CASE REPORT

A Case Report of Rosai Dorfman Disease With Nodal and Cutaneous Involvement: A Rare but Important Disease

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ABSTRACT

Cervical lymphadenopathy is a very common symptom in children seeking treatment at primary health care facilities. It is typically observed following viral or bacterial infection and, in most cases, resolved after treatment of the infection is completed. It may cause concern among parents especially if lymphadenopathy persists for several months. There are many possible causes for this serious condition, such as malignancy and tuberculosis infections. One of the differential diagnoses of this problem is Rosai-Dorfman disease (RDD). It is a rare disease, a subtype of non-Langerhans cell histiocytosis disorder which can only be diagnosed histologically. This case report presented a four-year-old boy with multiple cervical lymphadenopathies that persisted for months and associated with extra nodal skin lesion. The diagnosis was made histologically by ultrasound guided fine needle aspiration cytology (FNAC) of the enlarged cervical lymph node. He was treated with prednisolone syrup and the lymphadenopathy resolved after one month. This case highlights the importance of considering rare differentials like Rosai-Dorfman disease in persistent lymphadenopathy with unresolving skin lesions to facilitate early diagnosis, appropriate referral, and reduce patient and caregiver burden.
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INTRODUCTION

Rosai-Dorfman disease (RDD) is also known as sinus-histiocytosis with enormous lymphadenopathy[1]. It is a self-limited disorder of unidentified etiology, with some patients exhibiting poor outcomes. RDD is classified by the Histiocyte Society under the "R group" of histiocytosis, acknowledging its diverse clinical manifestations and associations. There were classical (nodal), extra nodal, neoplasia associated RDD, immune disease associated RDD, and Inherited RDD [1]. Additionally, cutaneous RDD, which predominantly affects the skin, was categorized separately within the "C group" of histiocytosis [1]. In classic RDD, patients commonly present with bilateral cervical lymphadenopathy, but some may present with extra nodal disease[1]. The most common sites of extra nodal presentation are skin, upper respiratory tract, and bone. The skin is involved in 10% of extra nodal RDD cases, and isolated cutaneous disease is rare. Typically, the lesions are slow-growing, painless, non-pruritic nodules, plaques or papules which vary in color from yellow, red to brown [1]. Outcomes are usually favorable, especially for nodal and cutaneous disease which is often self-limited [1]. In this report, we present the case of a four-year-old boy with persistent bilateral cervical lymphadenopathy and skin involvement. The diagnosis was made histologically while also ruling out other more serious differential diagnoses, including malignancy and tuberculosis.

CASE REPORT

A four-year-old boy was presented with multiple cervical lymph nodes enlargement for four months. It was preceded by a history of upper respiratory tract infection (URTI). Despite the URTI symptoms being resolved after one week, the lymph nodes enlargement persisted and even increased in size and number. It was associated with a skin lesion near his right ear, which developed

after two months of lymph nodes enlargement. It is a small, pigmented skin lesion that was sometimes itchy but not painful. Otherwise, he had no night sweats, prolonged cough, fever, loss of appetite or weight. He had no history of contact with tuberculosis patients. There is no reported history of similar symptoms among family members. Despite having this lesion, it does not affect his daily activities or psychological well-being. He can go to school and play with his friends as usual. The lesion does not cause any systemic symptoms that require him to miss school. His mother has sought treatment from a primary health clinic several times, and he had completed two courses of antibiotics without improvement. She is worried because the lesion has not shown any improvement and is concerned it might indicate a more serious condition. Subsequently, he was referred to the ENT (Ear, nose and Throat) and Dermatology clinic. On physical examination, the right submandibular lymph node was enlarged (2 cm x 2 cm), non-tender, firm in consistency, and not matted. There was a small plaque of hyperpigmented skin lesion on the right periauricular area with the initial size of 1 cm x 1 cm (Fig. 1). The size progressively increased to 3 cm x 3 cm after two months (Fig.2). During this time, the skin lesion appeared as a round indurated plaque and nodule-like swelling (Fig. 2).

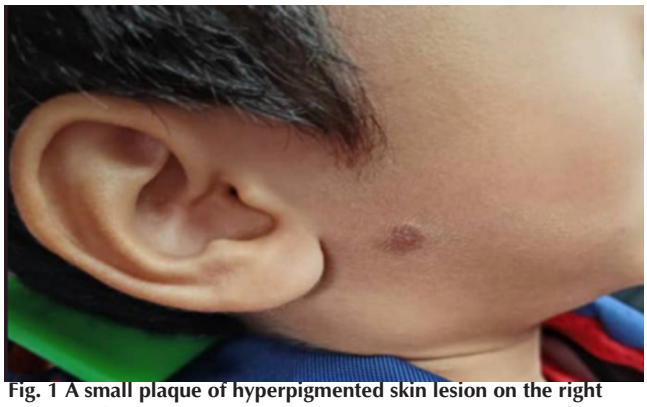

Fig. 1 A small plaque of hyperpigmented skin lesion on the right periauricular area measuring 1 cm x 1 cm.

