

## Clinical manifestations of rosai dorfman syndrome – A case report

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### Abstract

We report a case of 17-year old male who came to us with complaints of recurrent bilateral diffuse soft tissue swellings in the anterior orbit. He also had a swelling over the left parotid region and bilateral submandibular lymphadenopathy. Patient had several systemic associations such as congenital deafness, polyarthritis, hypoparathyroidism, pigmented hypertrichosis and juvenile onset Diabetes mellitus, which lead of the clinical diagnosis of Rosai Dorfman Syndrome (RDS). Excision biopsy of the masses was done and histopathological examination revealed “emperipolesis” – engulfment of lymphocytes by histiocytes, characteristic of RDS. Rosai-Dorfman Syndrome (RDS) is a rare benign, idiopathic proliferative histiocytic disorder presenting with a spectrum of systemic associations, most of which manifested in our patient. Diagnosis was made clinically first, and confirmed by histopathology later.

**Keywords:** Emperipolesis, Rosai Dorfman Syndrome, Orbit.

### Introduction

Sinus histiocytosis with massive lymphadenopathy (SHML) later named as RDS has been recognized as a distinct clinico-pathological entity with multi-system involvement. About 25% of cases have involvement of extra nodal sites. The diagnosis is usually made on characteristic histopathological and cytological features. The cells show positivity for CD 68 and alpha-1 antitrypsin.

We report a case of RDS with orbital involvement along with Juvenile Chronic Arthritis and Insulin Dependent Diabetes Mellitus, Hypoparathyroidism, pigmentary hypertrichosis and congenital deafness. Orbital involvement in RDS is first diagnosed clinically with classical involvement of all four eyelids in a young patient. The diagnosis is then confirmed on Histopathological Examination. RDS was managed surgically and referred to immunologist for further treatment.

### Materials and Methods

A 17-year old male presented with complaints of recurrent bilateral diffuse soft tissue swellings in the anterior orbit. Swelling over the left parotid region and bilateral submandibular lymphadenopathy were present. He complained of difficulty in breathing due to neck swellings.

Patient is also a known case of Juvenile Chronic Arthritis since seven years, on treatment with immunosuppressants. He is congenitally deaf and suffers from insulin dependent diabetes mellitus since three years. Three Biopsies of the said masses done elsewhere previously were suggestive of a pseudotumour. All of the above disorders were being treated individually and no conclusive diagnosis of the overall disease or syndrome had been made earlier.

In view of multisystem involvement, a diagnosis of Rosai Dorfman Syndrome was proposed and

investigations were planned accordingly. CT scan Orbit and Paranasal Sinuses and Chest X-ray were done. Excision biopsy of the orbital masses was done.

### Results

Ocular examination revealed bilateral diffuse soft tissue swellings in the anterior orbit along with a “salmon patch” appearance in the temporal aspect of conjunctiva of both eyes. (Fig. 1)

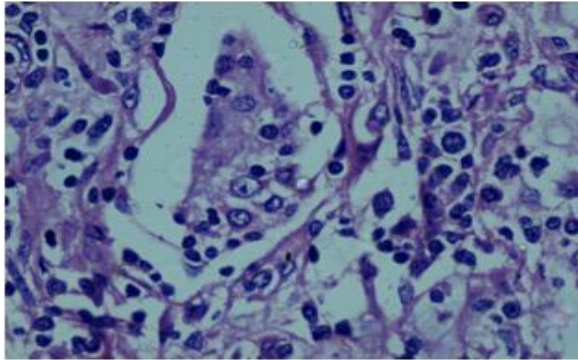


**Fig. 1: Involvement of all four eyelids was seen- very classical of Rosai Dorfman Syndrome**

These were firm, lobulated masses causing mild restriction of eye movements and fullness of eyelids. Anterior segment examination was normal in both eyes. Fundus examination showed diffuse Retinal Pigment Epithelium atrophy in both eyes. On systemic examination, cardiovascular, respiratory and central nervous system examination was unremarkable.

