Our Dermatology Online

Case Report

Progressive nodular histiocytosis: An exceptional case in dermatology

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ABSTRACT

This study presents the case of a 73-year-old male diagnosed with progressive nodular histiocytosis (PNH), a rare disorder characterized by disseminated nodules on the skin and mucous membranes. These nodules emerged eight months prior to presentation. A definitive diagnosis of PNH was established through skin biopsy. This case underscores the importance of further case reports to advance comprehension and management of this uncommon coexistence. Expanding the literature on PNH will contribute to improving diagnostic accuracy and treatment efficacy for patients presenting with similar manifestations.

Key words: Progressive nodular histiocytosis; Skin disorder; Exceptional case

INTRODUCTION

Progressive nodular histiocytosis (PNH), initially described by Touton in 1978, remains an exceedingly rare non-Langerhans cell histiocytosis [1]. This condition poses a diagnostic challenge, characterized by disseminated dermatosis affecting various regions of the body, including the head, trunk, and limbs. It presents distinctive clinical features, manifesting as the progressive emergence of yellowish-brown papules and pinkish-red nodules. While predominantly observed in adults, it may also affect pediatric populations. Remarkably, fewer than 20 documented cases have been indexed in PubMed, emphasizing its extraordinary rarity [2].

Although no direct association with malignancies has been firmly established, the occurrence of progressive nodular histiocytosis (PNH) in individuals with a history of cancer may raise suspicions of tumor recurrence. The etiology of PNH remains elusive, with hypotheses revolving around reactive, etiologic, or neoplastic components [3].

CASE REPORT

We present the case of a 73-year-old male patient who presented to the clinic with a disseminated progressive nodular dermatosis on the head and trunk. The erythematous nodules were mainly located on the face, chest, and abdomen and ranged in size from 5 to 10 mm in diameter. The patient reported that the nodules appeared eight months prior and showed no signs of improvement.

The patient had previously been treated for what was erroneously diagnosed as acneiform eruptions, which were believed to be secondary to the use of a vitamin B complex prescribed for non-specific low back pain. However, upon further evaluation, it became evident that the dermatosis was not consistent with secondary

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acneiform eruptions, and it was unlikely that the vitamin B complex was the issue. Subsequently, a skin biopsy was taken, revealing the presence of histiocytes with abundant cytoplasm and lymphocytes, which was consistent with a preliminary diagnosis of histiocytosis.

At clinical examination, erythematous nodules ranging from 5 to 10mm in diameter were observed on the patient's face and back, exhibiting a tendency to cluster in certain areas. These nodules are consistent with the clinical manifestation of progressive nodular histiocytosis, a rare disorder characterized by the proliferation of histiocytes in the skin (Figs. 1a and 1b).

Due to our clinical suspicion, hematoxylin and eosin staining was employed, utilizing a 40x magnification lens. The resulting photomicrograph revealed dermal infiltration by a densely populated inflammatory infiltrate composed of lymphocytes, mononuclear histiocytes, and multinucleated giant cells. Notably, these cells exhibited a finely granular cytoplasm with a ground-glass appearance (Fig. 2).

Additionally, immunohistochemical analysis revealed that the histiocytic cells exhibited positivity for CD68, while displaying negativity for CD1a and S-100 protein, consistent with the diagnostic profile of progressive nodular histiocytosis (PNH). PU.1 staining was also conducted to distinguish between histiocytosis and histiocyte-rich tumors, further supporting the diagnosis of PNH. These findings align with PNH, an infrequent disorder characterized by histiocyte proliferation within the skin, forming nodules and plaques (Fig. 3).

Upon genitourinary examination, a palpable and indurated mass was identified within the right infratesticular region. This mass presented with multiple nodules characterized by ill-defined borders, measuring approximately 1.2 x 1.69 cm, with no accompanying deviations in temperature noted.

Subsequent ultrasonographic evaluation revealed the presence of a complex, septated cystic lesion with irregular hypoechoic areas, strongly suggestive of teratoma. However, while this teratoma was identified, establishing a definitive association with the concurrent histiocytosis remained inconclusive. Further comprehensive investigations were warranted to elucidate any potential interrelationships between these clinical entities.

Unfortunately, the patient's clinical course resulted in a detrimental outcome, with the teratoma ultimately contributing to the patient's demise. It is important to note that while the teratoma was present, the current literature does not substantiate a confirmed causal nexus between the teratoma and the histiocytosis. Thus, any purported association remains speculative, necessitating further investigation to fully understand the complexities of this clinical scenario.

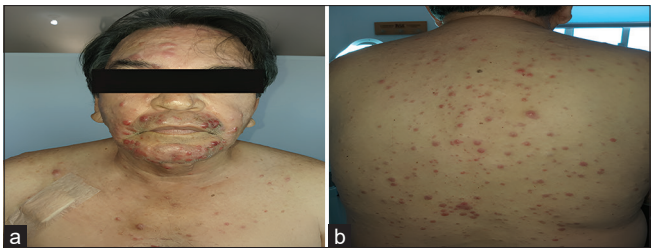

Figure 1: a) Erythematous nodules on the back with a tendency to cluster in certain areas. b) Erythematous nodules on the patient's face, ranging diameter of 5–10 mm, with a tendency to cluster in some areas.

