Introduction

Systemic Rosai-Dorfman disease (S-RDD), also known as sinus histiocytosis with massive lymphadenopathy (SHML), is a non-Langerhans cell histiocytosis first recognized as a distinct clinicopathologic entity by Rosai and Dorfman in 1969.1 It commonly presents as bilateral, painless cervical lymphadenopathy with fever, leukocytosis, anemia, elevated erythrocyte sedimentation rate, and polyclonal hypergammaglobulinemia.1,2 Although less common, other lymph nodes may be involved.2 Lymphadenopathy with extranodal disease may occur in up to 43% of patients and includes sites on the skin, soft tissues, eyes, respiratory tract, liver, spleen, testes, skeleton and nervous system.2,3 Purely extranodal cutaneous disease without lymph node involvement is rare. Herein, we describe a rare case of cutaneous RDD without lymph node involvement in a 79-year-old man.

Case Report

A 79-year-old male with no significant past medical history presented to our dermatology clinic with multiple, asymptomatic lesions on his face and trunk of two years' duration. Physical examination revealed violaceous papules and nodules on his cheek, chest and upper back (Figures 1a - 1c). No other lesions were noted, and no lymphadenopathy was appreciated. He denied any history of fever, weight loss, night sweats, or malaise. His complete blood cell count, complete metabolic panel, antinuclear antibody, serum protein electrophoresis, and urine protein electrophoresis were all within normal limits.

Erythrocyte sedimentation rate was slightly elevated at 21 mm/hr. A skin biopsy of two lesions was performed, and histopathological examination revealed a diffuse, predominantly histiocytic dermal infiltrate with a background of small lymphocytes, neutrophils, and scattered plasma cells (Figure 2). A number of histiocytes showed emperipolesis (Figure 3). Immunohistochemical staining was positive for S-100 protein (Figure 4) and CD68, and negative for CD1a. Based upon clinicopathological correlation, a diagnosis of cutaneous Rosai-Dorfman disease was made, and the patient was referred to oncology for workup of systemic involvement.

Discussion

S-RDD, or sinus histiocytosis with massive lymphadenopathy, is a rare disorder characterized by a proliferation of non-Langerhans cell histiocytes in the lymph node. It may have extranodal involvement, the skin being the most common site. RDD limited to the skin without nodal involvement, or cutaneous Rosai-Dorfman disease (C-RDD), is even rarer, with only 85 cases having been described.4,5 Contrary to the systemic form, C-RDD generally has no systemic involvement or laboratory abnormalities.4,5 Clinically, the cutaneous lesions are similar in both S-RDD and C-RDD. The lesions are often slow-growing, asymptomatic papules and nodules with yellow to red, brown, or violaceous color, varying in size from less than 1 cm to 30 cm.4,6,8 The lesions may be localized or disseminated.4,5 C-RDD tends to occur in slightly older age groups, in women, and in non-black ethnic groups, in contrast to the systemic form, which affects children and young adults in the first or second decade of life.1,2,4,6

The etiology of S-RDD and C-RDD remains unclear, and a debate between infection, immune dysregulation, and neoplasia remains.2,4,9 To date, many infectious agents, including Epstein-Barr virus, human herpesvirus 6, Brucella, Klebsiella rhinoscleroma and many others, have been reported in association with RDD.2 In addition, autoimmune diseases such as systemic lupus erythematosus, rheumatoid arthritis, and thyroid disease have been associated with RDD.3,5

Histopathologically, systemic and cutaneous RDD are indistinguishable. The main microscopic findings include proliferation of large polygonal and palely eosinophilic histiocytes with variable amounts of a mixed, but predominantly chronic, inflammatory infiltrate. Emperiplois is often present, which is the intracytoplasmic inclusion of inflammatory cells such as lymphocytes, plasma cells, and neutrophils within vacuoles.4,6,8 The cells are also characterized by round or oval vesicular nuclei.2,4,5 The pattern of the infiltrate in cutaneous layers is usually nodular and diffuse but may be patchy or interstitial and correlates with the clinical presentation.8,9 The infiltrate is mostly confined to the dermis but may have some subcutis involvement or be confined to only the subcutis.6,8 Epidermal changes are usually absent or mild.6,8 The histiocytes stain positive for S-100 protein and negative for CD1a, unlike the Langerhans cells, which stain positive for both markers.5,8

Abstract

Rosai-Dorfman disease (RDD), also known as sinus histiocytosis with massive lymphadenopathy (SHML), is a benign, self-limiting disease of histiocytes with unknown etiology. RDD typically presents in the first or second decade of life with massive, painless cervical lymphadenopathy. Cutaneous RDD is a rare, extra-nodal variant that is strictly limited to the skin. In both forms, the histiocytes stain positive for S-100 protein and negative for CD1a. Herein, we describe a rare case of cutaneous RDD presenting on the face and trunk of a 79-year-old man and review the literature on systemic RDD and its rare cutaneous variant.

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References


Figures 1a - 1c: Violaceous papulonodular lesions on the left cheek, chest, and back.
Both S-RDD and C-RDD generally have a benign course with spontaneous regression over a period of months to years, although a small number of patients may have significant morbidity, directly or indirectly from the disease. Due to S-RDD having lesions in any organ system, complications are more common with S-RDD than C-RDD. Treatment of RDD is based on anecdotal reports, and several therapies have been utilized with variable rates of success, including glucocorticoids and chemotherapy for S-RDD.

C-RDD is benign and usually self-limited. Documented treatments of C-RDD include surgical excision, glucocorticoids, antibiotics, cryotherapy, radiotherapy, thalidomide, isotretinoin, acitretin, interferon-alpha, dapsone, methotrexate, and pulsed dye laser, with surgery yielding the highest success rates.\(^4,5\)

**Conclusion**

Due to the rarity of C-RDD, insufficient data and studies of small sample sizes fail to clarify whether C-RDD is a specific subset of S-RDD, a separate entity, or if the two are part of a spectrum. The pathogenesis of RDD remains largely unknown. Although studies do not support progression of C-RDD to S-RDD, long-term follow-up is nonetheless recommended to rule out systemic involvement and associated autoimmune and neoplastic diseases.\(^4,7\) Our patient had only skin involvement with no adenopathy or systemic involvement. His lesions were controlled with topical mid-potency glucocorticoid.

**References**


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