CASE REPORT

The uncovered story of leiomyosarcoma of the cervix: a rare case report and review of literature

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SUMMARY

Sarcomas of the uterine cervix are uncommon tumours arising from uterine cervix constituting less than 1% of all cervical malignancies. Leiomyosarcoma of uterine cervix is extremely rare. Combined modality of treatment including surgery, radiotherapy and chemotherapy should be used in these patients to achieve better survival. We present a rare case of leiomyosarcoma of uterine cervix presented with bleeding per vaginam and bulky cervical mass. Simple hysterectomy was carried out and operative findings revealed a large growth arising from the anterior cervical lip. Diagnosis in this case was made by subjecting the resected specimen to histopathological and immunohistochemical analysis. Postoperatively patient received adjuvant combination chemotherapy (VAC) followed by radiotherapy. Patient is asymptomatic without any evidence of tumour recurrence after 6 months of follow-up.

BACKGROUND

Sarcomas of the uterine cervix constitute less than 1% of all cervical malignancies. Although leiomyosarcoma is one of the most common non-epithelial malignant neoplasms arising in soft tissue and somatic organs, while arising from the uterine cervix is extremely rare. The rarity of cervical sarcomas as contributed to paucity of information regarding the clinical features, mode of management and prognosis of the patients. Usually most patients present with vaginal bleeding and a bulky cervical mass at the time of diagnosis. They generally occur in the perimenopausal and postmenopausal population in their 4th–6th decades of life. We present a rare case of leiomyosarcoma of cervix presented with bleeding per vaginam which was managed with combined modality of treatment.

CASE PRESENTATION

A 38-year-old premenopausal woman presented with 3-month-old history of bleeding per vaginam. Initially bleeding was off and on, which, later become persistent and progressive. Bleeding was associated with pain in the lower abdomen. Pain was intermittent and dull aching in nature and relieved on medication. Patient was non-alcoholic, non-smoker with a history of significant sun exposure throughout her life. General physical and systemic examination was normal. Pervaginal and per-rectal examination revealed a bulky cervix.

INVESTIGATIONS

Complete haemogram and routine blood biochemistry of the patient were within normal limits. Chest

radiography was normal and ultrasonography of abdominopelvic region revealed a hypoechoic lesion arising from the cervix. MRI revealed a large soft tissue mass of size 12×13×13 cm, seen arising from the anterior lip of the cervix, which was encapsulated without extension into adjacent viscera. On T₂-weighted image, mass was predominantly hyperintense (figure 1A) and hypointense on T₁-weighted image (figure 2A). On contrast administration peripheral thick irregular enhancement was seen (figure 2B). Pretreatment urography revealed pressure effect on bilateral ureters by the mass with proximal bilateral hydroureter and bilateral hydronephrosis (figure 3). The patient was being investigated for dysfunctional uterine bleeding and simple hysterectomy was performed under the clinical impression of fibroid uterus but later the histopathology revealed leiomyosarcoma uterus hence total abdominal hysterectomy with bilateral salpingo-oophorectomy was not performed. Operative findings revealed a growth of 15×15 cm in size, arising from the anterior cervical lip. Histopathological examination of simple hysterectomy specimen revealed poorly circumscribed tumour mass arising from the cervix and composed of spindle cells arranged in sheets and fascicles (figure 4A). On higher magnification pleomorphic spindle cells exhibit hyperchromatic nuclei (figure 4B). The neoplastic cells illustrated wide spread positivity for desmin (figure 4C) and smooth muscle actin (SMA) immunocytochemical stain (figure 4D) and stain for masson's trichrome (MT) and cytokeratin (CK) were negative. Mitosis was found to be >10 per high power field. The histopathological appearance and immunohistochemical profile of the biopsy tissue confirmed it to be leiomyosarcomas of uterine cervix. Clinically the patient was labelled as stage 1B according to the International Federation of Gynecology and Obstetrics (FIGO) staging system.

DIFFERENTIAL DIAGNOSIS

The clinical presentation often misleads with fibroid uterus. The diagnosis of leiomyosarcoma cervix mainly depends on the pathological and immunohistochemical profile and includes squamous cell carcinoma producing similar clinical presentation and other sarcoma arising from cervix such as rhabdomyosarcoma, liposarcoma, primitive neuroectodermal tumour and malignant peripheral nerve sheath tumour.¹

TREATMENT

Patient initially underwent simple hysterectomy followed by secondary suturing as she presented with burst abdomen. Local examination of the abdomen

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Figure 1 Pretreatment scan showing hyperintense mass lesion on T₂-weighted image (A) and post-treatment magnetic resonant scans showing normal study (B).

and pelvis revealed a surgical scar healed by secondary intention and per vaginal examination revealed posthysterectomy status. Postoperative chemotherapy was started 3 weeks after the surgery and patient received nine courses of 3 weekly intravenous adjuvant chemotherapy with vincristine, adriamycin, cyclophosphamide (VAC) regimen (inj vincristine 2 mg, inj doxorubicin 70 mg and inj cyclophosphamide 1 gm). The body surface area (BSA) of our patient was 1.4 square meters, hence doxorubicin 70 mg per course was given, and the total cumulative dose of doxorubicin received was 630 mg, which is well below the tolerable dose in a normal adult (lifetime tolerable dose of doxorubicin is 550 mg/m², that is, calculated as 770 mg according to the BSA of our patient). Two weeks after the completion of chemotherapy, external beam radical radiotherapy 50 Gy/25 fractions/5 weeks was given by conventional

fractionation. After two weeks of the completion of external beam radiation therapy (EBRT), the patient received three courses of vaginal cuff high dose rate (HDR) brachytherapy of 6 Gy each over a total duration of three weeks.

