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Case Report

Spinal epidural Rosai–Dorfman disease preceding by relapsing uveitis: a case report with literature review

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Study design: Case report.
Setting: Tertiary referral center hospital in Taiwan.
Objectives: To report a case of spinal Rosai–Dorfman disease (RDD) presenting with paraparesis and also preceding by relapsing uveitis for 6 months. A thoracic laminectomy was performed to remove the solid mass. The pathological diagnosis reveals infiltrating histiocytes, emperipolesis and positivity for S-100. There is no recurrence 1 year later with MR imaging.
Conclusions: The relapsing idiopathic uveitis may be a prodrome for this unusual disease, because RDD is associated closely to defective immunogical response. Early and accurate diagnosis of CNS RDD may reverse the neurologic deficits by early decompression.
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Keywords: Rosai–Dorfman disease; sinus histiocytosis; spinal neoplasm; uveitis

Introduction

Rosai–Dorfman disease (RDD) is a rare disorder characterized by an abnormal proliferation of histiocytes.[1] The most frequent site is cervical lymph node appearing as a painless mass. Other symptoms include fever, leukocytosis, polyclonal hypergammaglobinemia and an elevated erythrocyte sedimentation rate. Only 14 cases of spinal RDD are reported. Ocular involvement is also very rare, especially presenting as uveitis.

Case report

A 31-year-old female was diagnosed with relapsing uveitis 6 months due to impaired vision acuity (Figure 1). She also had mid-thoracic back pain for 3 months, slow progression of both legs weakness, numbness below umbilicus and mild difficulty in urination. She was sent to the emergency room due to progressive weakness of the legs. There was no fever, palpable lymph nodes and skin lesions. Clinical examinations revealed paresthesia below T10 level. The muscle power of lower limbs is grade 3/5. Magnetic resonance imaging showed a homogeneous enhanced mass lesion at the epidural space (T6–8), compressing the thecal sac and spinal cord (Figure 2). Viral serology expressed IgG (+) and IgM (−) for toxoplasma, cytomegalovirus and Epstein–Barr virus. For Varicella–Zoster virus, the IgG is negative, but positive for IgM. The anti-nuclear antigen, rheumatic factor, FTA-ABS and RPR for syphilis and HIV is negative.

An urgent laminectomy of T6–8 was performed to remove a grayish, solid, firm mass over epidural space and the tumor was excised with intact dura. Histologically, the mass revealed chronic inflammation with fibrovascular tissue; in addition, clusters of large eosinophilic histiocytes and interspersed lymphocytes, plasma cells. Emperipolesis with multiple lymphocytes engulfed within histiocytic cells was displayed in some histiocytes. Histiocytes expressed S-100 protein (Figure 3). Thus, the diagnosis of RDD is confirmed.

Postoperatively, the patient walks without assistance soon. However, her vision had decreased from 20/40 OD and 20/100 OS to 20/500 OU at last follow-up due to the sequelae of chronic macular edema following relapsing uveitis despite of topical and systemic corticosteroid treatment. After 1 year, a follow-up MRI shows no concurrent brain or orbital lesion and no recurrence of spinal lesion.

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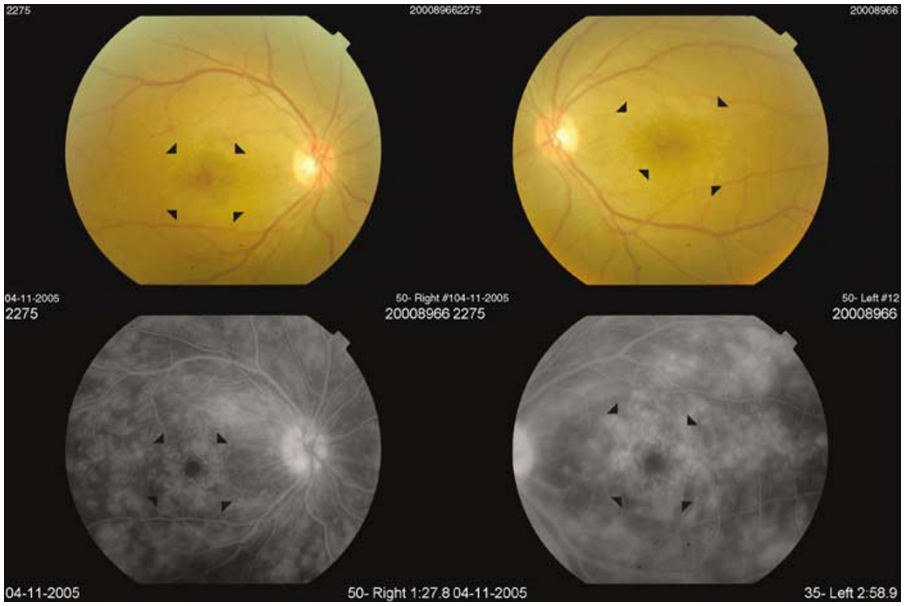

Figure 1 A 31-year-old female with RDD presenting as bilateral relapsing uveitis. Consequent bilateral cystoid macular edema can be demonstrated by the fundus photographs and fluorescence angiogram

