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Rosai-dorfman disease on fine needle aspiration cytology in a patient suspected of lymphoma: A rare case report

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Abstract
Rosai-Dorfam disease (RDD) also known as sinus histiocytosis with massive lymphadenopathy (SHML) is a rare self-limited and benign disease. The clinical features in the classical form include slowly enlarging painless massive lymphadenopathy, fever, leukocytosis, anemia, hypergammaglobulinemia and elevated erythrocyte sedimentation rate (ESR). We report a case of 53 year old female who presented with generalized lymphadenopathy and clinical suspicion of lymphoma. The diagnosis of RDD was made primarily by the fine needle aspiration cytology (FNAC) findings. Emperipolesis was the key feature for diagnosis. The diagnosis was confirmed by the histopathological examination too. This case report, therefore establishes the usefulness of FNAC as a simple diagnostic tool for RDD, thereby avoiding more invasive approaches and unnecessary investigations. It also aims at creating an awareness about this rare entity among the clinicians, general practitioners and also pathologists especially in patients presenting with generalized massive lymphadenopathy. Finally, our case report adds on to the existing literature on cytologic diagnosis of RDD.

Keywords: Rosai-dorfman disease, Emperipolesis, sinus histiocytosis, massive lymphadenopathy, fine needle aspiration cytology

1. Introduction
Rosai-Dorfam disease (RDD) also known as sinus histiocytosis with massive lymphadenopathy (SHML) is a rare self-limited and benign disease that was first described in 1965 by Destombes [1] and subsequently recognized as a distinct entity by Rosai and Dorfman in 1969 [2, 3]. The clinical features in the classical form include painless enlargement of cervical lymph nodes, fever, leukocytosis, anemia, hypergammaglobulinemia and elevated erythrocyte sedimentation [4]. Frequently other lymph nodes can be involved such as axillary, paraaortic, mediastinal, inguinal [5] and concurrent extranodal disease may be evident. Extranodal disease has a particular predilection for the head and neck region (75% of cases) [6]. Involvement of ≥1 extranodal site has been identified in 43% of cases and only 23% have extranodal disease exclusively [3, 7]. Documented sites of extranodal involvement include skin, respiratory tract, bone, genitourinary system, oral cavity, central nervous system, eyes and ocular adnexa, salivary gland, tonsil, breast, soft tissue and heart [8, 13]. Herein, we report a case of 53 year old female who presented with generalized lymphadenopathy and clinical suspicion of lymphoma. The diagnosis of RDD was made primarily by the FNAC findings and was confirmed by the histopathological examination too. This case report, therefore establishes the usefulness of FNAC as a simple pre-operative diagnostic tool for RDD, thereby avoiding more invasive approaches and unnecessary investigations.

2. Case report
A 53-year-old female presented with the complaints of slowly enlarging painless lymph nodes in bilateral cervical regions, left axillary and left inguinal regions and low-grade intermittent fever for the last four years. There was no history of night sweats, reduced appetite or weight loss. On clinical examination, mild pallor and generalized lymphadenopathy involving right cervical (2× 1.5cms), left cervical (multiple matted lymph nodes were noted with the largest measuring around 3.5x3x2.5 cms and showing an erythematous, nodular surface) (Figure 1), left axillary (2 × 1 cms) and left inguinal (2.5x1.5 cms) lymph nodes was noted. All the lymph nodes were non-tender and firm in consistency. On routine haemogram, her haemoglobin was 10.8 gm/dL, total leucocyte count was 16,900/mm^3 and platelet count was 1, 58, 000/mm^3. Neutrophilia was noted on differential count. Peripheral smear examination showed normocytic to microcytic RBCs with mild hypochromasia. Erythrocyte sedimentation rate (ESR) was elevated. No hepato-splenomegaly was noted on abdominal palpation.
The patient was referred to the cytology section for FNAC. The FNAC was done from multiple lymph nodes using 23 gauge needle. The procedure was uneventful. The material was spread on the glass slides and both air-dried and wet fixed smears stained with Leishman stain and Hematoxylin & eosin stain respectively were prepared.
The microscopic examination revealed a cellular sample with numerous histiocytes showing an abundant eosinophilic cytoplasm, in a reactive lymphocytic background, made up of lymphocytes, plasma cells, few eosinophils and neutrophils. Some of these histiocytes were binucleated and multinucleated. The cytoplasm of these histiocytes harbored numerous intact lymphocytes, plasma cells, neutrophils and RBCs (emperipolesis) (Figure 2A, 2B and 3).

An excision biopsy of the largest left cervical lymph node was subsequently performed and the specimen was sent for histopathological examination. Grossly, the mass measured around 3.2x3x2.4 cms and was solid grey-white (Figure 4). The microscopic examination revealed lymph nodes showing thickened fibrotic capsule with partial effacement of the architecture. The sinuses were markedly dilated (Figure 5A) and partial effacement of the follicles was noted. The sinuses were occupied by numerous histiocytes with a vesicular nucleus and abundant clear cytoplasm harboring the phagocytozed numerous intact lymphocytes, plasma cells, neutrophils and RBCs (emperopolesis) (Figure 5B, 6A, 6B).

