EPITHELIOTROPIC CUTANEOUS LYMPHOMA IN A SHIH-TZU DOG

LINFOMA CUTÂNEO EPITELIOTRÓPICO EM UM CÃO SHIH-TZU

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ABSTRACT

Canine cutaneous epitheliotropic lymphoma (CEL) is a rare malignant neoplasm characterized by the infiltration of neoplastic T lymphocytes in the epidermis and adnexal structures. It predominantly affects older dogs and presents with variable clinical signs, often delaying diagnosis. This report describes the clinicopathological features of CEL in a Shih Tzu. The patient presented with multiple erythematous and crusty skin lesions. Histopathological analysis revealed diffuse infiltration of neoplastic T lymphocytes, Pautrier microabscesses, adnexal involvement, and a high mitotic index. Although immunohistochemistry is recommended for definitive classification, it was not performed in this case because of financial limitations. The clinicopathological findings were consistent with the mycosis fungoides form of CEL. The clinical presentation resembles that of chronic inflammatory dermatoses, making early diagnosis challenging. The scarcity of reported cases in Shih Tzus underscores the importance of this case in broadening the breed-specific knowledge. This case highlights the need for clinical suspicion and histopathological confirmation in dogs with chronic dermatoses, especially in underreported breeds, such as Shih Tzus.

Keywords: T-cell lymphoma, Skin, Histopathology, Dogs, Mycosis Fungoides, Shih Tzu.

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RESUMO

O linfoma cutâneo epiteliotrópico (LCE) é uma neoplasia maligna rara em cães, caracterizada pela infiltração de linfócitos T neoplásicos na epiderme e nas estruturas anexas da pele. Afeta predominantemente cães idosos e apresenta sinais clínicos variados, o que frequentemente retarda o diagnóstico. Este relato descreve as características clinicopatológicas de um caso de LCE em um cão da raça Shih Tzu. O animal foi atendido com múltiplas lesões cutâneas eritematosas e crostosas. A análise histopatológica revelou infiltração difusa de linfócitos T neoplásicos, presença de microabscessos de Pautrier, comprometimento de anexos cutâneos e alto índice mitótico. Embora a imunohistoquímica seja recomendada para a classificação definitiva, ela não foi realizada neste caso por limitações financeiras. Os achados clinicopatológicos foram compatíveis com a forma micose fungoide do LCE. A apresentação clínica mimetizava dermatopatias inflamatórias crônicas, dificultando o diagnóstico precoce. A escassez de relatos em cães da raça Shih Tzu reforça a relevância deste caso para o aprimoramento do conhecimento específico por raça. Este relato destaca a importância da suspeita clínica e da confirmação histopatológica em cães com dermatoses crônicas, especialmente em raças pouco descritas, como o Shih Tzu.

***Palavras-chave**: linfoma T, Pele, Histopatologia, Cães, Micose Fungoide, Shih Tzu.*

1 INTRODUCTION

Cutaneous epitheliotropic lymphoma (CEL) is a rare malignant neoplasm that predominantly affects older dogs. It is characterized by the proliferation of neoplastic T lymphocytes with an affinity for the epithelium of the skin, adjacent structures, and, frequently, mucous membranes. Lymphocytic infiltration occurs specifically in the epidermis and hair follicles, as well as in the sebaceous and sweat glands, and may also affect the mucocutaneous junctions and oral mucosa. Due to its progressive and often insidious nature, CEL is usually diagnosed in advanced stages, which limits therapeutic options and negatively influences prognosis (Fontaine *et al*., 2010).

Clinically, CEL can present in several forms, such as diffuse erythema, desquamation, alopecia, erythematous plaques, nodules, and ulcers, mimicking other common inflammatory and allergic dermatological diseases in dogs. This polymorphic characteristic often delays definitive diagnosis and contributes to unfavorable clinical evolution, hindering early and effective therapeutic interventions. Furthermore, it is common for affected dogs to manifest intense pruritus, aggravating secondary lesions, and directly impacting the animals' quality of life (Ramos *et al*., 2022).

Although the etiology of CEL is not yet fully elucidated, some evidence suggests a possible association with chronic and atopic inflammatory processes, indicating that prolonged and recurrent stimulation of the cutaneous immune system may play an important role in its pathogenesis. Epidemiological studies have indicated a higher prevalence in certain breeds, suggesting a possible genetic predisposition. However, specific data on breed predisposition are limited, and detailed reports involving Shih Tzu dogs remain scarce, highlighting the need for more in-depth studies on this specific breed (Azuma *et al*., 2021).