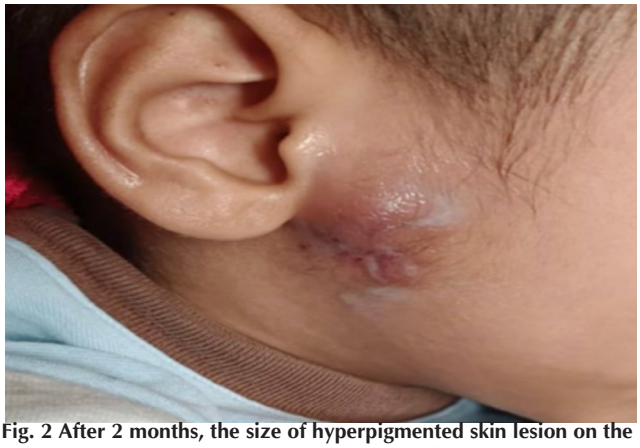

Fig. 2 After 2 months, the size of hyperpigmented skin lesion on the right periauricular area progressively increased to 3 cm x 3 cm.

The full blood count parameters were normal. However, erythrocyte sedimentation rate (ESR) was significantly elevated (35 mm/hr). He was initially suspected of having tuberculosis lymph node and fungal skin infection. He also underwent tuberculosis examinations including chest X-ray, gastric lavage and Mantoux test. All the results were normal. The histopathological examination (HPE) of the skin biopsy revealed mild hyperkeratosis, acanthosis, and spongiosis in the epidermis. The perivascular, superficial dermis, deep dermis, and subcutis exhibited dense infiltrations of lymphocytes, histiocytes, foamy histiocytes, and eosinophils. No epithelioid granuloma was identified. The HPE results are shown in Fig. 3. Results of polymerase chain reaction (PCR) on the skin indicated that tuberculosis was not detected. The fungal culture results also did not exhibit any growth.

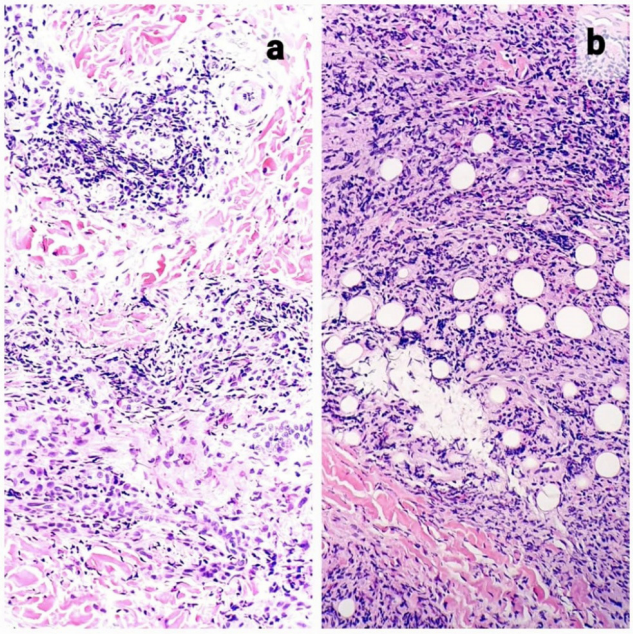

Fig. 3 Result of HPE of skin biopsy. Hematoxylin and Eosin staining (high power magnification, 40x). The perivascular inflammation consists of dense lymphocytes, histiocytes, foamy histiocytes and eosinophils infiltrates, involving the entire dermal thickness (figure 'a') and subcutaneous layer (figure 'b'). There is no evidence of emperipolesis to suggest the diagnosis of Rosai-Dorfman disease.

