

# FIRST CONSTELLATION OF EXTRASKELETAL PRIMARY EWING'S SARCOMA OF LABIA MAJORA WITH CRANIAL METASTASIS: A CASE REPORT

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## ABSTRACT

Sarcomas are comparatively rare tumors of mesenchymal origin, which may arise from the soft tissues and viscera. Vulvar sarcomas are often misdiagnosed, because of their non-specific clinical manifestations and rare occurrence. They are characterized by rapid growth, high metastatic potential, frequent recurrences, aggressive behavior, and high mortality rate. Ewing family of tumours (EFTs) are extremely rare in the vulva and vagina, and only 17 cases have been reported. EFTs with metastasis are even more rare and only pulmonary metastasis has been reported so far. We here in this article report Primary Ewing's sarcoma of labia majora in a 12 year old girl and its first constellation with cranial metastasis.

**Keywords:** Ewings sarcoma, vulva, vagina, extraskeletal, metastasis, cranial

## Introduction

Ewing's sarcoma (EwS) and peripheral primitive neuro ectodermal tumour (PNET) are now regarded as a spectrum of neoplasms exhibiting neuro ectoder-mal differentiation and collectively referred to as Ewing family of tumours (EFTs). This is because >90% of these neoplasms harbour the same t (11;22) (q24;q12) chromosomal translocation, which results in the EWSR1-FLI-1 fusion protein.<sup>1-4</sup> EFTs involving the vulva or vagina are extremely rare with only 17 previously reported cases, 11 in vulva, 5 in vagina and 1 case involving rectovaginal septum. EFTs with metastasis are even more rare and only pulmonary metastasis has been reported so far. We here in this article report Primary Ewing's sarcoma of labia majora in a 12 year old girl and its first constellation with cranial metastasis.

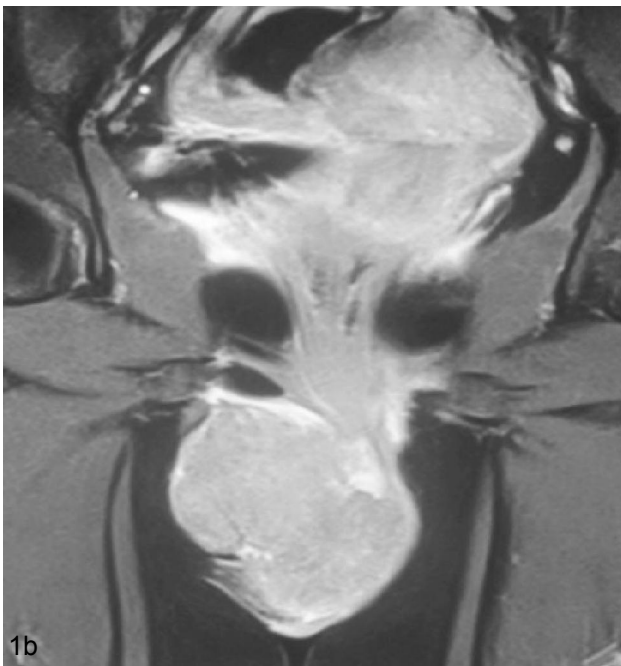
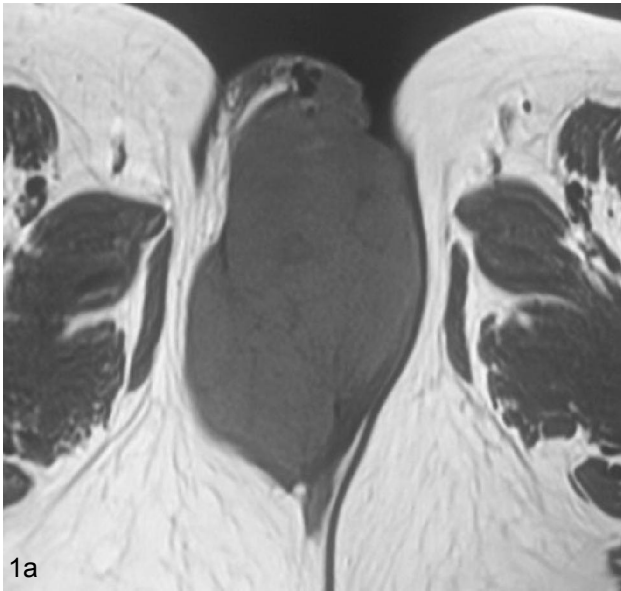
## Case Report

A 12 year old girl with no significant medical history presented with a large painless vulvar mass involving the right labia majora that was noticed three months prior to consultation and which had increased in size since then. On physical examination the patient was afebrile. A large solid soft mass was palpable in the right labia majora. Signs of local inflammation was absent. Initially it was treated as a large Bartholin cyst.