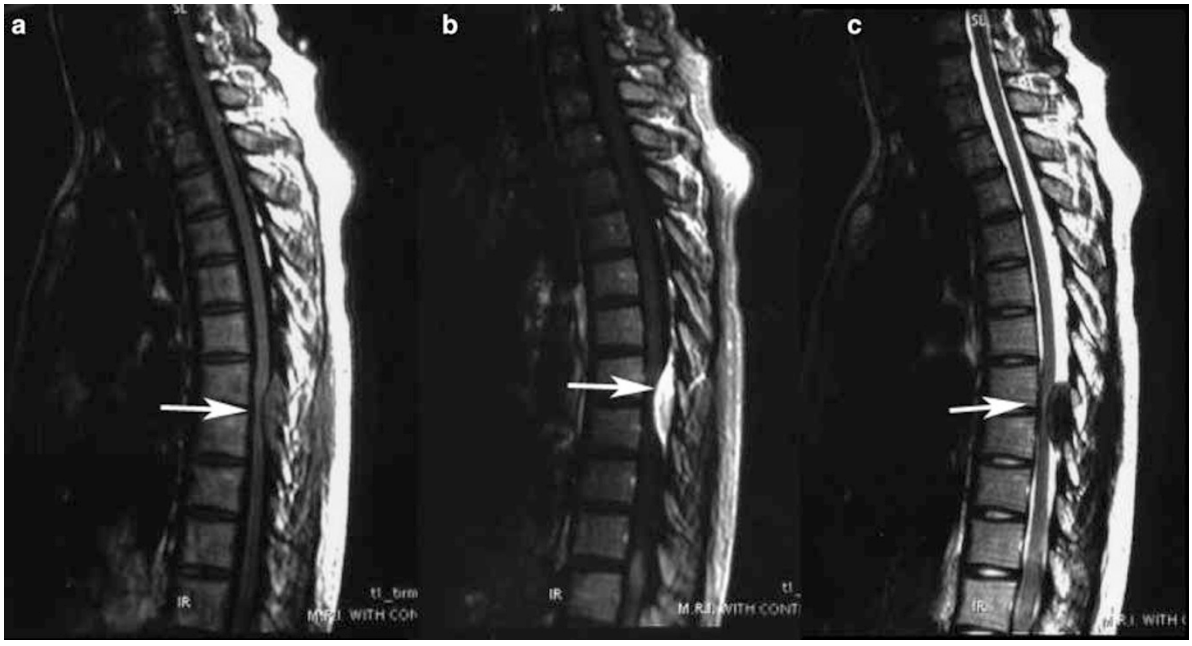

Figure 2 Sagittal MR image revealing a well-circumscribed epidural lesion (arrows), extending from T6 to T8. (**a**) T1-weighted without enhancement; (**b**) T1-weighted with enhancement demonstrating a high signal lesion. (**c**) T2-weighted image

Discussion

Rosai and Dorfman[1] first defined sinus histiocytosis with massive lymphadenopathy in 1969. The distinctive histopathologic character is infiltrative of lymphoplasmacytic cells and histiocytes. Reviewing a registry of 423 patients, average prevalence age was 20.6 years with most frequent presentation as cervical lymphadenopathy accompanied by fever, general malaise.[2] Abnormal laboratory findings include anemia (50%), polyclonal hypergammaglobulinemia (75%) and elevating ESR (88.5%).[3]

The most common extranodal sites are the skin, orbit and eyelid, head and neck region, trachea in about 43% of cases.[2] CNS RDD is relatively infrequent (5%, 44 cases). Regions in the brain include dura, venous sinus,

