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Rosai–Dorfman Disease in the Head and Neck Region: A Case Report

Abstract
Background:
Rosai–Dorfman disease (RDD), also referred to as sinus histiocytosis with massive lymphadenopathy, is a rare, benign, non-Langerhans cell histiocytic proliferative disorder of uncertain etiology. Although it primarily involves lymph nodes, particularly the cervical group, extranodal manifestations occur in approximately 40% of cases, most frequently affecting the head and neck region.
Case Presentation:
We report a case of a 12-year-old female presenting with multiple neck swelling for 6 months with history of pulmonary tb in parent (now post ATT). Clinical history examination and radiologic findings raised suspicion of lymphoma or chronic granulomatous disease (e.g. tuberculosis). Histopathological examination revealed accumulation of histiocytes with enlarged, round to oval hypochromatic nuclei and abundant eosinophilic cytoplasm, often containing engulfed intact inflammatory cells known as emperipolesis consistent with Rosai–Dorfman disease. The patient was managed with corticosteroids with favorable outcome on follow-up.
Conclusion:
RDD in the ENT region is a diagnostic challenge due to its variable presentation and rarity. Histopathology remains the gold standard for diagnosis. Awareness of this condition is essential to avoid unnecessary aggressive management.
Keywords: *Rosai–Dorfman disease, Sinus histiocytosis, Extranodal, Head and neck, Case report*

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I. Introduction

Rosai–Dorfman disease (RDD) was first described by Rosai and Dorfman in 1969 as "sinus histiocytosis with massive lymphadenopathy"and previously classified by the Working Group of the Histiocyte Society of 1987 as a non- Langerhans cell (LC) histiocytosis. [1-3] It is characterized by a benign proliferation of histiocytes within lymph node sinuses and extranodal tissues.

BRAF V600E mutations are described in histiocytic neoplasms such as LCH [4] and Erdheim- Chester disease (ECD), [5,6] and have been sought in RDD . The disorders recently classified as part of the 'R group' of histiocytoses are summarised in figure 1.

Sporadic RDD is the most common form and includes the classic nodal form, extranodal RDD, neoplasia-associated RDD and immune disease- associated RDD. [7]

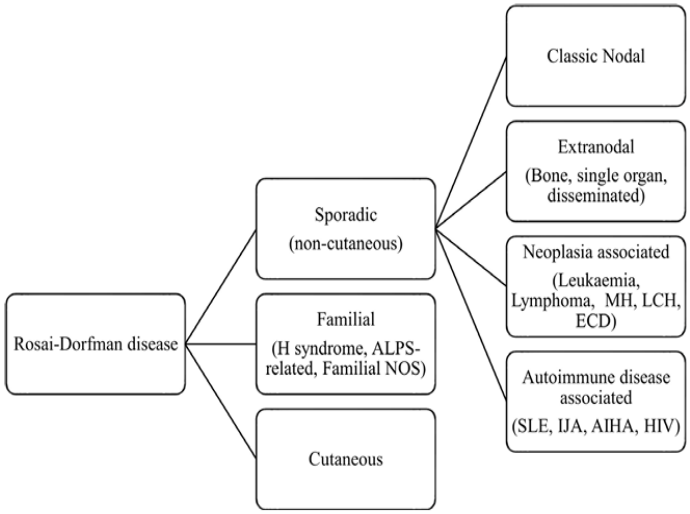

Figure 1 Schematic classification of Rosai- Dorfman disease according to the Histiocyte Society. [7]

Classic RDD presents with massive bilateral painless cervical lymphadenopathy with associated fever, loss of weight and night sweats. [2,8] It affects predominantly children and young adults with an average age of onset of 20.6 years, and occurs more commonly in African patients with a slight male predominance.

While cervical lymphadenopathy is the most frequent presentation, extranodal involvement is seen in 40–50% of cases, particularly affecting the nasal cavity, paranasal sinuses, orbit, and salivary glands.

Because RDD can mimic malignancy or infectious granulomatous disease, especially in the head and neck region, accurate diagnosis relies on histopathology and immunohistochemistry. We report a case of nodal RDD involving cervical lymph nodes with review of relevant literature.

II. Case Report

A 12 year-old female presented to the ENT outpatient department with chief complaints of multiple neck swelling for 6 months(figure 2 & 3). There was no history of fever, weight loss, or night sweats.

