Case report: Rosai-Dorfman disease: Pelvic manifestation*

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ABSTRACT

This is a case of a 51-year-old, Filipino, multipara, presenting with a five-month history of gradually enlarging pelvoabdominal mass. Initially assessed with multiple myoma, a total abdominal hysterectomy with bilateral salpingooophorectomy and excision of pelvic mass were done. Histopathology report of the mass showed Rosai-Dorfman Disease (RDD) and immunohistochemical stains, CD68 and S100, were both confirmatory. RDD within the pelvic cavity is an extremely rare occurrence with only seven reported cases globally on a wide-literature search. This paper describes the clinical presentation, imaging, management and histopathology of the case. The objective is to increase awareness on the pelvic manifestation of RDD and to provide health care professionals with additional knowledge for diagnosis and management of similar cases.

Keywords: case report, extranodal, pelvis, Rosai-Dorfman

INTRODUCTION

Rosai-Dorfman Disease (RDD) was described in 1965 by Destombes[1] and defined as a distinct clinicopathologic entity by Juan Rosai and Ronald Dorfman in 1969[1,2]. It was initially termed sinus histiocytosis with massive lymphadenopathy (SHML), due to clinical findings of lymph node enlargement and microscopic picture of prominent histiocytosis within the nodal sinuses[2]. However, extranodal manifestations with no associated lymphatic involvement occur in 43% of cases[3,4,5,] hence, RDD became a more commonly used term. It is a rare, benign, idiopathic disease with a predilection for males under the age of 20 years. Majority are found in the head and neck[4] and to date, there are only 7 reported cases of RDD found within the pelvic cavity. Due to its rarity, approach to RDD remains a dilemma and patients' prognosis are based on case reports alone. This paper describes the course and management of RDD occupying the pelvoabdominal cavity.

CASE

A 51-year-old, Gravida 2 Para 2 (2002), Filipino presented with abdominal enlargement and pelvic heaviness noted since 5-months prior to admission. This was unaccompanied by weight change, loss of appetite, fever, edema, nausea, vomiting, hypogastric pain, urinary or bowel movement changes or vaginal bleeding.

She was well, afebrile, with no lymph adenopathy. On abdominal examination, there was a nodular, non-movable, nontender mass measuring 8x5 cm, at the left lower quadrant. Confirmatory to the abdominal exam was an internal examination revealing an asymmetrically enlarged uterus of about 14-weeks-size with a nodular mass at the left posterior fundal area. The cervix was firm, long, closed and in mid position.

Transvaginal ultrasound revealed: normal-sized uterus with a pedunculated, bilobed, subserous myoma measuring 7.4x8.4x7.4cm at the left posterior isthmic area and an intramural myoma at the posterior midcorpus measuring 2.0x2.0x1.3cm. The endometrium was thin and both ovaries were visualized. Complete blood count revealed slight leukocytosis of 11.69x10^9/L without anemia.

Impression at that time was multiple myoma uteri and patient was scheduled for total abdominal hysterectomy with bilateral salpingooophorectomy. During surgery, there was no ascitic fluid noted. The

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uterus was slightly enlarged, with a huge subserous myoma extending to the left postero-fundal area, densely adherent to the left pelvic walls. However, on further dissection it was noted to have no connection with the uterus. A diagnosis of intraligamentary myoma was considered. The intraligamentary mass was within the left broad ligament, extending to and impacted on the left pelvic wall, abutting the iliac vessels and displacing the ureter medially and the sigmoid anteriorly. Ovaries and fallopian tubes were grossly normal. Total abdominal hysterectomy with bilateral salpingooophorectomy was done followed by referral to a surgeon for the excision of the intraligamentary mass.

Grossly, the uterus was slightly enlarged to 6x6x3cm, with a tan to pink, smooth serosal surface. Cut section revealed a 2x1x1cm intramural myoma. The intraligamentary mass was well-circumscribed, flesh to brown, ovoid, firm, nodular, measuring 11x10x6 cm. Cut section disclosed a nodular surface, yellowish to gray-white in areas specially at the periphery and readily recognized adipose tissues.

On haematoxylin and eosin stains, lymphoid tissues were appreciated. It had mixed cellular infiltration, composed of lymphocytes, plasma cells, polymorphous nuclear leucocytes and prominent histiocytosis exhibiting emperipolesis. There was marked fibrosis and no lymphoid sinus or capsule was appreciated. This was signed out as Extranodal Rosai-Dorfman Disease. Immunochemical stains were positive for S100 and CD68.

Total surgical resection of the localized mass was the sole intervention done on the patient. Postoperative steroid, chemotherapy or radiation were not initiated. To date, three months after diagnosis, patient has not shown any sign or symptom of recurrence or persistence of RDD based on physical examination and complete blood count.

