Rosai-Dorfman Disease: A case of massive lymphadenopathy leading to dyspnea

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ABSTRACT

Objectives: Sinus histiocytosis with massive lymphadenopathy, also known as Rosai-Dorfman disease (RDD), is a rare, non-neoplastic, histiocytic proliferative disorder, which commonly presents as asymptomatic lymph node enlargement. However, disease may also be extranodal, and depending on the site involved, severe symptoms may develop. We report a case of RDD presenting with massive mediastinal and cervical lymphadenopathy leading to dyspnea.

Study design: Case report

Methods: The clinical records of a patient with RDD were examined and the literature on RDD was reviewed.

Results: A 65-year-old woman presented to the ED with dyspnea in the setting of a neck mass. CT of the neck and chest revealed a 15 x 8 x 17 cm heterogeneous mass centered in the anterior mediastinum, encasing and displacing the large vessels and causing tracheal narrowing. The mass was metabolically active on PET/CT. Biopsy demonstrated RDD. Treatment with high dose steroids and radiation therapy did not result in cure, but significantly decreased her disease burden and provided symptomatic control.

Conclusions: RDD is a rare idiopathic condition with clinically diverse manifestations that may mimic malignancy. Treatment is reserved for symptomatic patients, as spontaneous remission has been observed. Patients with RDD have been treated with surgery, radiation therapy, oral or intralesional steroids, interferon and targeted agents; the optimal treatment has yet to be determined. RDD should be included in the differential diagnosis of patients presenting with cervical lymphadenopathy.

CASE REPORT

A 65-year-old woman with a history of hypertension and asthma presented to the Emergency Department (ED) with dyspnea. She had a large neck mass that she had been aware of for one year. The mass had been increasing in size, especially during the past month. She complained of a pressure sensation involving her neck, and denied dysphagia or dysphonia. A fine-needle aspiration (FNA) and core biopsy at an outside institution were non-diagnostic so an open biopsy was performed. Although a classical feature of RDD is emperipolesis, it is not specific as it can be seen in other conditions. This term refers to the process in which a cell exists as a viable cell within another cell. In RDD, lymphocytes, plasma cells and erythrocytes are seen within the intracellular vacuoles in histiocytes, and thereby escape degradation. Tissue from this patient’s open biopsy showed findings that were characterized as an atypical lymphocytic proliferation with features suggestive of RDD. Immunohistochemical stains showed positivity for S100, CD163 and CD68, while CD1a was negative, all consistent with previous reports. No thyroid glandular components were seen.

Computed tomography (CT) of the neck and chest with contrast demonstrated a 15 x 8 x 17 cm heterogeneous neck mass that extended into the mediastinum. The mass encased and displaced the blood vessels in the carotid sheath bilaterally, and caused tracheal narrowing. There were no abnormal cervical lymph nodes. Positron emission tomography/computed tomography (PET/CT) showed fluorodeoxyglucose (FDG) avidity of the mass (SUVmax 9.5). A subcentimeter FDG-avid (SUVmax 3.6) left level IV node was also seen.

FIGURE 1
Axial view of CT neck with contrast. Mass causes mass effect on airway and encases great vessels

FIGURE 2
Coronal cut of CT neck with contrast. Mass extends beyond the clavicle into the mediastinum.

FIGURE 3
Sagittal view of CT neck with contrast. Extension into mediastinum clearly seen.

FIGURE 4
Axial cut on PET/CT. High FDG avidity noted.

DISCUSSION

Rosai-Dorfman disease (RDD), was first described by Destombes in 1965, and later recognized as a distinct entity by Rosai and Dorfman in 1969. It most commonly presents with massive but painless cervical lymphadenopathy but can be seen in other sites. RDD may present elsewhere and extranodal involvement may also be seen. RDD has been reported to have an increased incidence during childhood and early adulthood, with most patients diagnosed during their second or third decade of life.

Forty-three percent of patients present with concurrent lymphadenopathy and at least one site of extranodal involvement, while 22% of cases have extranodal involvement only. Multiple extranodal sites may also be involved. The most frequently involved extranodal sites include skin and soft tissue (16%), nasal cavity and paranasal sinuses (10%), eye, orbit and ocular adnexa (11%); bone (11%), salivary glands (7%); and central nervous system (7%). Fevers, night sweats, fatigue and weight loss are common. Laboratory abnormalities are non-specific, and include elevated ESR, leukocytosis, elevated ferritin, hypergammaglobulinemia, and autoimmune hemolytic anemia.

Histopathological examination is usually necessary to establish the diagnosis. In our case, both FNA and core biopsy were non-diagnostic so an open biopsy was performed. Although a classical feature of RDD is emperipolesis, it is not specific as it can be seen in other conditions. This term refers to the process in which a cell exists as a viable cell within another cell. In RDD, lymphocytes, plasma cells and erythrocytes are seen within the intracellular vacuoles in histiocytes, and thereby escape degradation. Tissue from this patient’s open biopsy showed findings that were characterized as an atypical lymphocytic proliferation with features suggestive of RDD. Immunohistochemical stains showed positivity for S100, CD163 and CD68, while CD1a was negative, all consistent with previous reports. No thyroid glandular components were seen.

The masses seen in RDD are well shown on ultrasound, CT and MRI but no specific imaging characteristics allows for differentiation of RDD from other disease processes. PET-CT demonstrates FDG avidity.

There is no gold standard for the treatment of RDD. Surgery, chemotheraphy, oral or intralesional corticosteroids, low-dose interferon, targeted agents and radiation therapy have been used, but patients may also be observed as spontaneous remission has been described. Treatment is usually reserved for symptomatic patients, those with progressive or systemic disease, and for cosmetic reasons. Clinical trials are lacking. Our patient underwent treatment with high dose steroids and radiation therapy (30 Gray in 15 fractions), which resulted in a significant reduction in the size of the mass on post-treatment CT.

In conclusion, RDD can present with clinically diverse manifestations that may mimic malignancy. Diagnosis requires a high index of suspicion and thorough pathologic review. Since spontaneous remission has been observed, treatment is reserved for symptomatic patients. Multiple modalities are available but optimal treatment has yet to be determined. RDD should be included in the differential diagnosis of patients presenting with cervical lymphadenopathy.

REFERENCES

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