The definitive diagnosis of CEL is established through histopathological and immunohistochemical evaluation of the lesions, with the characteristic identification of neoplastic T lymphocytes infiltrating the epidermis and adjacent structures of the skin. Complementary techniques, such as polymerase chain reaction (PCR) for antigen receptor rearrangements, can be used to confirm the clonality of neoplastic cells and strengthen differential diagnosis, excluding other inflammatory or infectious lymphocytic dermatopathies. A complete diagnostic approach is essential for adequately directing treatment and providing a more accurate prognosis (Fontaine *et al*., 2010; Ramos *et al*., 2022).

This report describes the clinicopathological characteristics of epitheliotropic lymphoma in a Shih Tzu.

2 CASE

A male Shih Tzu dog of unknown age was presented with a history of skin lesions that had developed over several months. Clinically, he presented with multiple and diffuse lesions all over his body, both nodular and in plaques, with rounded shapes, covered by crusts, and with variable erythematous coloration (Figure 1 A and B).

Figure 1: Epitheliotropic lymphoma in a Shih Tzu dog.
Note: Generalized distribution of nodules and plaques covered by yellowish crusts on the abdomen (A) and the back (B).
Source: Authors, 2025.

In addition, erosions and ulcers were observed in the oral mucosa (Figure 2).

Figure 2: Epitheliotropic lymphoma in a Shih Tzu dog.
Note: Hyperemia, erosion, and ulceration of the oral mucosa were noted.
Source: Authors, 2025

A skin biopsy was performed and sent for histopathological examination. Histologically, a diffuse and marked infiltration of neoplastic intermediate lymphocytes was observed, distributed throughout the dermis and frequently located above the basement membrane, forming intraepidermal aggregates known as Pautrier's microabscesses (pagetoids). In addition, there was diffuse infiltration of the skin appendages, resulting in the complete obliteration of these structures in certain areas. The neoplastic cells demonstrated moderate to marked anisocytosis, anisokaryosis, and mild karyomegaly, exhibiting mild, poorly delimited cytoplasm, round and vesicular nuclei, and slightly evident nucleoli. The mitotic count was 8 mitotic figures for an area of 2.37 mm2. The final diagnosis was epitheliotropic cutaneous lymphoma (Figure 3 A and B).

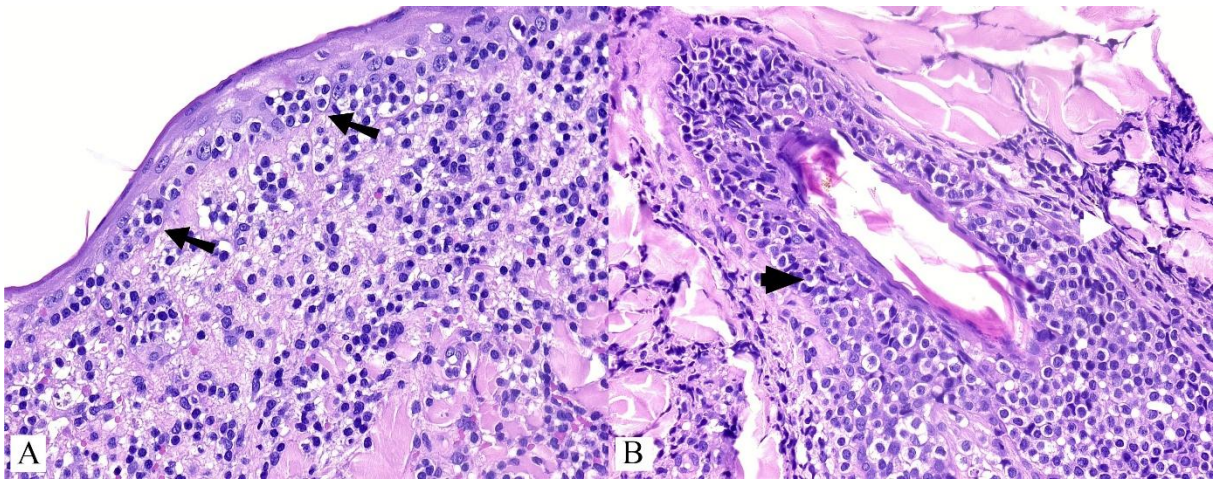

Figure 3: Epitheliotropic lymphoma in a Shih Tzu dog.
Note: Intraepidermal (arrows) (**A**) and follicular (arrowhead) (**B**) lymphocytic infiltrations were observed.
Source: Authors, 2025.

3 DISCUSSION

The clinical presentation observed in the dog in this report, with multiple erythematous and crusted lesions, is compatible with the typical clinical presentation described in the literature for mycosis fungoides, the most common subtype of CEL (Pye 2023; Fontaine *et al*. 2009; Bhang *et al*. 2006). This similarity with chronic inflammatory diseases, such as atopic dermatitis, pyoderma, or food hypersensitivity dermatitis, can lead to initially erroneous therapeutic approaches, with prolonged use of antibiotics or corticosteroids without satisfactory clinical response. This condition contributes to delays in referral for additional tests, such as skin biopsy, compromising

early detection and the initiation of more appropriate management. Therefore, in patients with chronic dermatological conditions refractory to conventional therapy, CEL should be considered in the differential diagnosis. Alternatively, cytology is used as a first diagnostic test to rule out other differentials such as a benign ulcerative process or other neoplasms.