He then underwent a neck ultrasound, which detected bilateral enlarged cervical lymph nodes, with the dominant right submandibular lymph node measuring 2 x 2 x 1.2 cm. The remaining lymph nodes were less than 2 cm in size, with normal parotid and submandibular glands. He was recommended to undergo fine needle aspiration cytology (FNAC) under ultrasound guidance. The cytology smear from FNAC of lymph node revealed a heterogeneous population of lymphoid cells, consisting of a mixture of centroblasts, centrocytes, and plasmacytoid lymphocytes, with frequent mitoses observed. Numerous histiocytes were interspersed among these cells. These histiocytes exhibited enlarged nuclei, abundant vacuolated cytoplasm, and engulfed inflammatory cells and cellular debris. The presence of

histiocytes displaying emperipolesis, referring to RDD. No granuloma or overt malignancy seen. These findings are shown in Fig. 4.

After diagnostic confirmation of RDD was obtained, he was given 5 mg of prednisolone syrup daily for a month (0.5 mg/kg/day). After one month of treatment, the lymph node enlargement resolved, and the skin lesion gradually healed. The medication dose was slowly titrated for four months, and he was reviewed monthly.

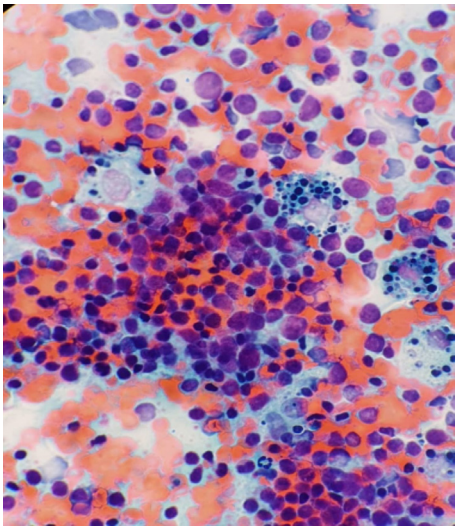

Fig. 4 The cytology smear from FNAC of the lymph node using Papanicolaou stain (20X magnification) showed a mixture of small mature lymphocytes and germinal center cells. The presence of histiocytes displaying emperipolesis, referring to RDD.

DISCUSSION

RDD is a rare benign clinicopathological entity characterized by massive painless lymphadenopathy, which was first described in 1969[2]. Although this disease was originally perceived to involve only the lymph nodes, it is recently known to involve many extra nodal sites including skin, soft tissues, upper airway, bones, urogenital system, lower airway, and oral cavity[2] . Among extra nodal sites, cutaneous or subcutaneous involvement is the most common, presenting in approximately 40%-50% of cases as painless, nonpruritic nodules, plaques, or papules[2].

The most common initial symptom of RDD is multiple cervical lymphadenopathies, observed in nearly 90% of cases [3]. Similarly, these findings were seen in our patient. There were multiple palpable lymph nodes enlargement in the bilateral cervical area of the neck, with prominent right submandibular lymph nodes also detected during imaging modalities. In addition, our patient also presented with the cutaneous manifestation. The symptoms of RDD often are nonspecific and can be mistaken for sarcoidosis, tuberculosis lymphadenitis, cutaneous lymphoma, and metastasis.[1]. Therefore, it is crucial for patients with persistent lymphadenopathy to undergo histological examination to ensure a correct diagnosis is obtained.

RDD is more often seen in children and young adults (mean age of 20.6 years), although it has also been reported to occur in individuals aged up to 74 years. It is also more common in males and in individuals of African descent, with the cutaneous form more common in Asian females[1]. Classic Rosai-Dorfman disease may be sporadic or familial. However, in this case there is no reported history of similar symptoms among family members.

The peculiar histopathological examination (HPE) characteristic observed in skin lesion biopsies for cutaneous manifestations of Rosai-Dorfman disease (RDD) showed a combination of both intensely and lightly stained areas distributed throughout the dermis. [4]. The lightly stained regions, situated near the basal layer of the epidermis, consist of large, polygonal, round, or oval histiocytes group in patches. These histiocytes have thin, pale membranes, abundant cytoplasm, and sometimes appear foamy with indistinct boundaries[4]. They possess large nuclei and prominent nucleoli. These cells are referred to as RDD cells. The deeply stained areas mainly consist of lymphocytes, plasma cells, and neutrophils. A key diagnostic feature of CRDD is the presence of complete lymphocytes and plasma cells within the cytoplasm of histiocytes, a phenomenon known as "emperipolesis" [4]. Similarly, the hallmark histocytopathological feature of RDD of the lymph node is the phenomenon known as emperipolesis, which is characterized by numerous large histiocytes with abundant, pale cytoplasm containing variable numbers of intact lymphocytes within them[5]. In this case, emperipolesis is only observed in the histocytopathological from fine needle aspiration cytology (FNAC) of the lymph node. In contrast, the HPE of the skin reveals dense infiltrations of lymphocytes, histiocytes, foamy histiocytes, and eosinophils in the deep dermis, perivascular areas, and subcutis. The epidermis shows mild hyperkeratosis, acanthosis, and spongiosis. There was no emperipolesis observed in HPE of this skin biopsy. The interpretation of HPE of the skin for this patient is dermal and subcutis inflammation with spongiosis. Therefore, the diagnosis of RDD in this case is made based on the cytomorphological appearance of the FNAC of the lymph node. Langerhans cell histiocytosis (LCH) was also considered as a differential diagnosis. A diagnosis of RDD requires the exclusion of LCH by negative CD1a or CD207 staining of the histiocytic infiltrate [5]. However, CD1a and CD207 staining were not performed due to the unavailability of cell block in this case. Consequently, differentiation from LCH was based on cytomorphological features. LCH typically exhibits Langerhans cells with grooved nuclei and a background containing eosinophilic micro abscesses, neither of which were observed in this case. Additionally, unlike RDD, LCH does not display emperipolesis.