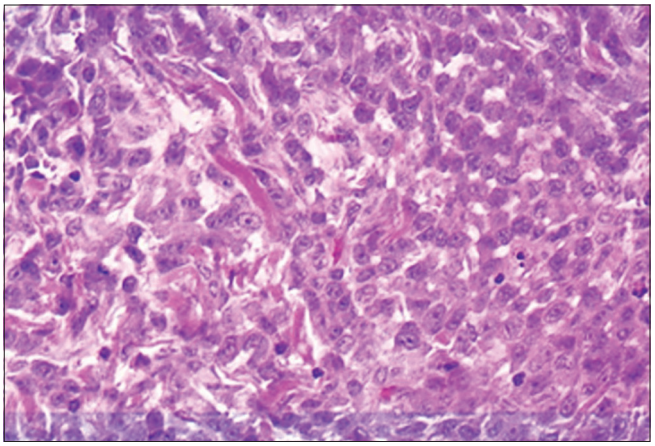

Figure 2: Dermal infiltration by lymphocytes, mononuclear histiocytes, and multinucleated giant cells. Notably, these cells exhibit a finely granular cytoplasm with a ground-glass appearance. H&E; 40x.

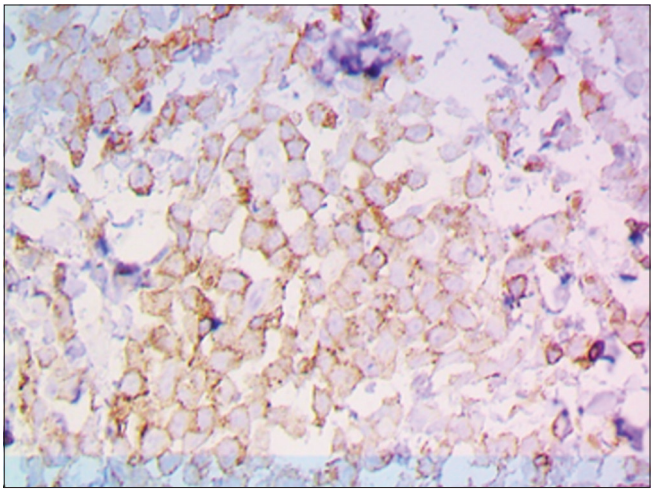

Figure 3: The staining demonstrated positive reactivity for CD68, confirming the presence of histiocytic cells. 40x.

DISCUSSION

Histiocytes, originating from bone marrow stem cells, constitute vital elements of the body's immune system, distributed extensively across various tissues and organs [4]. Consisting predominantly of macrophages and dendritic cells, histiocytes play distinct roles in immune surveillance, encompassing phagocytosis of foreign agents and antigen presentation for the initiation of adaptive immune responses [5].

Furthermore, histiocytes actively contribute to tissue homeostasis and repair mechanisms by releasing growth factors and facilitating tissue remodeling. Their pivotal function also encompasses the clearance of apoptotic cells and debris, thereby preserving tissue integrity and averting inflammatory processes [5].

Progressive nodular histiocytosis (PNH) represents an exceptionally rare form of non-Langerhans cell histiocytosis, characterized by widespread dermatosis affecting diverse body regions. Despite its infrequency, PNH presents a diagnostic conundrum due to its varied clinical manifestations and scant literature [2].

The precise etiology of PNH remains elusive, with hypotheses spanning from reactive to neoplastic origins. While its correlation with malignancies remains speculative, its manifestation in individuals with a history of cancer may evoke concerns regarding tumor recurrence [3].

Recent studies have uncovered potential therapeutic approaches for PNH, driven by the activation of the MAPK pathway with documented mutations in genes such as MAP2K1 and MAPK1 [6]. Treatment options are currently limited, comprising surgical interventions, radiation therapy, and systemic treatments such as chemotherapy and immunotherapy. Emerging avenues such as methotrexate and BRAF inhibitors offer promise, yet their efficacy and safety require further exploration [7,8].

Given the paucity of reported PNH cases and the inherent challenges in its diagnosis and management, concerted collaborative endeavors among clinicians and researchers are imperative to propel our comprehension of this rare disorder. Subsequent research endeavors should aim to delineate its pathogenesis, refine diagnostic criteria, and devise targeted therapeutic strategies, thereby enhancing patient outcomes and advancing medical knowledge.

However, it is crucial to emphasize that due to the unfortunate demise of the patient, the establishment of a definitive relationship with the teratoma remained inconclusive. With the limited number of reported cases, there is an urgent need for additional case reports to expand our understanding of PNH and optimize management strategies. The continuous documentation and publication of similar cases will contribute to the accumulation of knowledge and foster advancements in comprehending and managing this rare condition, ultimately enhancing the quality of patient care on a global scale.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

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