For radiological workup MRI Pelvis was done. A large exophytic lobulated soft tissue lesion was seen arising from right labia majora involving ischiocavernosus and bulbospongiosus muscles. The lesion was crossing midline and causing pressure effect over left labia majora. The fat in ischioanal fossa was also infiltrated. The lesion appears hypointense on T1W and hyperintense on T2W images (Fig. 1a, 1b) and showed

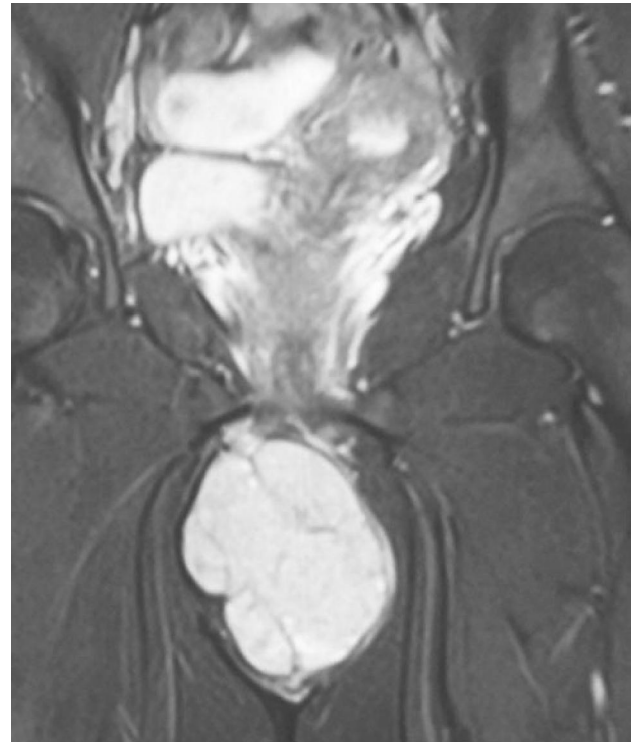
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**Figure 1a, 1b:** T1W Axial and T2W Coronal images showing a soft tissue lesion involving labia majora

intense contrast enhancement after contrast administration. (Fig. 2) It was measuring 9.2 x 6.4 x 5.2 cm. Multiple enlarged lymph nodes were also present involving bilateral inguinal and right external iliac chain. Radiological findings were suspicious of a neoplastic mass lesion and biopsy of the lesion was recommended that confirmed Ewing's Sarcoma of Vulva with extensive areas of hemorrhage and nec-

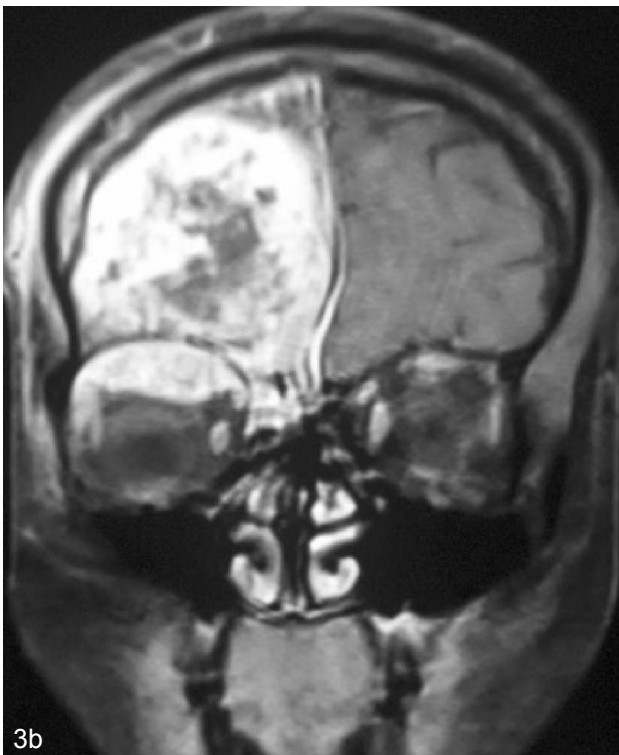


**Figure 2:** Coronal section of T1W post contrast image showing intense enhancement of the lesion with multiple septations in it.

rosis. Immunohistochemical stains showed positive CD 99, focal positive Cytokeratin AE/AE3. Desmin, Myo-D1 and Tdt were negative. Molecular characterization of the lesion was not performed.