CASE DISCUSSION

This case is a rare presentation of Rosai-Dorfman Disease (RDD) as to the patient age, gender, race and tumor location. In 1990, there were only 423 reported cases of RDD globally[6]. And in 2010, there were almost 600 reported RDD cases, mostly coming from Africa and the Caribbean region[8]. RDD may occur at any age but has a predilection for males under the age of 20 years and of African descent[1]. Eighty-seven percent of RDD cases manifest in the head and neck as painless, bilateral, massive cervical lymph adenopathy in a patient with otherwise good general condition[2]. Forty-three percent of the total number of RDD would have extranodal involvement and the skin, central nervous system, orbit, eyelid, respiratory tract and gastrointestinal system are the most commonly involved sites [3,4,5].

A comprehensive search of reported cases of RDD within the pelvic cavity was conducted using PubMed and Google Search and only 7 reported cases were found. Three of which were presacral[7], one uterine, one cervical, one involved bilateral ovaries[6,11] and one retroperitoneal mass, extending to the left pelvic sidewall[10]. In a review of abdominal and pelvic RDD made by Karajqikar, et al, the three presacral RDDs had manifestations in other parts of the body. One occurred in a 65-year-old female with abdominal pain. Contrast enhanced abdominal CT showed multiple masses measuring 1-1.5cm within the pancreas and a soft tissue nodule measuring 2cm at the presacral area. All yielded Rosai-Dorfman Disease on endoscopic ultrasound-guided biopsies and patient was asymptomatic after the diagnosis. The second case occurred in a 62-year-old male who had abnormal liver function test warranting a contrast-enhanced abdominal MRI. This revealed a central hilar mass extending to the right biliary system and common bile duct. Histopathologic study was non-diagnostic but periportal lymph node biopsy yielded positive for RDD. Follow-up contrast enhanced CT showed a presacral mass that was eventually biopsied and was also positive for RDD. The patient underwent six cycles of chemotherapy resulting to a decrease in mass volume. The third case of presacral RDD occurred in a 62-year-old male who was previously diagnosed with RDD of the left median arm. His presacral mass was noted in a contrast-enhanced abdominal CT scan that was done to assess for systemic disease[7]. Another reported case was in a 55-year-old, African-American female with right abdominal and pelvic pain. Magnetic resonance imaging showed complex, bilobed, pelvic mass extending from the uterus to the pelvic brim. Histopathologic diagnosis after supracervical hysterectomy with bilateral salpingooophorectomy and surgical excision of the mass showed extranodal RDD. Patient was treated with vinblastine for 5 months and had no evidence of disease progression thereafter[10]. To date, there are only 3 reported cases of RDD in the female genital tract. It was found within the uterus of a 63 year-old gravida 2, para 2 who underwent total abdominal hysterectomy for possible uterine malignancy. Cervical manifestation was noted in a 37-year-old gravida 3, para 3 with prolonged vaginal bleeding. Both cases were uneventful following surgery.

RDD affecting bilateral ovaries was found in a 17-year-old with a long-standing ventriculoperitoneal shunt and primary meningeal RDD[11].

Constitutional symptoms such as fever is associated with RDD in 30% of cases but was not present in our patient. Abnormal laboratory findings such as hypergammaglobulinaemia, elevated erythrocyte sedimentation rate, neutrophilia, anemia and leukocytosis are observed in 90, 88, 68, 66 and 59 percent of cases respectively[1,8]. In our patient, only slight leukocytosis was noted three days prior to the operation.

Ackerman's Surgical Pathology describes the lesions of RDD to be initially isolated, mobile, and small but become adherent with disease progression, forming a voluminous multinodular mass. The huge mass retrieved in our case had a nodular appearance similar to matted lymph nodes with prominent perinodal fibrosis. Sections of RDD are said to be gray to golden yellow, depending on the amount of adipose tissue present.[8] This was appreciated on the cut section of our specimen.

Differential diagnosis for RDD vary depending on the location and size of the mass. In our case, an impression of intraligamentary myoma was made due to its close proximity with the uterus and the consistency of the mass.

The diagnosis of RDD however, is based mainly on microscopic findings of dilated lymphoid sinuses occupied by lymphocytes, plasma cells and numerous histiocytes. These were seen in our patient except for lymphoid sinuses. Within the vacuolated cytoplasm of these histiocytes are intact lymphocytes, a phenomenon called emperipolesis. Unlike in phagocytosis, no cell lysis occurs in emperipolesis. Lymphocytes that penetrate histiocytes remain intact and may exit the histiocyte without causing harm to itself or to the histiocyte.[9] Histiocytic emperipolesis, although not specific, is a constant feature of RDD hence, an important diagnostic tool.[8,9]

Nodal and extranodal RDD are similar microscopically except for a more pronounced fibrosis seen in the later.[8] The absence of lymphoid sinuses and the prominence of fibrosis suggest that our case of RDD is extranodal in origin.