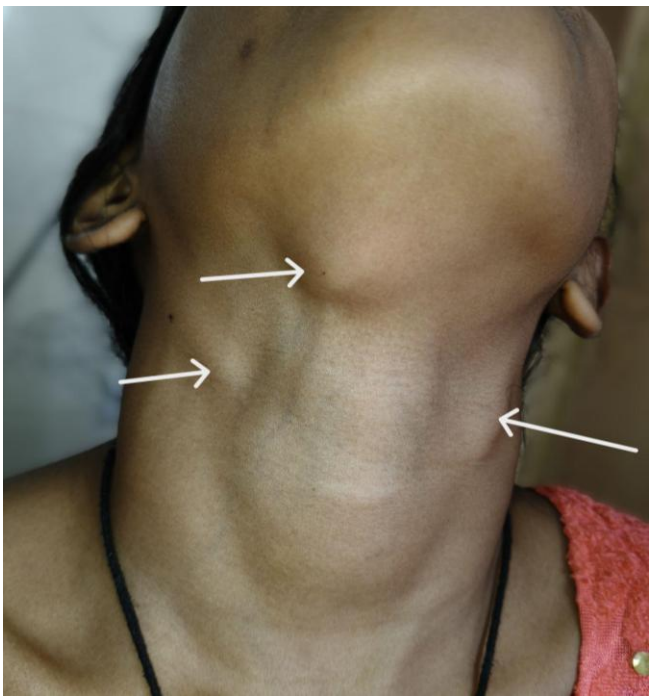

Figure -2: showing the multiple cervical swelling with one right paramedian sublingual swelling

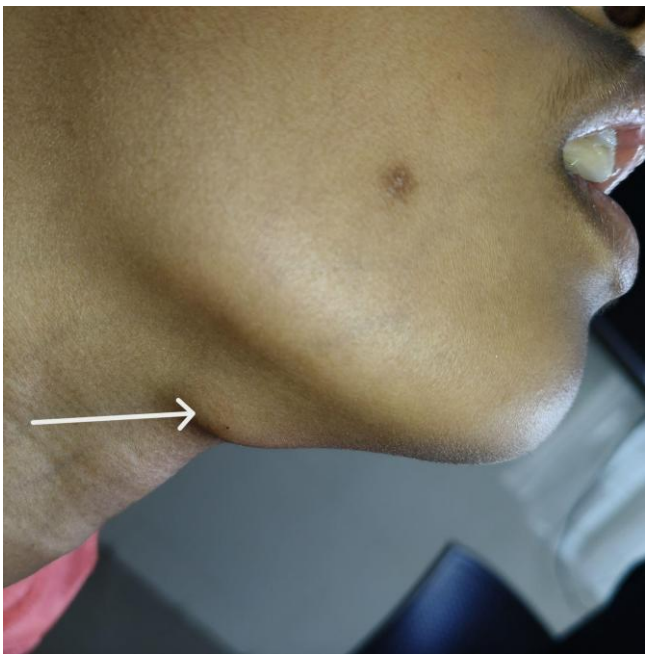

Figure -3: showing the paramedian sublingual swelling in lateral view.

Examination: on clinical examination multiple firm, non-tender cervical lymph nodes present, largest measuring 2*2cm in size.
Investigations: Complete blood count was within normal limits except for elevated lymphocyte count (58.8%) . Ultrasound showed multiple enlarged cervical lymph nodes largest 2.2cm * 1.9 cm. Sputum examination for MTB was negative in both ZN stain & CBNAAT. All other investigations were normal.

Management: The lesion biopsy performed. Histopathology revealed Characterized by the accumulation of histiocytes with enlarged, round to oval hypochromatic nuclei and abundant eosinophilic cytoplasm, often containing engulfed intact inflammatory cells known as emperipolesis (engulfment of intact lymphocytes and plasma cells). Immunohistochemistry showed S100 and CD68 positivity, and CD1a negativity confirming the diagnosis of RDD.

The patient was managed with systemic steroids & observation. On follow-up after 6 weeks, the patient remained asymptomatic with no recurrence.