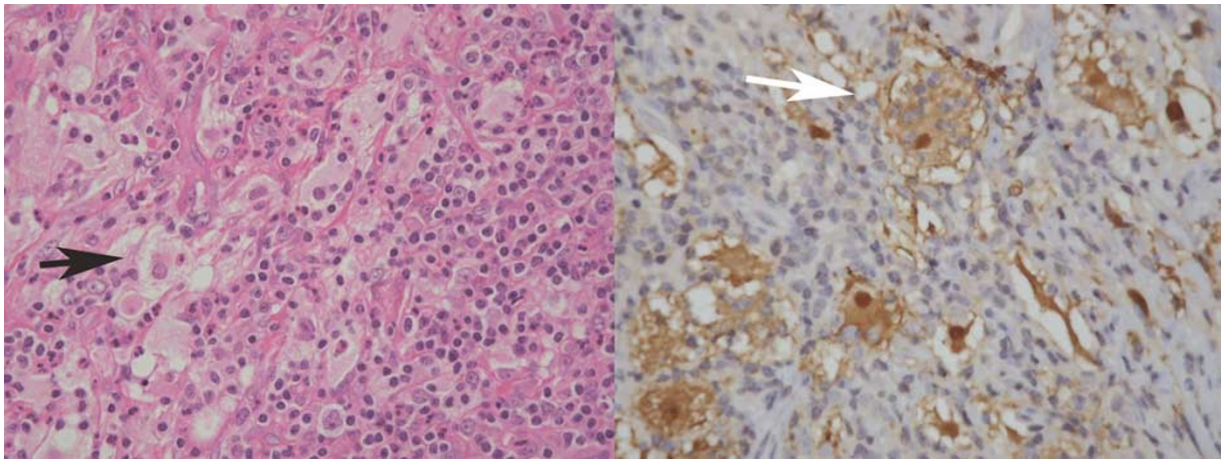

Figure 3 Intermediate-power view of a tissue sample showing numerous, large, pale-staining histiocytes with abundant cytoplasm (black arrow). The background was interspersed with many plasma cells and lymphocyte. Emperiopolesis is evident in H&E stain ($\times 200$). High-power field of the same histiocyte demonstrated a histiocytic cell (white arrow) with emperiopolesis and immunopositive for S-100 protein ($\times 400$)

Table 1 Summary of 14 reported spinal RDD cases

Location	*Location descriptions*	*Manifestations*	*Authors/year*
Subdural extramedullary	Cervical	Quadriparesis	Arun Bhandari *et al* (2006)[11]
Epidural	T9 lytic vertebral lesion multiple bone lesions	Papaparesis	Al-Saad *et al* (2005)[12]
Epidural	T5–9 level	Paraplegia	Hargett *et al* (2005)[13]
Intramedullary	—	Paraplegia	Tubbs *et al* (2005)[14]
Intramedullary	—	Sensory disturbance	Sato *et al* (2003)[15]
Epidural	Dura-based mass	Paraplegia	Andriko *et al* (2001)[4]
Epidural	Cervical, thoracic and lumbar	Pain, parasthesia and weakness of legs	Hollowell *et al* (2000)[16]
Intramedullary	—	Paraplegia	Osenbach *et al* (1996)[17]
Subdural	(1) Cervical spine intradural mass (2) Posterior fossa mass	—	Katz *et al* (1993)[7]
Epidural	Sacrum lesion	—	Unni *et al* (1988)[18]
Subdural	Three lobulated subdural masses, C5–7	Progressive quadriparesis, torticollis	Chan *et al* (1985)[19]
Epidural	(1) Epidural mass, T5–9 (2) Epidural mass, L5–S1	Paraparesis	Foucar *et al* (1982)[2]
Epidural	T9 lytic lesion	Paresthesias of lower extremities	Hass *et al* (1978)[20]
Epidural	C7–T3 level	Spastic paraparesis	Kessler *et al* (1976)[21]

intraparenchymal, intraventricle area.[4] There were 36 cases reported RDD involving eyes were highly accompanied with nasal sinuses involvement.[2] The common ocular manifestations were soft tissue of the orbit and eyelids. Only seven patients with uveitis were reported.[5] In addition, 14 cases of spinal RDD were reported (Table 1).

The pathologic findings of RDD are involvement of sinuses with lymphocytes and histiocytes in a background of increased collagen and/or reticulin fiber. The characteristic histiocytic cell has abundant cytoplasm, a pale irregular nucleus and small vesicular nuclei. Emperipolesis consisting of multiple lymphocytes engulfed within histiocytes, which are also seen in B-cell lymphoma, autoimmune hemolytic anemia and myelosclerosis is pathognomonic for RDD. Extranodal RDD, including central nervous system, has been noted to have fewer typical histiocytes and less evidence of emperipolesis.[6,7] The histiocytes in this case are positive for the dendritic cell-associated protein, S-100.

Rosai and Dorfman suggested that RDD is caused by an abnormal immunologic response or infectious factor. Becroft *et al*[8] demonstrated the importance between cellular immunity defect and histiocytic reaction. EBV and HSV 6 were implied to be causative agents or opportunistic infections for patients to develop RDD. In

our patient, positive IgM response for varicella Zoster, positive IgG for toxoplasma and EBV also implies the immune compromised status.

MRI of RDD shows characteristic low T1 and T2 signals with homogenous contrast enhancement.[9] Spinal RDD is slow growing without malignant changes. The preservation for neurologic function is thus mandatory. Surgery, radiation therapy, and chemotherapy are treatment strategies. Surgical excision is indicated for spinal cord compression in this case. Andriko *et al*[4] reported 11 cases of CNS RDD without any adjuvant steroid, chemotherapy or radiation therapy. In our case, the epidural mass is removed without recurrence on a MRI follow-up 1 year later.

Regarding the relapsing uveitis, the prognosis seems to be poor. Topical and systemic corticosteroids were the choice of treatment within all these few case reports, following the treatment modality for idiopathic uveitis. However, the prognosis may be poor due to recurrence, as in our cases.[10] No other treatment modality has been proposed due to rarity of this presentation. To the best of our knowledge, this case is the first case reported with uveitis and spinal RDD.

Conclusion

We reported a patient with thoracic spinal epidural RDD preceding by relapsing uveitis. Either spinal epidural RDD or ocular relapsing uveitis is extremely rare. Prompt treatment for spinal RDD is surgical excision. Further investigations toward immunological reactions are important due to its multiple manifestations.

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