

Infiltrating and Ulcerated Adenoid Solid Basal Cell Carcinoma Associated with Nematode Infection (Larva migrans)

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Abstract

We report the case of a 72-year-old man from Maracaibo, Zulia, with a solid, infiltrating, and ulcerated facial basal cell carcinoma (BCC). We report an unusual histopathological association with a nematode infestation (Larva migrans). BCC is the most common cutaneous neoplasm, and its infiltrating variant has high local aggressiveness. The coexistence of this neoplasm with an active parasitic infection in a single lesion is an exceptional finding, suggesting a possible interaction in the tumor microenvironment, particularly in endemic tropical regions such as ours. This case underscores the complexity of diagnostic management in these contexts and the fundamental importance of clinicopathological correlation.

Keywords: Basal cell carcinoma; Nematodes; Cutaneous infection; Adenoid subtype

Introduction

Basal cell carcinoma (BCC) is the most common malignant neoplasm in humans, accounting for approximately 80% of all non-melanoma skin cancers. Its global incidence shows an increasing trend, linked primarily to chronic exposure to ultraviolet radiation, although its pathogenesis also involves genetic and environmental factors [1]. While most BCCs exhibit slow growth and low metastatic potential, certain histological subtypes (such as the adenoid solid and infiltrating variants) are associated with more aggressive clinical behavior, higher recurrence rates, and a significant potential for local invasion [2]. In these variants, ulceration is a frequent finding that can mask the lesion and broaden its differential diagnosis. Concurrently, in tropical and subtropical regions (such as western Venezuela), cutaneous nematode infections represent a significant public health issue. Among these, cutaneous larva migrans, strongyloidiasis, and onchocerciasis can manifest with a broad spectrum of dermatological lesions, whose presentation depends on the etiologic agent, parasitic load, and host immune response [3]. Histopathologically, these infestations typically trigger a

chronic inflammatory response in the dermis, characterized by infiltrates of eosinophils, lymphocytes, and histiocytes. The intersection between cutaneous oncogenesis and parasitic infections constitutes an emerging field of study. Current scientific evidence supports the role of chronic inflammation as a fundamental pillar in the development and progression of various cancers [4]. It is postulated that a persistent inflammatory microenvironment, with its consequent release of cytokines, chemokines, and growth factors, can promote cellular proliferation, angiogenesis, and the inhibition of apoptosis, establishing a favorable substrate for neoplastic transformation [4]. However, the coexistence of an aggressive BCC and an active nematode infestation within a single lesion is an exceptionally rare phenomenon that is poorly documented in the medical literature. This report aims to present a clinicopathologically unique case of an infiltrating and ulcerated adenoid solid basal cell carcinoma associated with the presence of nematodes in a patient from the Zulia region of Venezuela. Through this description, we seek not only to highlight the importance of an exhaustive histopathological diagnosis in complex cutaneous

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lesions from endemic areas, but also to speculate on a possible synergistic interaction between the parasitic infestation and tumor biology, based on the established principles of parasite-induced chronic inflammation.

Case Presentation

A 72-year-old male patient, a native and resident of Maracaibo, Zulia, Venezuela, presented with a history of chronic occupational sun exposure and no relevant personal or family history of skin cancer or immunosuppression. He presented to the dermatology clinic for a skin lesion on the right malar region, measuring approximately 3 cm in its largest diameter. The lesion had been growing slowly over the past two years, and in the last six months, it had become ulcerated and painful. Physical examination revealed an erythematous-violaceous plaque with raised, pearly borders and peripheral telangiectasias, featuring a central ulcer with a granulomatous base and indurated margins (Figure 1).



Figure 1: Clinical view of the ulcerated lesion in the right malar region (a), contralateral nasal fossa (b), and postoperative appearance (c).

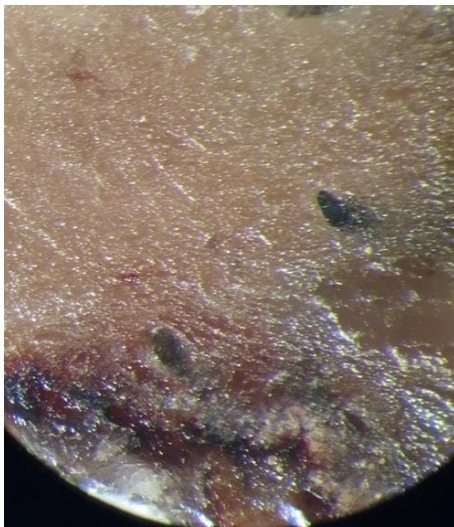


Figure 2: Histopathological study showing solid pattern tumor nests.