Immunochemical staining strengthens the diagnosis of RDD and differentiates it from other histiocytosis especially those that are malignant. RDD is reactive for S100 and CD-68 in 94.4% and 83.3% of cases respectively[6] while Langerhans cell histiocytosis is positive for S-100 alone. Malignant melanoma's histiocytes on the other hand, are also positive for S100 but does not exhibit emperipolesis[1]. Hematolymphoid disorders such as in Hodgkins leukemia exhibit a different class of emperipolesis which is megakaryocytic[9].

Management for RDD is not well-established due to the rarity of the disease. As a benign lesion that resolves spontaneously, "watchful waiting" is advised if diagnosed through biopsy and if the patient is asymptomatic and with no vital organ involvement[1]. Pelvic RDDs, as in our case, are diagnosed postoperatively. Surgical excision is said to be sufficient for cases of solitary lesions[1]. Elimination of the mass keeps the patient free of recurrence for a prolonged period of time[1]. No longer given to our patient is oral prednisone which is the first line treatment for systemic RDD. Also, no additional benefit was anticipated with the use of vinka alkaloids, anthracyclines and alkylating agents.

To date, three months postoperatively, the patient does not exhibit any sign or symptom of recurrence within the pelvic cavity. She was advised to undergo computed tomography scan of the whole body to visualize other sites of involvement but patient declined.

In general, RDD has a good prognosis. However, 70% of untreated cases experience recurrence and/or persistence. In extreme rarity, fatalities were reported especially those resulting from nodular expansion into vital organs inhibiting its function[6].

Recommendations for surveillance is similar to that of non-Hodgkin's lymphoma wherein clinical examination and complete blood count are done every 2-3 months and computerized tomography every 4 months for the 1st 2 years then yearly thereafter[1].

SUMMARY

Rosai-Dorfman Disease is a benign, histiocytic proliferative disorder that can occur extranodally within the pelvic cavity. Diagnosis is made with high index of suspicion and should be differentiated from any malignancy and other histiocytosis. Surgical resection alone for solitary lesion is acceptable and prolonged recurrence-free period may be observed. Close follow-up surveillance during the 1st 2 years is made to detect recurrence. ■

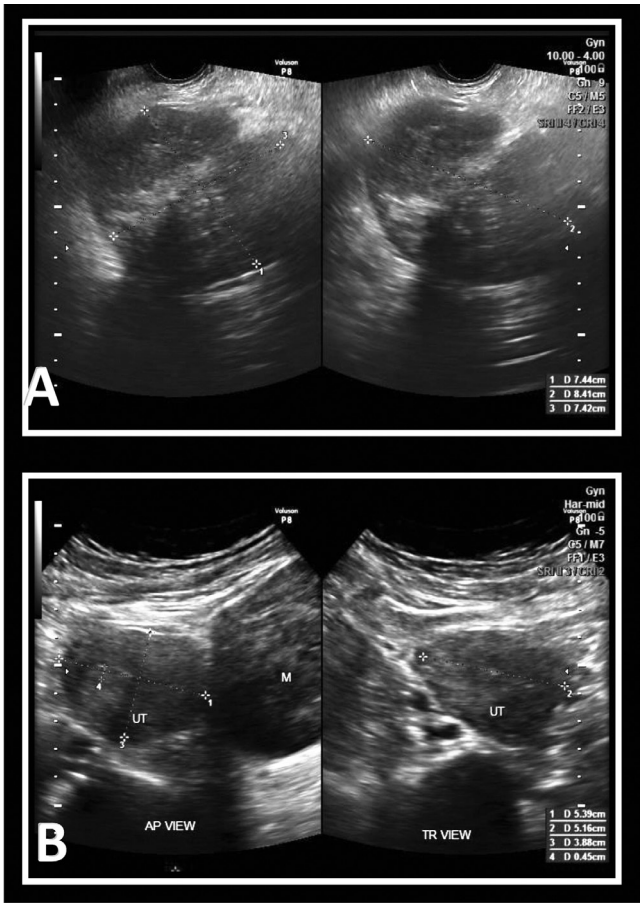

Figure 1: A transvaginal ultrasound of the uterus and pelvic mass. The normal-sized uterus **(UT)** was anteverted, measuring 5.38x5.16x3.88cm and has a huge, pedunculated mass **(M)** at the left isthmic area (**A**, upper panel). The pelvic mass was bilobed, measuring 7.44x8.41x7.42cm with mixed echogenicity (**B**, lower panel)