CT scan Orbit and Paranasal Sinuses showed no extension into retro orbital space. Chest X-ray was normal, no mediastinal lymph nodes were seen. Excision biopsy of the orbital masses was done and Histopathological examination of the same revealed inflammatory aggregates composed of lymphocytes, plasma cells and histiocytes. Some of the histiocytes

demonstrated emperipolesis – engulfment of lymphocytes by histiocytes suggestive of Rosai Dorfman Syndrome (RDS). (Fig. 2) Patient was referred to immunologist for further evaluation. On six months follow up no recurrence was noted.



**Fig. 2: Histopathological Section showing Emperipolesis**

### Discussion

The term “histiocytoses” encompass a group of diverse disorders characterized by the accumulation and infiltration of variable numbers of monocytes, macrophages, and dendritic cells in the affected tissues. RDS is a rare benign, idiopathic proliferative histiocytic disorder initially described “sinus histiocytosis with massive lymphadenopathy (SHML)” by Rosai and Dorfman in 1969.<sup>(1)</sup>

The disease predominantly, occurs in young adults with a mean age at presentation of 21 years. There may be a slight male predominance.<sup>(2)</sup> RDS has been reported concurrently or after Hodgkin’s and non-Hodgkin’s lymphoma.<sup>(3)</sup> A cytokine-mediated migration of monocytes may be involved in histiocytes accumulation and activation. The most frequent (~80%) clinical presentation of RDD is a massive bilateral and painless cervical lymphadenopathy with fever, night sweats and weight loss. This phenomenon has also been described as “bull neck”. Mediastinal, inguinal and retroperitoneal nodes may also be involved. Extra nodal involvement by RDD has been documented in 43% of cases with the most frequent sites being skin, soft tissue, upper respiratory tract, multifocal bone, eye and retro-orbital (7-11%) tissue with lymphadenopathy or as an isolated initial manifestation of disease.<sup>(4)</sup> Head and neck involvement has been reported in 22% of cases, most commonly the nasal cavity followed by the parotid gland.<sup>(5)</sup>

RDD involving mainly the orbit showed a median age at presentation was 13 years; median duration of symptoms was 6 years. Among the systemic associations, central nervous system may be involved in less than 5% of the Rosai-Dorfman disease and in 90% of these cases the leptomeninges are afflicted.<sup>(6)</sup> Progressive neurosensory hearing loss and dural-based

intracranial lesions.<sup>(7)</sup> Ocular manifestations commonly include proptosis, or may mimic eyelid tumour or epibulbar tumour with or without diplopia and restriction of extra-ocular movements. It may be associated with scleral calcification.

RDS has been recognized as a distinct clinicopathological entity, often associated with pigmented hypertrichosis with insulin-dependent diabetes mellitus.

The diagnosis is usually made on characteristic histo-pathological and cytological features. The presence of ‘emperipolesis’, or the engulfment of lymphocytes and erythrocytes by histiocytes that express S-100, is considered diagnostic of RDD although not uniquely. Apart from S-100 antigen positivity, immunohistochemical stains of RDD cells are also positive for CD68, CD163,  $\alpha$ 1-antichymotrypsin,  $\alpha$ 1-antitrypsin, fascin and HAM-56 while CD1a is typically negative.<sup>(5)</sup>

The clinical course of RDD is unpredictable with episodes of exacerbation and remissions that could last many years. The disease is often self-limiting with a very good outcome; nevertheless 5-11% of patients die from their disease. The natural history is that of a regression and resurgence followed eventually by complete resolution. Surgical option may be reserved for compressive symptoms. In cases of disseminated RDD or those refractory to surgery or other modalities (e.g., radiotherapy, steroids), chemotherapy has been used with varying degrees of success.<sup>(8)</sup>

The authors deny any conflicts of interest related to this study.

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