No cervical or preauricular lymphadenopathy was palpable. An incisional biopsy of the lesion was performed. Histopathological examination revealed a proliferation of basaloid cells with peripheral palisading, alongside tumor nests exhibiting solid and adenoid patterns, infiltrating the reticular dermis down to the subcutaneous cellular tissue. Mild to moderate cytologic atypia and mitotic activity were observed. The adjacent epidermis showed acanthosis and hyperkeratosis. Unexpectedly, within the stroma adjacent to the tumor nests, multiple sections of tubular structures compatible with nematodes were identified. These structures possessed a cuticle and a digestive tract, and were surrounded by a mixed chronic inflammatory infiltrate that included eosinophils (Figure 2). The presence of filarial structures within the tumor tissues was confirmed by the pathology department. Given these findings, parasitic serology was performed and returned negative. Treatment was initiated with a single dose of Ivermectin at 200 mcg/kg and Albendazole 400 mg daily for 3 days. Concurrently, a complete surgical excision of the carcinoma was performed with oncological safety margins. Histopathological examination of the surgical specimen confirmed the complete excision of the BCC and the absence of nematode foci. The patient recovered satisfactorily post-surgery, with adequate wound healing. Strict dermatological and parasitological follow-up was scheduled.

Discussion

This clinical case presents the rare coexistence of an aggressive subtype of basal cell carcinoma (infiltrating adenoid solid) and a nematode infection within the same cutaneous lesion. Infiltrating BCC is known for being more difficult to control locally and for its tendency to recur, underscoring the importance of accurate diagnosis and management [2]. The ulceration observed in this case is a sign of more advanced disease and can mask other underlying processes. The detection of nematodes within the context of a neoplastic lesion is an exceptional finding. Although cutaneous parasitic infections are endemic in tropical areas like Zulia, their direct association with the development or altered progression of skin cancer is not clearly established in the literature. Potential hypotheses include:

- **Incidental coinfection:** The presence of the nematode could be an incidental finding in a patient with chronic exposure.
- **Immunological modulation:** The chronic inflammatory response induced by parasites, particularly with an eosinophilic infiltrate, could theoretically influence the tumor microenvironment, either promoting or inhibiting tumor growth. It has been suggested that chronic inflammation can be a risk factor for carcinogenesis [4, 5]; however, its direct relationship with nematodes in the context of BCC is speculative and requires further investigation.

- **Cutaneous barrier compromise:** The ulceration of the BCC might have facilitated the entry or migration of nematode larvae into the tumor tissue.

Although the precise identification of the nematode species was not achieved in this case, the finding is relevant for the differential diagnosis of complex cutaneous lesions in endemic areas. The negative serology could indicate a localized infection or a low parasitic load undetectable by systemic methods. This case highlights the importance of a deep biopsy and meticulous histopathological evaluation of any atypical skin lesion, especially those that fail to respond to conventional treatment or present with unusual features, such as persistent ulceration. Identifying coexisting pathogens can influence the overall management of the patient and open new lines of research regarding the interaction between the host, neoplasms, and infectious agents. Nevertheless, the co-occurrence of the infiltrating adenoid solid basal cell carcinoma and cutaneous larva migrans in our patient raises the question of a possible pathogenic association beyond mere coincidence. While we cannot establish a direct causal relationship, it is plausible to postulate that the chronic inflammatory microenvironment induced by the parasitic infestation could have played a facilitating role in oncogenesis or in modifying tumor behavior. Persistent tissue inflammation is characterized by the release of cytokines, chemokines, and growth factors that promote cell proliferation, angiogenesis, and the inhibition of apoptosis—all mechanisms closely linked to the development and progression of cancer [1,2]. In this context, the lymphocytic infiltration and chronic tissue response to the nematode could have created a favorable niche that exacerbated the local aggressiveness of the underlying basal cell carcinoma. Although this association is extremely rare and the possibility of a fortuitous finding cannot be ruled out, the pathophysiological connection between chronic inflammation and cancer is well established, making this co-occurrence a clinicopathologically significant event that deserves to be reported.

Conclusion

This report documents an unusual clinicopathological presentation characterized by parasitic coinfection and malignant neoplasia within the same cutaneous lesion. The finding of an infiltrating adenoid solid basal cell carcinoma associated with Larva migrans in a patient from a tropical region underscores the complexity of differential diagnosis in dermatology within endemic areas. Histopathology stands as a fundamental diagnostic tool to identify this comorbidity, which may represent more than a mere incidental association. From a pathophysiological perspective, this case hypothesizes that the chronic inflammation induced by parasitism could create a microenvironment conducive to tumor progression through paracrine mechanisms of

cellular proliferation and survival. Although this relationship requires validation through molecular and epidemiological studies, its potential oncogenic significance warrants consideration when evaluating complex cutaneous lesions in similar geographic contexts. The relevance of this finding transcends the academic realm, holding direct implications for clinical practice: a high index of suspicion is urgently needed to detect unusual comorbidities in patients from tropical regions, where parasitic load and sun exposure act as concurrent risk factors. Prospective studies exploring the synergistic interaction between infection and chronic inflammation in cutaneous carcinogenesis could elucidate new mechanisms in tumor biology.

Ethical Considerations

Informed consent was obtained from the patient for the publication of this case report, ensuring the confidentiality of his personal and clinical data. The study was approved by the Research Ethics Committee of the Ministry of Popular Power for Health of Venezuela (MPPS).

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