OUTCOME AND FOLLOW-UP

Patients with cervical sarcomas tended to be younger, diagnosed in the later years of study, have larger tumour and have more advanced stage of the disease. Among women with early stage disease survival was inferior for those with sarcomas. Five-year survival for cervical sarcoma were 80%, 67%, 42% and 20% compared to 95%, 80%, 56% and 32% of cervical squamous cell carcinomas for stage IA, IB, II and III, respectively.^{1 2} Overall leiomyosarcomas of uterine cervix has poor prognosis and patients with cervical sarcomas were 60% more likely to die

Figure 2 Pretreatment magnetic resonant scan showing hypointense mass lesion on T₁-weighted image (A), and showing peripheral thick irregular enhancement on contrast (B) and post-treatment magnetic resonant scan showing normal study on T₁-weighted image (C) and normal contrast enhanced magnetic resonant scan (D).

Figure 3 Pretreatment urography showing pressure effect on bilateral ureters by the mass with proximal bilateral hydroureter and bilateral hydronephrosis.

from their tumours. Contrary to the above facts, in our case the outcome was favourable with good locoregional response and patient is asymptomatic without any evidence of tumour recurrences after six months of follow-up as evident from the CT scan and the post-treatment contrast-enhanced magnetic resonant scan of the abdomen and pelvis (figures 1B, 2C,D).

DISCUSSION

Sarcomas of the uterine cervix are distinctly uncommon and constitute less than 1% of all cervical malignancies. Of the sarcoma, most rhabdomyosarcoma of embryonic subtype was reported.¹ Leiomyosarcomas are malignant tumours composed of cells showing smooth muscle features. Owing to the relative infrequency of the disease, most of the available data on the natural history of cervical sarcomas are derived from case reports and small case series. To date the largest series of

cervical sarcomas identified only 67 cases of cervical leiomyosarcoma among 33 074 patients with cervical cancer treated over nearly 17 years for an incidence of 0.2%.²

They generally occur in the perimenopausal and postmenopausal population in their 4th–6th decades of life. Most patients present with vaginal bleeding and a bulky cervical mass at the time of diagnosis. Macroscopically, the tumours are typically large (up to 12 cm in one series) and poorly circumscribed. These masses either protrude from the cervical canal or thicken and expand it circumferentially.³ The current approach is to simply extrapolate diagnostic criteria from the corpus tumours and apply them to their cervical counterparts, incorporating various combinations of cytological atypia, coagulative necrosis and mitotic activity to predict their malignant potential.¹ The optimal management of these tumours is uncertain owing to its rarity; however, combined modality treatment can result in prolonged survival and cure. Several factors have consistently been found to demonstrate value as prognostic indicators predictive of outcome of therapy and includes tumour size, stage, grade, mitotic count, age and menopausal status.^{4–5} Giuntoli *et al.*⁶ retrospectively evaluated that stage, older age (>51 years), postmenopausal status and larger tumour size (>5 cm) to be significantly associated with a reduced likelihood of survival in cervical leiomyosarcoma. For disease confined to the cervix, total abdominal hysterectomy with bilateral salpingo-oophorectomy is probably warranted. Given the low incidence of lymph node dissemination by leiomyosarcoma, the value of routine lymphadenectomy has been questioned. In a review of literature, Salazar and Dunne⁷ observed a non-significant trend towards improved survival in stage-I uterine leiomyosarcoma who received postoperative pelvic radiotherapy. Likewise, individual investigators have shown a trend towards improved locoregional control in patients with uterine leiomyosarcoma who were treated with postoperative adjuvant pelvic irradiation.^{4–5–8} There is no statistically significant association between the administration of pelvic radiation therapy and improved survival. One case–control investigation demonstrated a significant decrease in local recurrences in the group receiving pelvic radiation therapy.⁶

The role of chemotherapy in cervical sarcomas is difficult to assess. Owing to tendency of haematogenous spread most patients are candidates for systemic chemotherapy. In leiomyosarcoma of the uterine cervix, the combination of doxorubicin

Figure 4 Photomicrograph H&E stain; original magnification $\times 200$ (A) and magnification $\times 400$ (B) showing pleomorphic spindle cells arranged in sheets and fascicles and immunohistochemical study illustrating the neoplastic cells wide spread positivity for tumour cells positive for desmin (C) and SMA (D).

and ifosfamide was used as a first-line combination chemotherapy and in spite of the high toxicity, response rate as high as 30% was seen in advanced or metastatic leiomyosarcoma of the uterus. Although the chemotherapeutic regimens were not standardised, combination chemotherapy containing doxorubicin which has best activity against uterine leiomyosarcoma results in better outcome.^{2–6} Because therapeutic measures have been widely discordant among the reported cases, their true natural history and any variations in their malignant potential are not readily evaluable. Combined modality of treatment including surgery, radiotherapy and chemotherapy should be used in these patients to achieve better survival.⁹ The effectiveness of radiation therapy and chemotherapy is debatable, and the lack of large series makes the conclusions insecure. Because of the small number of cases so far, the best approach for these malignant tumours is the collaboration between the surgical oncologist, the pathologist, the radiation and the medical oncologists in order to optimise the results for the best interest of the patient.

Learning points

- ▶ Leiomyosarcoma of uterine cervix is a rare disease and diagnostic confirmation is based on pathological and immunohistochemical profile.
- ▶ Prognostic indicators predictive of outcome of therapy include tumour size, stage, grade, mitotic count, age and menopausal status.
- ▶ For disease confined to the cervix, total abdominal hysterectomy with bilateral salpingo-oophorectomy is probably warranted. Combined modality of treatment including postoperatively adjuvant chemotherapy with VAC regimen followed by external beam radical radiotherapy and vaginal cuff brachytherapy should be used to achieve better survival.

Competing interests None.

Patient consent Obtained.

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