherd and one intact female Belgian Malinois shepherd. The age of onset of the lesions varied between three and six years old (mean five years).

### Clinical summary

At the time of presentation, all four dogs had an ulcerative condition of the claw fold that expanded outward to adjacent digital and interdigital skin (Figures 1 and 4). The two Greyhounds had multiple clawfolds on multiple paws involved with a striking swelling of affected toes, i.e. a symmetric distribution (Figures 2 and 3). The two shepherd dogs had an asymmetric claw condition. The German shepherd had extensive ulceration at a single claw fold (Figure 4). The Belgian shepherd had ulcerations with peripheral hyperpigmentation on the claw fold, and adjacent digital and interdigital skin of the left ipsilateral legs (Figure 5). Claw folds of the dew claws, claws and foot pads appeared normal in all dogs.



**Figure 4. German shepherd. A. Perinasal ulcerations and B. Severe ulceration of a single claw fold that expanded outward to adjacent digital and interdigital skin.**

Skin lesions were restricted to the claw folds in the Irish Greyhound. Minor skin lesions were also observed at several mucocutaneous regions in the Spanish Greyhound: tiny ulcers at the medial canthus of both eyes, erosions around, but not extending into, the lower lips, and a small anal ulcer (Figure 6). The German shepherd had ulcerations involving the dorsal and lateral perinasal skin (Figure 4). The skin condition was more generalized in the female Belgian Malinois shepherd. Several mucocutaneous junctions were involved and multifocal plaque-like lesions were present on the lateral thorax and on the lateral and medial aspects of the limbs. Ulcers were present on the external vulva and perivulvar skin with periulcer hyperpigmentation (Figure 7) and reticulated perilesional hyperpigmentation, on the anus with peripheral hyperpigmentation (Figure 8), and on perinasal skin. Plaque-like lesions were characterized by scaling, dyspigmentation, and focal ulceration (Figure 9). Antinuclear antibody testing had a negative test result in that dog.

There were no systemic signs observed apart from pain at the site of the lesions.

Information on treatment outcome was available for three dogs. The German shepherd was lost to follow-up. The Irish Greyhound, failed to respond to a three-month combination of glucocorticoids, niacinamide and cyclin antibiotic; its treatment regimen had to be adapted. Both Greyhounds and the Belgian shepherd had a fair response to oral glucocorticoids in combination with oral ciclosporin but experienced relapses upon the tapering of drug dosages. The Belgian shepherd had to be euthanized later on due to medical causes unrelated to its skin condition.

### Histopathology

Perinasal biopsies obtained from the German shepherd had a lupus-specific histopathology. Micro-



**Figure 5. Left hind foot of the Belgian Malinois shepherd. Expanded ulceration of the claw fold to adjacent digital and interdigital skin. Note peripheral hyperpigmentation.**



**Figure 6. Anal region of the Spanish Greyhound. Note presence of a small ulcer.**



**Figure 7.** Vulvar and perivulvar region of the Belgian Malinois shepherd. Multifocal ulcers with perilesional hyperpigmentation.



**Figure 8.** Anal region of the Belgian Malinois shepherd. Anal ulceration with peripheral hyperpigmentation.



**Figure 9.** Lateral thorax of the Belgian Malinois shepherd. Plaque-like lesion characterized by scaling, depigmentation, ulceration and peripheral reticulated hyperpigmentation.