Fig 1: Photograph of the patient with multiple enlarged left cervical lymph nodes. The largest lymph node is showing erythematous and nodular surface.

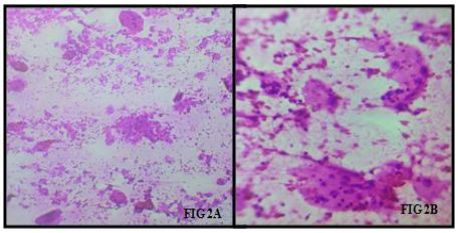

Fig 2A and 2B: FNAC smears showing cellular aspirate and many large histiocytes with multinucleation and emperipolesis. [Hematoxylin and eosin stain, x10 (FIG 2A) and x40 (FIG 2B)].

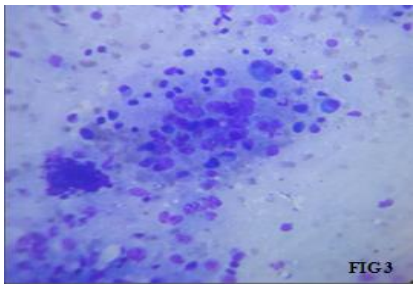

Fig 3: FNAC smear showing a large multinucleated histiocyte with abundant cytoplasm harboring many intact lymphocytes and plasma cells. (Leishman stain, x40).

Fig 4: Gross photograph of the excised cervical mass showing multiple matted lymph nodes.

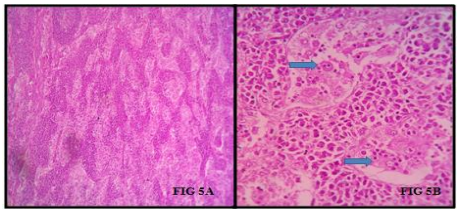

Fig 5A and 5B: Tissue sections showing markedly dilated sinusoids filled with large histiocytes showing emperipolesis. [Hematoxylin and eosin, x10 (FIG 5A) and x40 (FIG 5B)]

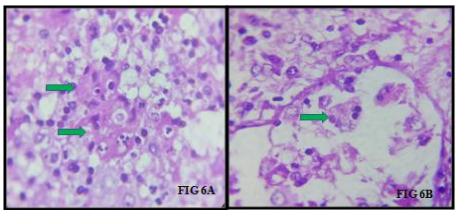

Fig 6A and 6B: High power view of the large histiocytes showing abundant eosinophilic cytoplasm and fine vacuoles harboring engulfed intact lymphocytes and neutrophils. (Hematoxylin and eosin, x40)

3. Discussion

RDD is a rare self-limiting benign disease of unknown etiology that has a predilection for males (male:female =2:1). Although any age group can be affected, 80% of the cases manifest within the first two decades of life [14]. Classically, RDD presents with gradual onset massive bilateral painless cervical lymphadenopathy, fever, raised ESR, and hypergammaglobulinemia. Rosai and Dorfman observed leucocytosis with neutrophilia in 19 out of the 34 cases of RDD in their study [2]. Our patient was a 53 year old female who had low grade intermittent fever, anemia, leucocytosis, neutrophilia, and raised ESR. She presented with slowly enlarging generalized painless lymphadenopathy. Involvement of axillary, inguinal, para-aortic, and mediastinal lymph nodes have also been documented in RDD [15]. However, our patient had bilateral cervical, left axillary and left inguinal lymphadenopathy.

In our case, RDD was initially mistaken for lymphoma as the patient presented with generalized painless lymphadenopathy accompanied by non-specific signs such as fever, neutrophilic leucucytosis and elevated ESR. Therefore, RDD should be considered in the differential diagnosis of painless, generalized massive lymphadenopathy [16].

FNAC plays an important role in the diagnosis of RDD. Cytological findings include a highly cellular smear showing numerous histiocytes with vesicular nucleus and abundant clear cytoplasm with fine vacuoles and lymphophagocytosis in a reactive background of lymphocytes, plasma cells and occasionally neutrophils [7, 16, 17]. In the present case, FNAC done from the largest left cervical lymph node revealed similar findings. In the presence of these classical features on FNAC, a diagnosis of RDD can be reliably made, and as such, biopsy may be avoided [12, 18].

However, FNAC was subsequently followed by an excision biopsy of the largest left cervical lymph node. The microscopic examination revealed lymph nodes showing thickened fibrotic capsule with partial effacement of the architecture. The sinuses were markedly dilated and were occupied by numerous histiocytes with a vesicular nucleus

and abundant clear cytoplasm harboring the phagocytozed numerous intact lymphocytes, plasma cells, neutrophils and RBCs (emperopolesis). Large binucleated and multinucleated forms were also present. Similar findings are described by Shi Y *et al*., [7] Kumar B *et al*., [8] and Juskevicius R *et al*. [19] in their studies too.

The cytological features of RDD are distinctive in the correct clinical context, whereby biopsy with FNAC may be sufficient for the diagnosis in most cases, thus preventing unnecessary invasive approaches. Surgical resection for histological diagnosis should be considered in cases with inconclusive cytological findings, or unusual clinical presentations.

