Malignant extrarenal rhabdoid tumor of the vulva in an adult

ABSTRACT
Sarcomas of the vulva account for only 1-3% of all vulvar malignancies. Most common vulvar sarcomas are leiomyosarcomas, malignant fibrohistiocytomas, and aggressive angiomyxomas. Malignant rhabdoid tumor (MRT) of the kidney is a distinctive clinicopathological entity that is recognized as a highly aggressive renal tumor of childhood. Extrarenal malignant rhabdoid tumors have been proposed to exist at several sites, including soft parts. MRT of the vulva is a rare and very aggressive neoplasm. Median survival reported in other studies is 9 months. Only 10 cases have been reported thus far in the English literature. We are reporting the 11th case who remains disease free 30 months following surgery and radiotherapy till the time of reporting.

KEY WORDS: Malignant rhabdoid tumor, malignant extrarenal rhabdoid tumor, tumors of vulva, vulvar sarcomas

INTRODUCTION
Malignant rhabdoid tumor (MRT) of the kidney was first described in 1978. Though it was initially thought to be rhabdomyosarcomatoid variant of Wilm’s tumor, it was subsequently recognized as a distinct clinicopathological entity. Most MRTs occur in infancy and have aggressive clinical behaviour, majority of the patients dying within a short period of time following the diagnosis. Subsequently, tumors with a histological resemblance to MRTs of the kidney were described in various extrarenal sites like skin, soft tissues, urogenital tract, gastrointestinal tract, liver, paraspinal and paratesticular areas, and central nervous system.[1]

MRT of the soft tissue is a rare and highly aggressive tumor of infancy and childhood. Most commonly it occurs in a deep axial location such as the neck or paraspinal region. Microscopically, the tumor is composed of a diffuse proliferation of rounded or polygonal cells with eccentric nuclei, prominent nucleoli, and glassy eosinophilic cytoplasm containing hyaline-like inclusion bodies, arranged in sheets and nests. These characteristic “rhabdoid cells” are also present in certain carcinomas (e.g., renal cell carcinoma) and soft-tissue sarcomas such as synovial sarcomas, extraskeletal myxoid chondrosarcomas, and leiomyosarcomas.[2] The term malignant extrarenal rhabdoid tumor as it pertains to the soft tissue should be used for tumors with predominant rhabdoid morphology in which no other clear line of differentiation can be documented. MRT of the vulva is a very rare and aggressive neoplasm of uncertain histogenesis.[3]

An online search yielded only 10 reported cases till now. We intend to report the 11th case with a review of the available literature.

CASE REPORT
A 50-year-old lady presented to the Surgical Oncology service of our Hospital with the complaints of growth in the vulva of 3-month duration and local pain since the past 1 week. Local examination revealed a nodular growth measuring 7 × 6 cm arising from the right labium majus and mons pubis. The overlying skin showed engorged veins, erythematous patches, and white blebs. The lesion was tender and firm in texture. Per speculum, per vaginal and digital rectal examinations were normal. Rest of the systemic examination was normal. Routine blood and urine tests were within the normal range. Fine needle aspiration cytology was done which was reported as positive for malignancy, suggestive of sarcoma, and a biopsy was advised for further typing by immunohistochemistry (IHC). Core needle biopsy was done and was reported as MRT. Chest radiography and abdominopelvic sonogram were normal. Ultrasonography of the inguinal region revealed multiple well-defined hypoechoic lesions of varying sizes, largest measuring 1.2 cm on the right side. Wide local excision of the lesion with right groin dissection and reconstruction of the defect by pedicled right rectus abdominis flap was done.