In the newly diagnosed RDD, there is no established standard approach to management [1]. A thorough evaluation of RDD includes a detailed medical history, a physical examination, imaging studies, and laboratory tests to assess the disease's extent and identify any coexisting conditions like autoimmune and malignancy to guide treatment strategies [1]. In this case, the involvement is limited to lymph nodes and the skin with no evidence of any associated coexisting conditions. The treatment is based on individual clinical circumstance[1]. After the diagnosis of RDD is established, in most cases it is reasonable for observation only [1]. The prognosis of RDD could not be described in detail due to insufficient data. Certain patients exhibit a clinical course that is unpredictable, marked by alternating phases of remission and reactivation, which may last for years [1]. As many as 10% of patients died because of direct complications, amyloidosis and infections [1]. Among patients with multifocal and extra nodal RDD, especially those with involvement of the kidneys, liver, or lower respiratory tract tend to have a poor prognosis [1]. However, particularly for nodal and cutaneous, the outcomes were favorable[1]. Around 20% - 50% of patients with nodal or cutaneous disease will experience spontaneous remissions[1]. This is suitable for cases with uncomplicated lymphadenopathy, asymptomatic cutaneous RDD, and potentially asymptomatic disease in other sites[1]. However, our patient encountered an increase in the size of skin lesion and lymph node. Typically, the initiation of steroids is beneficial in reducing the nodal size and symptoms, although the responses may vary[1]. The optimal dose and duration of corticosteroid (prednisone or dexamethasone) are not clearly defined. Treatment of the best-observed response, followed by gradual dose tapering, is another essential approach. The first response assessment should be conducted within four months of initiating treatment; if the disease is in remission or stable, the surveillance interval can be extended to six to twelve months[1].

CONCLUSION

This case report focused on the occurrence of persistent lymphadenopathy associated with a skin lesion that did not improve despite receiving several treatments from a primary care clinic. We also emphasized the importance of considering other differentials when experiencing such a case, which could aid in the early detection of RDD. This case report aims to educate healthcare providers and raise awareness of RDD. Early referrals can help avoid extreme anxiety, time consumption, and financial burden for caregivers and patients.

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REFERENCE

1. Abla O, Jacobsen E, Picarsic J, Krenova Z, Jaffe R, Emile JF, et al. Consensus recommendations for the diagnosis and clinical management of Rosai-Dorfman-Destombes disease. Blood. 2018 Jun 28;131(26):2877–90. DOI 10.1182/blood-2018-03-839753
2. Ravindran A, Rech KL. How I Diagnose Rosai-Dorfman Disease. Vol. 160, American Journal of Clinical Pathology. Oxford University Press; 2023. p. 1–10. DOI 10.1093/ajcp/aqad047
3. Feriante J, Lee RT. Rosai-Dorfman Disease: Self-Resolving Unilateral Lymphadenopathy and a Brief Review of Literature. Case Rep Oncol Med. 2018 Sep 16; 2018:1–4. DOI 10.1155/2018/4869680.
4. Zhang P, Liu F, Cha Y, Zhang X, Cao M. Self-Limited Primary Cutaneous Rosai-Dorfman Disease: A Case Report and Literature Review. Clin Cosmet Investig Dermatol. 2021; 14:1879–84. DOI 10.2147/CCID.S343815
5. Abraham ZS, Francis Z, Ngaiza AI, Kahinga AA, Bukanu F. Histocytopathological diagnosis of Rosai–Dorfman disease: Case report. Clin Case Rep. 2022;10(2). DOI 10.1002/ccr3.5412