4. Conclusion

Rosai-Dorfman disease is a rare self-limiting benign condition which can often mimic a plethora of malignant neoplasms. Emperipolesis is the key feature for diagnosis. Cytologic features of RDD are so distinctive that it can be easily diagnosed by FNAC which is minimally invasive. Therefore, FNAC can be used as a reliable tool to establish the diagnosis of RDD and unnecessary interventions to the patients can be avoided. It also serves as a useful tool to keep a follow-up of the patients especially because RDD has a propensity to recur. Our case report, thus aims at creating an awareness about RDD among the clinicians, general practitioners and also pathologists especially in patients presenting with generalized massive lymphadenopathy.

5. Abbreviations

RDD- Rosai-Dorfman disease, SHML- Sinus histiocytosis with massive lymphadenopathy, FNAC- Fine needle aspiration cytology, ESR- Erythrocyte sedimentation rate, RBCs- Red blood cells

6. 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. Foucar E, Rosai J, Dorfman R. Sinus histiocytosis with massive lymphadenopathy (Rosai-Dorfman disease): Review of the entity. Semin Diagn Pathol, 1990; 7:19-73.
4. Gaitonde S. Multifocal, extranodal sinus histiocytosis with massive lymphadenopathy: An overview. Arch Pathol Lab Med, 2007; 131:1117-21.
5. Najafi-Sani M, Saneian H, Mahjoub F. Rosai-Dorfman disease with nodal and extranodal involvements: A case report. J Res Med Sci, 2011; 16:1251-56.
6. Cocker RS, Kang J, Kahn LB. Rosai-Dorfman disease. Report of a case presenting as a midline thyroid mass. Arch Pathol Lab Med, 2003; 127:e197-e200.
7. Shi Y, Griffin AC, Zhang PJ, Palmer JN, Gupta P. Sinus histiocytosis with massive lymphadenopathy (Rosai-Dorfman Disease): A case report and review of 49 cases with fine needle aspiration cytology. Cytojournal, 2011; 8:3.
8. Kumar B, Karki S, Paudyal P. Diagnosis of sinus histiocytosis with massive lymphadenopathy (Rosai-Dorfman disease) by fine needle aspiration cytology. Diagn Cytopathol. 2008; 7(36):691-5.
9. Vemuganti GK, Naik MN, Honavar SG. Rosai Dorfman disease of the orbit. J Hematol Oncol, 2008; 1:7.
10. Kala C, Agarwal A, Kala S. Extranodal manifestation of Rosai-Dorfman disease with bilateral ocular involvement. J Cytol, 2011; 28:131-3.
11. Sandoval-Sus JD, Sandoval-Leon AC, Chapman JR, Velazquez-Vega J, Borja MJ, Rosenberg S. *et al*. Rosai-Dorfman disease of the central nervous system: Report of 6 cases and review of the literature. Medicine (Baltimore), 2014; 93:165-75.
12. Deshpande AH, Nayak S, Munshi MM. Cytology of sinus histiocytosis with massive lymphadenopathy (Rosai-Dorfman disease). Diagn Cytopathol, 2000; 22:181-5.
13. Garza-Guajardo R, García-Labastida LE, Rodríguez-Sánchez IP, Gómez-Macías GS, Delgado-Enciso I, Chaparro MM. *et al*. Cytological diagnosis of Rosai-Dorfman disease: A case report and revision of the literature. Biomed Rep. 2017; 6(1):27-31. Doi: 10.3892/br.2016.814. Epub 2016 Nov 18. PMID: 28123703; PMCID: PMC5244775.
14. Sanchez R, Rosai J, Dorfman RF. Sinus histiocytosis with massive lymphadenopathy. An analysis of 113 cases with special emphasis on its extranodal manifestations. Laboratory Investigation, 1977; 36:21-2.
15. Rosai J, Dorfman RF. Sinus histiocytosis with massive lymphadenopathy: a pseudolymphomatous benign disorder. Analysis of 34 cases. Cancer. 1972; 30(5):1174-88.
16. Ruggiero A, Attinà G, Maurizi P, Mulè A, Tarquini E, Barone G. *et al*. Rosai-Dorfman disease: Two case reports and diagnostic role of fine-needle aspiration cytology. J Pediatr Hematol Oncol, 2006; 28:103-6.
17. Pettinato G, Manivel JC, d'Amore ES, Petrella G. Fine needle aspiration cytology and immunocytochemical characterization of the histiocytes in sinus histiocytosis with massive lymphade- nopathy (Rosai-Dorfman syndrome). Acta Cytol, 1990; 34:771-7.
18. Das DK, Gulati A, Bhatt NC, Sethi GR. Sinus histiocytosis with massive lymphadenopathy (Roasi-Dorfman dis- ease): report of two cases with fine needle aspiration cytology. Diagnostic Cytopathology. 2001; 24(1):42-5.
19. Juskevicius R, Finley JL. Rosai-Dorfman disease of the parotid gland: Cytologic and histopathologic findings with immunohistochemical correlation. Arch Pathol Lab Med, 2001; 125:1348-50.