Histologically, the presence of Pautrier microabscesses and diffuse lymphocytic infiltrate confirmed the diagnosis of CEL, in line with other reports in the literature (Dettwiler *et al*., 2022; Mineshige *et al*., 2016). The presence of moderate to marked anisocytosis and anisokaryosis, associated with a high mitotic index, suggests an aggressive neoplastic proliferation, compatible with a poor prognosis, as widely described in previous studies (Azuma *et al*., 2021; Carpenter *et al*., 2024).

Although it has been described that certain breeds may have a genetic predisposition to the development of CEL, such as Boxers, Golden Retrievers and Cocker Spaniels (Fontaine *et al*., 2010; Bouchard, 2000), the occurrence in Shih Tzu dogs is poorly documented. This case report highlights the need for additional studies on racial predisposition, especially in this breed of dogs.

Regarding treatment, several options have been discussed in the literature, including the use of chemotherapeutic agents such as lomustine (Azuma *et al*., 2021), isotretinoin (Ramos *et al*., 2022), and corticosteroids, as well as palliative therapies that mainly aim to alleviate symptoms such as pruritus and secondary infections (Fontaine *et al*., 2009; Rook, 2019; Chan *et al*., 2017). However, no approach has demonstrated consistent prolonged success, reflecting the generally refractory and progressive nature of neoplasms.

Immunohistochemical examination is essential for accurately determining the lymphoma subtype, which enables a better understanding of the pathogenesis and guides a more appropriate therapeutic approach. In cases of canine epitheliotropic lymphoma (LE), immunophenotyping is fundamental for confirming the T-cell origin of the neoplastic cells, a hallmark of this disease. Chan *et al*. (2017) highlighted this, demonstrating that 97.2% of LE tumors in their study expressed the T-cell marker CD3, while none expressed the B-cell marker CD79α. Therefore, confirming T-cell lineage through markers such as CD3 is a crucial step in the diagnosis of canine LE. However, in the present case, the immunohistochemical analysis could not be performed due to financial constraints of the animal's owner.

Histopathological examination is often highly suggestive of cutaneous epitheliotropic lymphoma; however, morphologic criteria alone are not always sufficient for a definitive diagnosis (Gross *et al*. 2005). The authors emphasize that epidermotropism and Pautrier's microabscesses, while characteristic, may also occur in chronic interface dermatitis, cutaneous lymphocytosis, or early nonepitheliotropic lymphomas. Therefore, immunohistochemistry is considered an essential diagnostic adjunct, allowing confirmation of the T-cell origin of neoplastic infiltrates (CD3-positive, CD79α-negative) and exclusion of B-cell or reactive conditions.

The lack of immunophenotypic confirmation in this case represents a significant limitation, as Gross *et al*. (2005) note that misclassification between inflammatory lymphocytic dermatoses and true epitheliotropic lymphoma may occur without immunohistochemical or molecular characterization. Accurate immunophenotyping not only refines diagnosis but also assists in distinguishing the mycosis fungoides variant, the most common form, from nonepitheliotropic or secondary cutaneous lymphomas, which differ in biological behavior and prognosis.

The authors further highlight that the clinical course, response to therapy, and survival time vary widely among dogs with epitheliotropic lymphoma and are strongly influenced by tumor immunophenotype and extent of epithelial tropism. Consequently, the absence of immunohistochemical confirmation restricts the precision of prognostic interpretation and clinical management decisions in this report.

Additionally, the unknown age of the dog constitutes another limitation. As noted by Gross *et al*. (2005), epitheliotropic lymphoma predominantly affects middle-aged to older dogs (usually over eight years), often in association with other senile dermatoses or comorbidities. The absence of age information prevents assessment of potential age-related predisposition and limits comparison with epidemiological data on affected breeds and age cohorts.

The PCR confirmation of T lymphocyte clonality can also be used as an additional diagnostic tool to confirm the neoplastic nature of infiltrating cells, especially in early or atypical cases (Carpenter *et al*., 2024; Dettwiler *et al*., 2022).

In conclusion, this report details the typical clinicopathological features of CLE in a Shih Tzu, reinforcing the importance of early and complete diagnosis for appropriate management. This case also reinforces the need for further studies

focused on breed predisposition and specific therapeutic efficacy, aiming to improve the prognosis of this often-fatal disease.

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