



**Cutaneous mucinosis in shar-pei - Case report**

*Mucínose cutânea em shar-pei – Relato de caso*

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**Abstract:** Cutaneous mucinosis is the excessive deposition of mucin in the dermis and hair follicles, being frequent in Shar-Pei dogs due to their skin roughness. This disease can be primary or secondary, the primary being of genetic origin and the secondary acquired. The clinical presentation is variable, with skin thickening, focal, multifocal or diffuse vesicular lesions, among others, and the places most affected by these lesions are the chest and pelvic limbs, the neck and the head of the animal. The definitive diagnosis can be obtained by performing histopathological examination. The present study aimed to report a clinical case of cutaneous mucinosis in a Shar-pei canine with vesicular lesions located on the anterior, posterior, periocular regions and pinna, the lesions contained a colorless and viscous aspect content. The diagnosis of cutaneous mucinosis was established through histopathological examination and the treatment was instituted in two moments, in the first, topical mupirocin and shampoo containing phytosphingosine and fomblin were administered, in the second, topical hydrocortisone aceponate and shampoo containing modified urea and omega-3 were used. The animal had remission of the lesions, and quarterly monitoring was recommended for better control of the disease.

**Keywords:** hyaluronic acid, racial dermatosis, vesicular dermatitis

**Resumo:** Mucínose cutânea é a deposição excessiva de mucina na derme e nos folículos pilosos, sendo frequente em cães da raça Shar-Pei devido a rugosidade da pele dos mesmos. Esta doença pode ser primária ou secundária, sendo a primária de origem genética e a secundária adquirida. A apresentação clínica é variável, podendo haver espessamento da pele, lesões vesiculares focais, multifocais ou difusas, entre outras, e os locais mais acometidos por essas lesões são os membros torácicos e pélvicos, o pescoço e a cabeça do animal. O diagnóstico definitivo pode ser obtido através da realização do exame histopatológico. O presente trabalho objetivou relatar um caso clínico de mucínose cutânea em um canino da raça Shar-pei com lesões vesiculares localizadas nos membros anteriores, posteriores, região periocular e pavilhão auricular, as lesões continham conteúdo de coloração incolor e aspecto viscoso. O diagnóstico de mucínose cutânea foi estabelecido através do exame histopatológico e o tratamento foi instituído em dois momentos, no primeiro foi administrado mupirocina tópica e shampoo contendo fitosfingosina e fomblin, no segundo foi utilizado aceponato de hidrocortisona tópico e shampoo contendo ureia modificada e ômega-3. O animal teve remissão das lesões, sendo recomendado acompanhamento trimestral para melhor controle da doença.

**Palavras chaves:** ácido hialurônico, dermatose racial, dermatite vesicular

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## Introduction

Cutaneous mucinosis, mucinous degeneration or hereditary cutaneous hyaluronosis consist of excessive mucin deposition in dermis and hair follicles (Santalucia et al., 2013). Mucin is a protein of high molecular mass, gelatinous aspect and light color (Zachary, 2018), which is located on mucous surfaces, being composed mainly of hyaluronic acid (CORFIELD, 2015).

Hyaluronic acid is produced by the Golgi complex and degraded by the enzyme hyaluronidase. In adverse conditions, there is an excess production of this acid and consequently greater deposition of mucin in different organs (DOCAMPO et al., 2011). There are authors who correlate this greater production of mucin with genetic conditions and skin wrinkling (ZACHARY, 2018).

Shar-pei dogs have a marked presence of wrinkles until the age of four months. After that, the skin growth stops accompanying the whole-body growth and

these dogs gradually lose most of these wrinkles, which remain mostly on the head

and hind limbs (VIANA et al., 2006). Thus, they are predisposed to be affected by this pathology (DOCAMPO et al., 2011).

Mucinous degeneration has a rare etiology and there is no predisposition related to the age and sex of dogs. Its pathophysiology can be classified as primary or secondary, being the primary of genetic origin, common in Shar-pei dogs, and characterized as non-painful, spontaneous involution between two to five months in mild cases (HNILICA & PATTERSON, 2016). Secondary cutaneous mucinosis can originate from endocrine disorders, such as hypothyroidism (Gross et al., 2008), and secondary to neoplasms or inflammatory diseases, such as lupus erythematosus (DOLIGER et al., 1995).

Clinical presentations of cutaneous mucinosis are variable (Elder et al., 2013), with skin thickening (Zanna et al., 2008), focal, multifocal or diffuse vesicular lesions

ranging from mild to severe, folliculitis, alopecia, erythema, pruritus, hyperthermia (Mecklenburg et al., 2009; Zachary, 2018) and skin deformities. The most affected places are the chest, pelvic limbs, the neck and the head (SANTALUCIA et al., 2013). In order to make the definitive diagnosis, the histopathological exam is recommended (Gross et al., 2008), where the separation or reduction of the dermal collagen fibers can be visualized as a consequence of mucin accumulation (ZACHARY, 2018).

Based on the above and because the breeding of dogs of the previously

mentioned breed is growing in Brazil (Ilha et al., 2005), this study aims to report a case of cutaneous mucinosis in a Shar-pei dog.

### Case Report

At a veterinary clinic in Fortaleza, a canine of the shar-pei breed (Figure 1), male, neutered, three years old and 21,9kg of body weight, was attended with the main complaint of bullous, non-rigid lesions, with colorless content, in addition to intense itching for a long time. He was already been diagnosed with stage 1 chronic kidney disease and hip dysplasia.