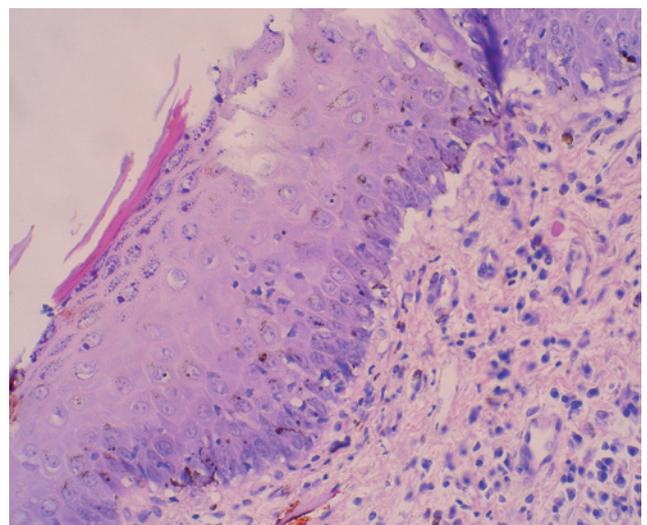
scopic examination of claw fold and adjacent skin biopsies revealed a cell-rich interface dermatitis with evidence of basal keratinocyte damage (apoptosis, vacuolation) (Figure 10). This pattern was patchy and it was scored as mild. Plasma cells were present in all three claw fold biopsies, mixed with lymphocytes, and were sometimes numerous (Figure 11). Suprabasal keratinocyte apoptosis with lymphocytic satellitosis was observed in the Greyhound cases (Figure 12) and in vaginal biopsies of the Belgian shepherd.

## DISCUSSION

In this report, four dogs are described with chronic ulceration of a single or of multiple claw fold(s), that had been unresponsive to antibiotic treatments. The claw fold lesions and/or concurrent mucocutaneous lesions had a lupus-specific histopathology.

Interestingly, only the Greyhounds had a symmetric claw fold involvement, either exclusively or as major clinical presentation. This observation raises the suspicion that this breed may have a predisposition to a claw fold-predominant form of canine CCLE.

Three of the four dogs had other body regions involved. The German shepherd had perinasal ulcerations and was considered as the mucocutaneous variant of canine CCLE with claw fold involvement. The Belgian shepherd had ulcerations on several mucocutaneous regions (in decreasing order of severity: vulvar/perivulvar, anal, perinasal) and had multifocal plaque-like lesions reminiscent of those reported in generalized DLE in dogs, another variant of canine CCLE (Banovic et al., 2016). This dog's disease may be an atypical and crossover variant of canine CCLE (mixed mucocutaneous LE and generalized DLE). Crossover variants



**Figure 10.** Photomicrograph of a claw fold and adjacent skin of the Belgian Malinois shepherd. Note patchy interface dermatitis with basal keratinocyte damage (vacuolation, apoptosis) and a lymphoplasmacytic dermal inflammation. Hematoxylin and eosin stain 400x.

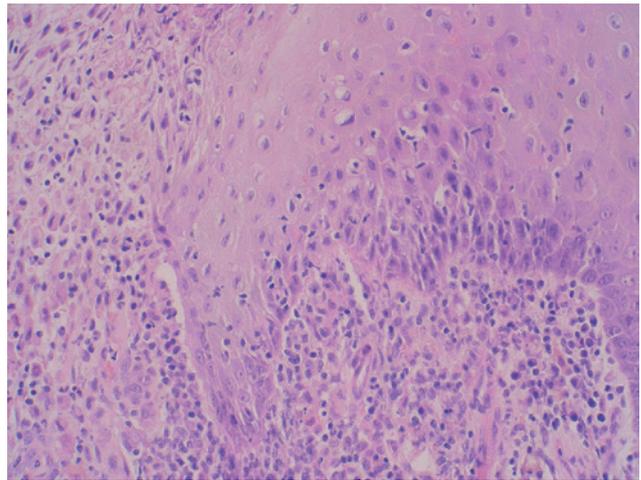
of canine CCLE are anecdotally mentioned and have to be characterized to add to the expanding phenotypic spectrum of canine CCLE (Olivry, 2018). The Spanish Greyhound had, in addition to its ulcerative claw fold disease, small ulcers on the medial canthus of the eyes, erosions around both lower lips, and an anal ulcer. These additional lesions were considered consistent with the mucocutaneous variant of canine CCLE.