III. Discussion

Rosai–Dorfman disease (RDD), also termed *sinus histiocytosis with lymphadenopathy*, is a rare, benign, non-Langerhans cell histiocytic proliferative disorder first described by Rosai and Dorfman in 1969 [9] . It is characterized by an accumulation of distinctive histiocytes within lymph node sinusoids and sometimes extranodal tissues. The disease most frequently involves cervical lymph node**s**, which remain the classic and most common presentation site [10] .

Etiopathogenesis

The etiology of RDD remains unclear. Proposed mechanisms include an exaggerated immune response to infectious or inflammatory stimuli. Several pathogens such as ***Epstein–Barr virus (EBV), human herpesvirus 6 (HHV-6), cytomegalovirus (CMV)***, and ***Klebsiella species*** have been implicated as potential triggers, though causality has not been consistently demonstrated [11,12] .

Recent molecular studies have identified ***somatic mutations in the MAPK/ERK pathway***, suggesting that at least a subset of RDD cases may represent a ***clonal histiocytic disorder*** rather than purely reactive hyperplasia [13,14] .

Clinical Presentation

RDD most commonly affects children and young adults, with a slight male predominance [15] . Cervical lymphadenopathy is observed in nearly 80–90% of patients and often presents as ***massive, bilateral, painless enlargement*** of the lymph nodes. Accompanying systemic symptoms may include fever, malaise, night sweats, weight loss, leukocytosis, and hypergammaglobulinemia [16] .

Although RDD can involve extranodal sites such as the skin, upper respiratory tract, orbit, or bone, ***nodal RDD*** remains the prototypical form, usually following a benign, self-limiting course [17] .

Histopathological and Immunohistochemical Findings

Histopathological evaluation is the diagnostic gold standard. The affected lymph nodes typically exhibit marked sinusoidal dilatation with a proliferation of large histiocytes possessing abundant pale cytoplasm and vesicular nuclei. The pathognomonic feature is *emperipolesis*—the presence of intact lymphocytes, plasma cells, or erythrocytes within the cytoplasm of histiocytes, without cellular degradation [18] .
Immunohistochemically, the histiocytes are ***positive for S100, CD68, and CD163****,* and ***negative for CD1a and Langerin***, distinguishing RDD from **Langerhans cell histiocytosis** [19] . The surrounding stroma often demonstrates a mixed inflammatory infiltrate of lymphocytes and plasma cells, sometimes forming germinal centers.

Differential Diagnosis

Cervical lymphadenopathy due to RDD must be differentiated from other causes, including ***lymphoma, Kikuchi–Fujimoto disease, tuberculous lymphadenitis****, and* ***reactive sinus histiocytosis****.* The presence of emperipolesis and the characteristic immunoprofile are essential distinguishing features [20] . Misdiagnosis as lymphoma is not uncommon, especially when histopathologic and immunohistochemical correlation is incomplete.

Management and Prognosis

There is no universally accepted treatment for RDD, as many cases resolve spontaneously. **Observation** is appropriate for asymptomatic nodal disease. ***Corticosteroids*** can be used to reduce lymph node size and systemic inflammation in symptomatic cases [21]. ***Surgical excision*** may be indicated for localized disease causing compression or diagnostic uncertainty. In refractory or disseminated disease, therapeutic options include

methotrexate, cladribine, interferon-α, rituximab, and radiotherapy [22]. Recently, patients harboring *MAPK/ERK* mutations have shown favorable responses to ***MEK inhibitors***, offering new avenues for targeted therapy [23].

Overall, the prognosis for cervical nodal RDD is excellent, with spontaneous remission occurring in most cases and mortality being exceedingly rare [24].

IV. Conclusion

Rosai–Dorfman disease, though rare, should be considered in the differential diagnosis of atypical head and neck masses. Recognition of its characteristic histopathologic and immunohistochemical features is crucial for accurate diagnosis and conservative management.