Figure 1. Chinese Shar-Pei patient affected by cutaneous mucinosis.

On clinical examination, the presence of vesicular lesions (Figure 2A) was observed, and these were located in the ears (Figure 2B), periocular region (Figure 2C),

and limbs (Figure 2D and 2E). The mucous membranes were normal, lymph nodes had no changes on palpation, 39.1°C of rectal temperature and there were no alopecia or

skin scaling. Blood samples were collected for hematological and biochemical evaluation, as well as urine sample for urinary assessment, cytology through fine needle aspiration puncture (FNAP) of vesicle fluid and three skin biopsy samples with subsequent histopathological analysis.

Initially, topical treatment was prescribed for 20 days (until the histopathological report was obtained) with mupirocin ointment (Bactroban®), twice a day associated with a shampoo containing phytosphingosine and fomblin (Douxo Seb®) twice a week.



Figure 2. Vesicular lesions found in the animal during physical examination, A – vesicles, B - pinna, C - periocular, D - thoracic limbs, E - pelvic limbs.

### Results and discussion

The results of hematological, biochemical and urine tests were within

normal reference range for the species. The FNAP report revealed that the consistency of the material of the vesicular lesions was

viscous and colorless (Figure 3) and microscopy showed scaling epithelial cells without atypia and the presence of gram-positive bacteria.

Corroborating thus with Raskin (2012), who states that it is possible to identify cellular abnormalities associated

with skin infection through cytological examination. Zachary (2018) explains that this bacterial infection can occur when there is impairment of the follicular structure due to the bacteria being liable to enter the skin through hair follicles, with staphylococcal folliculitis being more common in dogs.



Figure 3. Aspect of the exudate present in vesicular lesions.

Histopathological examination, stained with hematoxylin-eosin, showed orthokeratosis in epidermis, deposition of basophilic fibrillar material dissociating the collagen fibers and hair follicles at different stages of maturation in the dermis. There were no changes in the sweat and sebaceous glands, and there was no sign of malignancy,

fungi or parasites. Given the information on these morphological changes, a histopathological picture compatible with dermal mucinosis was proposed.

The dermis is rich in mucopolysaccharides (Rivitti, 2018) and fibroblasts, the latter being responsible for synthesizing collagen (Gartner & Hiatt,

2008), which has the important function of maintaining the shape and preventing tissue breakdown (BEDOYA et al., 2016). When there is cutaneous mucinosis, thickening of the dermal collagen fibers is expected (Zanna et al., 2008), similar to what occurred in the present report. Thus, we can infer that the collagen will not perform its function effectively and this can trigger reduced skin elasticity, irregular healing with frequent formation of granulomas and joint changes, with worsening of the hip dysplasia existing in the animal.

In addition, the use of hematoxylin-eosin staining is chosen in the histopathological examination to visualize mucin deposition in the dermis (ZANNA et al., 2009). Changes in the appearance of hair follicles according to the maturation cycle can also be seen (MILLER et al., 2012). Thus, it can be said that the report of the histopathological examination of the present case was in common agreement with that reported by the referred authors.

Three weeks after the first consultation, the patient returned for clinical reassessment where incomplete regression of the lesions was found, along with the diagnosis of cutaneous mucinosis obtained by histopathology. Due to the dermatological clinical condition, associated

with a history of chronic kidney disease, topical therapy with hydrocortisone aceponate (Cortavance®) was proposed for all lesions, once a day for seven days, and Labyderm Bioforce® (consisting of skin moisturizers) once a week for four weeks. On the subsequent return, the animal showed complete regression of the lesions and itching.

The treatment of cutaneous mucinosis is instituted according to the clinical symptoms. In the reported case, the protocol was initially established with mupirocin ointment and shampoo based on phytosphingosine and fomblin. The first drug is a bactericidal antibiotic effective against gram-positive bacteria and is widely used in the therapy of bacterial skin diseases (OLIVEIRA & OLIVEIRA, 2012; HETEM & BONTEN, 2013). The composition of the prescribed shampoo was aimed at cleaning the skin, controlling oiliness and performing deep hydration of the skin.

The therapeutic protocol should be performed according to the symptoms, as well as it must be instituted with caution, especially in relation to the use of glucocorticoids, as these can trigger adverse effects, as changes in renal metabolism (PEREIRA et al., 2011). There are available topic corticosteroids, which can be used in

order to reduce potential side effects (YOUNG et al., 2012). Since the patient was previously diagnosed with chronic kidney disease, it was decided to use glucocorticoid only in topical formulation, resulting in complete remission of the lesions and promoting a less risk for renal damage.

Unfortunately, the pathological mechanism of cutaneous mucinosis is not completely established, and some animals may present recurrence of the lesions requiring maintenance treatment (MORGAN, 2008). In the presente dog, the proposed maintenance therapy was based on the weekly use of Cortavance® and Douxo Seb®, and quarterly reassessments were recommended for therapeutic adjustments and follow-up examinations.

### Conclusion

From the above, it can be concluded that cutaneous mucinosis is a dermatological condition present in the clinical routine, suggesting the attention of the Veterinarian to adopt appropriate diagnostic and therapeutic protocols, in order to improve the identification of patients affected by the disease.

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