Microscopically, sections from the tumor showed hyperplastic squamous epithelium with prominent,
dilated lymphatics and congested capillaries in the subepithelial connective tissue overlying a circumscribed, unencapsulated, and focally necrotic tumor. The tumor was composed of sheets, islands, and nests of monomorphic epitheloid tumor cells with a large eccentric vesicular nucleus with a prominent nucleolous, abundant eosinophilic cytoplasm some with hyaline globules suggestive of rhabdoid cells, brisk mitosis (5/10 HPF) with focal peritheliomatous pattern, and focal spindling of tumor cells in a scant stroma containing numerous thinwalled sinusoidal vessels and occasional entrapped adnexal glands. All of the resected margins, base, and 10 lymph nodes isolated from the groin dissection were uninvolved [Figure 1]. On IHC staining, the neoplastic cells were diffusely positive for vimentin, CD 99, and EMA. The cells were negative for CK, LCA, HMB 45, CD 34, and desmin [Figure 2]. Postoperatively, the patient developed wound gaping in the inguinal region which was skin grafted. On complete healing of the operative wound, she was referred to Radiation Oncology services for adjuvant radiotherapy in view of aggressive histology, grade, and size more than 5 cm. She was treated with external beam radiotherapy of 60 Gy in 30 fractions over a period of 6 weeks (5 days/week). Apart from mild leg edema and postradiotherapy skin changes, patient is disease free (history, physical examination, chest radiography, abdomen and pelvis sonography every 3 months, and annual chest CT) 30 months posttreatment.

DISCUSSION

Rhabdoid cells were first described in the rhabdoid tumor, a distinctive renal neoplasm of infancy. These are round or polygonal cells with an eccentric, vesicular nucleus, prominent nucleoli, and glassy eosinophilic cytoplasm containing hyaline-like inclusion bodies. The extrarenal occurrence of MRTs has been described in the central nervous system, liver, skin, and soft tissues. Rhabdoid cells have also been reported in sarcomas and carcinomas of various types, their presence predicting of aggressive tumor behavior. Majority of the reported cases of MRTs of the vulva are located on labia majora as was in the case reported by us (7 of 10 cases reported earlier, Table 1). Other reported sites are vulva (not otherwise specified), mons pubis, and clitoris (one each). Most of these tumors of the vulva are noted in the age group 30-50 years (7 of 10 cases reported earlier, Table 1), youngest patient being 19 years and oldest being 63 years of age.

Most of the reported MRTs of the vulva presented as a painless, firm-to-hard circumscribed mass of 2-to10 cm size. Lymphatic spread was rare as in most of the other sarcomas compared to more common vulvar carcinomas. After thorough clinical evaluation to know local and systemic spread, diagnosis was often confirmed by some form of incisional biopsy. This is necessary to provide sufficient material for IHC. Most of the MRTs express vimentin, followed by EMA, cytokeratin, and CD 99. They do not express desmin.

Distinction from the proximal-type epitheloid sarcoma can be difficult and few of the authors have argued for the consolidation of the two pathologies. Both of these mesenchymal tumors exhibit epithelial profiles such as immunohistochemical expression of cytokeratin and EMA. They also share ultrastructural features such as specialized junctions, tonofilaments, and microvilli indicative of the epithelial differentiation. Dysadherin expression in epithelioid sarcoma is a powerful diagnostic marker for distinguishing from the malignant rhabdoid tumor. Dysadherin is a cancer-associated cell membrane glycoprotein, which down-regulates E-cadherin and hence promotes metastasis.

Radiological evaluation including computed tomography of the chest should be done to assess locoregional and distant spread of the tumor prior to treatment planning. Treatment of the vulvar sarcomas usually consist of wide local excision or hemivulvectomy depending upon the local tumor extent. Surgery usually included groin node dissection, probably due to enlarged nodes at the time of presentation and established role of routine lymphadenectomy for vulvar carcinomas. The
post resection defects can be primarily closed, grafted, or myocutaneous flaps (free or pedicled) can be used. Prognosis for the vulvar sarcomas depends up on the size of tumor, depth of invasion, histology, and the status of resection margins. Though most reported cases of MRTs of the vulva have been routinely treated with inguinal lymphadenectomy, we think this practice needs to be questioned as most of these nodes were found to be reactive or inflammatory as in our case. Furthermore, unlike vulvar carcinomas, sarcomas except epitheloid sarcoma rarely spread via the lymphatic route. By omitting inguinal lymphadenectomy, associated morbidity can be avoided and adjuvant treatment, if any, can be started earlier.