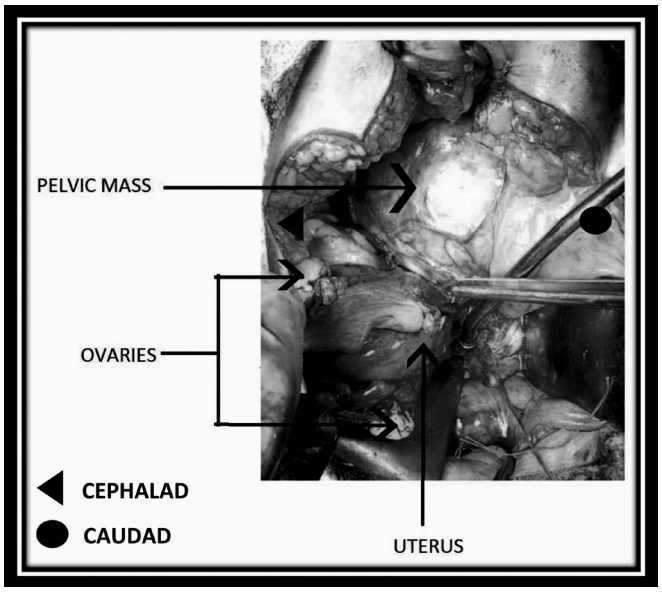

Figure 2. Intraoperative view of the uterus, bilateral ovaries and pelvic mass. The grossly normal-looking uterus and ovaries had no connection with the pelvic mass which was densely adherent to the left pelvic wall

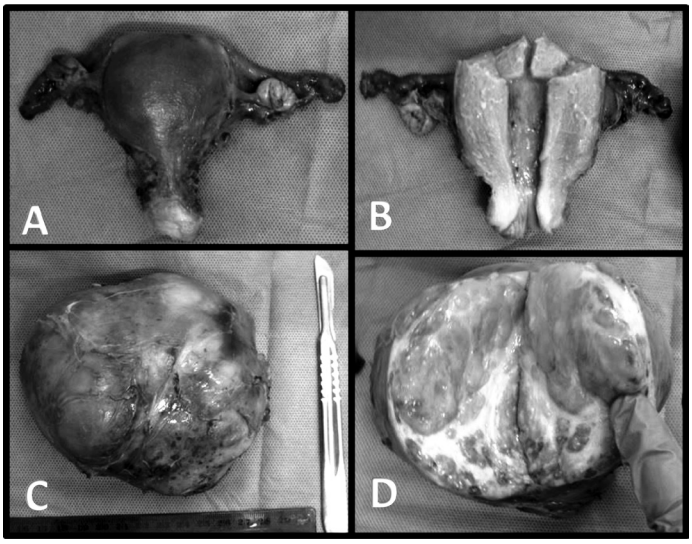

Figure 3: Surgical specimen of the uterus and ovaries and pelvic mass. The uterus and was grossly normal with pink, smooth serosal surface, both ovaries were grossly normal (**A**, upper left panel). Cut section of the uterus with thin, smooth endometrium (**B**, upper right panel). Pelvic mass with pink to yellow, nodular surface (**C**, lower left panel). Cut section of pelvic mass with gray-white periphery and prominent adipose tissue (**D**, lower right panel)

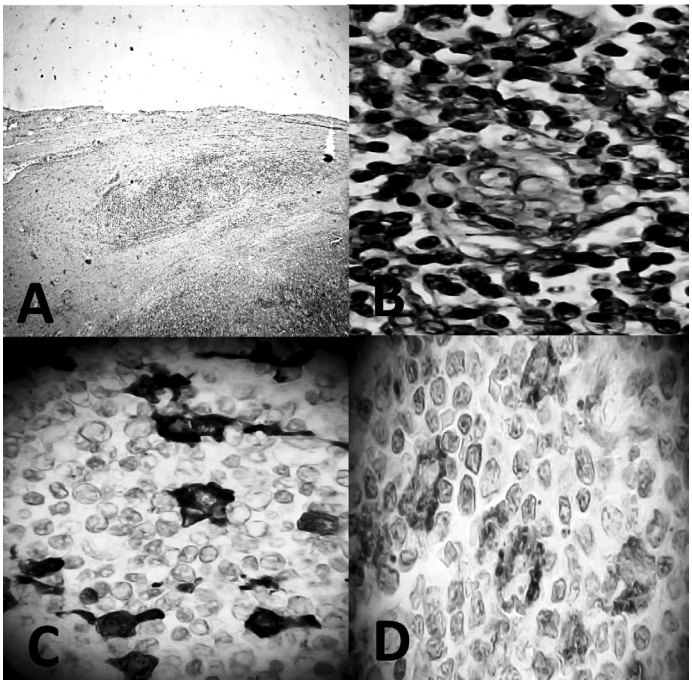

Figure 4. Light microscopy of lymphoid tissue. Low power view of lymphoid tissue showing marked fibrosis (A), High power view showing mixed cellularity with prominent histiocyte exhibiting emperipolesis (B), Densely stained histiocytes exhibiting positive CD-68 (C), and S100 (D)

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