References

[1]. Destombes P. [Adenitis with lipid excess, in children or young adults, seen in the Antilles and in Mali. (4 cases)]. Bull Soc Pathol Exot Filiales 1965;58:1169–75.
[2]. Rosai J, Dorfman RF. Sinus histiocytosis with massive lymphadenopathy. A newly recognized benign clinicopathological entity. Arch Pathol 1969;87:63–70.
[3]. Writing Group of the Histiocyte Society. Histiocytosis syndromes in children. Lancet 1987;1:208–9.
[4]. Badalian- Very G, Vergilio J- A, Degar BA, et al. Recurrent BRAF mutations in Langerhans cell histiocytosis. Blood 2010;116:1919–23.
[5]. Haroche J, Charlotte F, Arnaud L, et al. High prevalence of BRAF V600E mutations in Erdheim- Chester disease but not in other non- Langerhans cell histiocytoses. Blood 2012;120:2700–3.
[6]. Emile J- F, Diamond EL, Hélias- Rodzewicz Z, et al. Recurrent RAS and PIK3CA mutations in Erdheim- Chester disease. Blood 2014;124:3016–9.
[7]. Emile J- F, Abla O, Fraitag S, et al. Revised classification of histiocytoses and neoplasms of the macrophage- dendritic cell lineages. Blood 2016;127:2672–81.
[8]. Destombes P, Destombes M, Martin L. Pseudotumoral lymph node lipidic histiocytosis. Further case in a young Martinique woman. Bull Soc Pathol Exot 1972;65:481–8.
[9]. Gupta A, et al. Extranodal Rosai–Dorfman disease of the parotid gland: A rare case report. *Indian J Otolaryngol Head Neck Surg.* 2018;70(1):156–159.
[10]. Sharma D, et al. Rosai–Dorfman disease involving the orbit: Case report and review. *J Laryngol Otol.* 2020;134(5):467–471.
[11]. Rosai J, Dorfman RF. *Sinus histiocytosis with massive lymphadenopathy.* Arch Pathol. 1969;87(1):63–70.
[12]. Foucar E, Rosai J, Dorfman RF. *Sinus histiocytosis with massive lymphadenopathy (Rosai–Dorfman disease): Review of the entity.* Semin Diagn Pathol. 1990;7(1):19–73.
[13]. Mehraein Y, Wagner M, Remberger K, et al. *Detection of human herpesvirus 6 in Rosai–Dorfman disease.* Hum Pathol. 1998;29(10):1091–1096.
[14]. Guo Y, Bai J, Zhao S, et al. *Rosai–Dorfman disease: a retrospective analysis of 87 cases and review of the literature.* Am J Med Sci. 2020;359(2):87–97.
[15]. Garces S, Medeiros LJ, Patel KP, et al. *Mutually exclusive recurrent KRAS and MAP2K1 mutations in Rosai–Dorfman disease.* Mod Pathol. 2017;30(10):1367–1377.
[16]. Diamond EL, Durham BH, Haroche J, et al. *Diverse and targetable kinase alterations drive histiocytic neoplasms.* Cancer Discov. 2016;6(2):154–165.
[17]. Dalia S, Sagatys E, Sokol L, Kubal T. *Rosai–Dorfman disease: tumor biology, clinical features, pathology, and treatment.* Cancer Control. 2014;21(4):322–327.
[18]. Pulsoni A, Anghel G, Falcucci P, et al. *Treatment of sinus histiocytosis with massive lymphadenopathy (Rosai–Dorfman disease): report of a case and literature review.* Am J Hematol. 2002;69(1):67–71.
[19]. Gaitonde S. *A comprehensive review of Rosai–Dorfman disease.* Ann Diagn Pathol. 2007;11(6):319–323.
[20]. Foucar E, Rosai J, Dorfman RF. *Sinus histiocytosis with massive lymphadenopathy: a clinicopathologic study of 30 cases.* Cancer. 1981;49(9):1830–1838.
[21]. Komp DM. *The spectrum of sinus histiocytosis with massive lymphadenopathy (Rosai–Dorfman disease).* Am J Pediatr Hematol Oncol. 1981;3(3):263–268.
[22]. Gupta K, Dey P, Bal A, et al. *Fine needle aspiration cytology of Rosai–Dorfman disease.* Diagn Cytopathol. 2011;39(7):503–507.
[23]. Abla O, Jacobsen E, Picarsic J, et al. *Consensus recommendations for the diagnosis and clinical management of Rosai–Dorfman–Destombes disease.* Blood. 2018;131(26):2877–2890.
[24]. Jain S, Kumar R, Chandra A, et al. *Rosai–Dorfman disease: clinical features, histopathology, and treatment outcomes in 13 cases.* Indian J Pathol Microbiol. 2019;62(1):77–83.