On staging CT Scan, no abdominal, pulmonary or bony metastasis was found. Initially, 6 months of Chemotherapy was given but the tumor did not respond and surgical excision was done.

3 months later the patient developed swelling in her forehead and right orbital region that progressively increased in size with complaints of headache, fits, decreased vision and altered level of consciousness. MRI Brain with contrast was performed that showed a large infiltrating mass lesion involving the inner and outer table of right frontal bone causing moderate compression over right lateral ventricle along with moderate midline shift towards the left side. The dura adjacent to this shows thickening and enhancement. (Fig. 3) The extracranial component was infiltrating right orbit and anterior ethmoidal air cells. Findings represented metastasis that was later confirmed by biopsy.



**Figure 3a, 3b:** Axial and coronal sections of MRI Brain with contrast showing a large infiltrating mass lesion involving inner and outer table of right frontal bone and right orbit with intracranial extra-axial and extra-cranial soft tissue component with intense heterogeneous enhancement. It was causing moderate compression over right lateral ventricle and moderate midline shift towards the left side. The dura adjacent to this shows thickening and enhancement.

## Discussion

EFTs most commonly arise in young patients (the peak incidence is in the 20s) with a slight male predilection and occur at a variety of bone and soft tissue sites.<sup>1-4</sup> Most extrasosseous neoplasms involve the soft tissues of the chest wall, pelvis, paravertebral region and lower extremities. EFTs / PNET of the external genitalia usually presents as a rapidly growing mass, with watery and foul smelling discharge per vagina or with pressure symptoms such as tenesmus and difficulty in passing urine.<sup>5</sup> Usually EwS of female genital tract occurs in young women (aged 15-16 years) and women of reproductive age (aged 20-40 years).<sup>6</sup> It is aggressive with a highly malignant course and development of early metastasis.<sup>7</sup>

The imaging features of primary tumors of EwS on contrast-enhanced CT or MRI were generally characterized as bulky heterogeneous masses with frequent local invasion or a mass effect to adjacent organs. Indeed, the mean largest tumor dimension was 9.1 cm (range, 1.3 - 23.0 cm). The majority of tumors showed heterogeneous enhancement. Necrotic foci were observed in (71.9%). Although these tumors generally showed a relatively well-defined margin, local invasion to adjacent organs was also commonly observed. In particular, local invasion was commonly noted in tumors of the abdomen, pelvis, and thorax. These tumors show low signal intensity on T1-weighted MRI and iso-signal intensity compared to that of muscle. All tumors showed high T2-weighted signal intensity that was either homogeneous or heterogeneous. Primary abdominal and pelvic Ewing Sarcoma tumors appeared as large retroperitoneal masses. PET CT Scan shows avid FDG activity.<sup>8</sup>

The most frequent site of metastasis are lymph nodes, followed by bone, lung, abdominal solid organ, peritoneum, pleura, and brain.<sup>8</sup> Definite diagnosis was achieved on microscopy coupled with immunohistochemical stains and molecular results. Morphologically EwS usually displays a lobulated architecture, composed of solid aggregates of cells, sometimes forming rosettes.<sup>9</sup> Histologically it shows the typical features of EwS: monomorphic population of small round blue cells with cytoplasmic glycogen, which is confirmed

by periodic acid-Schiff.<sup>10,11</sup> Immunohistochemistry shows membranous positivity for CD99 and Fli-1 in anuclear pattern. A EwS / Fli-1 fusion transcript can be evidenced by polymerase chain reaction.<sup>12</sup>

Therapeutically, most of the earlier documented cases were treated with surgery and specific adjuvant chemotherapy, including the present case, with optional radiotherapy in certain cases.<sup>7,9,10</sup> Our patient initially underwent chemotherapy but it did not respond and the size of the lesion increased so surgical tumor resection was performed. Post surgery chemo-radiotherapy was given. Unfortunately, she developed cranial metastatic lesion for which palliative treatment was given.

Prognosis is poor, and depends mainly on the size of the primary lesion, tumor invasion, and mitotic activity. Lesions greater than 5 cm in diameter, with infiltrating margins, extensive necrosis are associated with even poorer prognosis and indicative of possible recurrence after surgical resection.

## Conclusion

Sarcomas of the vulva are rare malignant neoplasms which often lead to misdiagnosis. It is important to consider vulvar sarcomas in the differential diagnosis of non-specific vulvar lesions in order to establish an early accurate diagnosis and appropriate treatment. Metastatic disease rather than loco-regional recurrence seems to be the main cause of death.

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