Both Greyhounds had a symmetric and widespread chronic ulcerative paronychia. Paronychia without onychogryphosis has been reported in canine leishmaniasis, and claw histopathology is characterized by lichenoid mononuclear dermatitis (histiocytes, lymphocytes, and plasma cells), with or without hydropic changes in the claw and/or claw bed (Koutinas et al., 2010). Hence, to be included in the present study, the imported Spanish Greyhound had to be screened for leishmaniasis and provided negative test results. Furthermore, histiocytes were not prominently present in biopsies of this dog. Other clinical differential diagnoses included symmetric lupoid onychodystrophy with secondary bacterial colonization or infection, and bacterial paronychia. The Greyhounds had no clinical evidence of concurrent claw disease, i.e. subungual hemorrhage, loosening of claws, onychodystrophy. Bacterial paronychia is mostly an asymmetrical claw disease (Scott, 2003) and both Greyhounds had not responded to various antibiotic treatments.

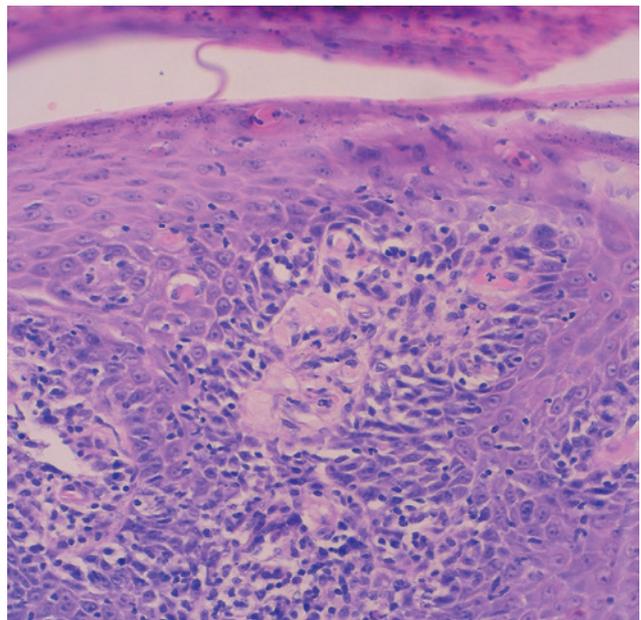
Lymphoplasmacytic lichenoid dermatitis is a non-specific histopathologic lesion of persistent mucosal and mucocutaneous inflammation (Gross et al., 2005). Although the claw fold is a portion of normal haired skin, the lichenoid lymphocyte and plasma cell rich inflammation observed in the claw fold biopsies of the present study may be considered as the stereotypical mucocutaneous inflammatory response; hence, these dogs fulfilled the inclusion criterium of a juxtamucosal phenotype.

The traditional systemic therapeutical approaches of MCLE in dogs include glucocorticoids combined with either antibiotics of the tetracycline family along with niacinamide or with ciclosporin. The clinical responses in the dogs of this study were judged moderate to fair, as the dogs experienced relapses upon tapering of drug dosages. Recent data on treatment recommendations are highly supportive for a combined therapy of glucocorticoids and oclacitinib (Olivry, 2023).

In conclusion, in this case series, four dogs are reported with an atypical phenotype of canine CCLE, chronic ulcerative paronychia, which may represent a further clinical manifestation of mucocutaneous LE. The Greyhounds had a symmetric claw fold involvement. The study of more cases is required to support and confirm the observations and to evaluate the response to a combined treatment of glucocorticoids and oclacitinib.



**Figure 11. Photomicrograph of a claw fold and adjacent skin of the Irish Greyhound. Plasma cell-rich lichenoid inflammation mixed with lymphocytes. Note mild hydropic degeneration of basal keratinocytes with clefting and lymphocytic exocytosis. Hematoxylin and eosin stain 400x.**



**Figure 12. Photomicrograph of a claw fold and adjacent skin of the Spanish Greyhound. Note basal and supra-basal keratinocyte apoptosis with lymphocytic satellitosis. Hematoxylin and eosin stain 200x.**

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