Chemotherapy and radiation therapy may be considered as additional first-line treatment options or may be utilized in cases of the relapse. Indications for employing postoperative adjuvant radiotherapy for sarcomas in general include high-grade, size more than 5 cm, and close or positive surgical margins. The role of adjuvant radiotherapy following complete surgical resection is controversial. One clinical study reported from the Sidney Kimmel Comprehensive Cancer at Johns Hopkins Division of Radiation Oncology by Ulutin et al. recommends postoperative adjuvant radiotherapy for close surgical margins (margins less than 5 cm), high-grade tumors, and residual disease. We opted for postoperative adjuvant EBRT for better local tumor control owing to rhabdoid histology, high grade and size of the tumor (more than 5 cm).

A recent study reported by Wendel et al. in pediatric patients with extrarenal, extracranial MRTs suggests that radiotherapy as part of multimodality treatment incorporating chemotherapy and surgery has the potential to prolong survival with acceptable toxicity. In a study of 13 pediatric patients with extracranial MRT of whom 3 patients had MRT of soft tissues, Gururangan et al. reported use of ifosfamide alone or in combination with carboplatin and etoposide as frontline chemotherapy. The reported median survival for patients with vulva MRT is around 9 months, the longest reported survival being 61 months. Local recurrences within a year are common and the appearance of distant metastases is almost invariably rapidly fatal. The most common site of metastasis is lung. Chemotherapy and radiotherapy do not appear to be effective in controlling recurrent or metastatic disease. Table 1 shows a summary of reported cases of MRT of the vulva.

<table>
<thead>
<tr>
<th>Author and year</th>
<th>No. of cases</th>
<th>Age at diagnosis (years)</th>
<th>Site</th>
<th>Primary treatment</th>
<th>Reported survival (months)</th>
<th>Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perrone et al, 1989</td>
<td>3</td>
<td>19</td>
<td>R LMj</td>
<td>Surgery</td>
<td>38 (alive)</td>
<td>LR</td>
</tr>
<tr>
<td>Matias et al, 1990</td>
<td>1</td>
<td>30-70</td>
<td>L vulva</td>
<td>Surgery + chemotherapy</td>
<td>42 (alive)</td>
<td>LR and mediastinum</td>
</tr>
<tr>
<td>Lupi et al, 1996</td>
<td>1</td>
<td>40</td>
<td>L LMj</td>
<td>Surgery + chemotherapy + radiotherapy</td>
<td>24 (alive)</td>
<td>Nil</td>
</tr>
<tr>
<td>Igarashi et al, 1998</td>
<td>1</td>
<td>39</td>
<td>L LMj</td>
<td>Surgery + chemotherapy</td>
<td>8 (alive)</td>
<td>Nil</td>
</tr>
<tr>
<td>Sert et al, 1999</td>
<td>1</td>
<td>44</td>
<td>R LMj</td>
<td>Surgery + chemotherapy + radiotherapy</td>
<td>8 (alive)</td>
<td>LR at 1 month and lung</td>
</tr>
<tr>
<td>Brand et al, 2001</td>
<td>1</td>
<td>40</td>
<td>Mons pubis</td>
<td>Surgery, surgery + radiotherapy for recurrence</td>
<td>61 (alive and NED)</td>
<td>LR at 11 months</td>
</tr>
<tr>
<td>Haidopoulos et al, 2002*</td>
<td>1</td>
<td>X</td>
<td>Clitoris</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tzilinis et al, 2002</td>
<td>1</td>
<td>63</td>
<td>L LMj</td>
<td>Surgery + radiotherapy</td>
<td>30 (alive and NED)</td>
<td>Nil</td>
</tr>
<tr>
<td>Argenta, 2007†</td>
<td>1</td>
<td>35</td>
<td>X</td>
<td>Surgery + radiotherapy</td>
<td>40 (alive and NED)</td>
<td>Nil</td>
</tr>
<tr>
<td>Current case</td>
<td>1</td>
<td>50</td>
<td>R LMj and Mons pubis</td>
<td>Surgery + radiotherapy</td>
<td>30</td>
<td>Nil</td>
</tr>
</tbody>
</table>

R - Right; L - Left; L Mj - Labium major; NED - No evidence of disease at reporting; LR - Local recurrence; *Only abstract available in PubMed; †Proximal epithelioid sarcoma/MRT (not included in 10 cases)

# REFERENCES

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Narendra, et al.: Malignant extra-renal rhabdoid tumor of the vulva in an adult


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