Rare disease

Malignant peripheral nerve sheet tumour of cervix

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Summary

Sarcomas account for less than 1% of malignancies of the uterine cervix. Among them, rhabdomyosarcomas are the ones most frequently reported. Malignant peripheral nerve sheet tumour (MPNST) is very rare. In this paper we present a 53-year-old woman with MPNST of the uterine cervix.

BACKGROUND

Tumours arising from the uterine cervix are mostly squamous cell carcinoma, followed by adenocarcinoma. Other malignancies such as small cell carcinoma, adenoid cystic carcinoma, lymphoma and melanoma are very rare. Primary pure sarcoma of the uterine cervix is scarce. Among cervical sarcomas, rhabdomyosarcoma, especially the embryonal subtype, is most prevalent.¹ There are few reports of malignant peripheral nerve sheet tumour (MPNST) on the uterine cervix. Owing to the rarity of such cases, so far no standard treatment has been developed for this disease. In this article we present a case of MPNST of the uterine cervix manifested in the advanced stage.

CASE PRESENTATION

A 53-year-old woman was admitted in the gynaecology ward of our centre because of pelvic and suprapubic pain that had exacerbated from 3 weeks before referral, fever and purulent, malodour vaginal discharge. Medical history revealed that she was a married woman gravid 12 para 11 and 1 abortion. The patient had been 18 in the first delivery. She had only one partner; her husband and she had no any other partners. The patient was not a smoker

(actively or passively). She did not show any evidence of the neurofibromatosis (NF) syndrome. Vaginal examination showed a huge cervical mass more than 7 cm and left parametrium and left pelvic wall involvement (clinical stage IIIB). Biopsy was performed. Intravenous wide-spectrum antibiotics were administered and abdominopelvic CT scan was performed. CT scan (figure 1) revealed a large cervical mass exerting pressure on the bladder and rectum. There was no evidence of pelvic and para-aortic lymph node involvement and liver metastasis. Chest CT scan and liver function tests were normal. Microscopically, H&E-stained sections (figure 2) revealed cellular neoplasm in the entire tissue with extensive necrotic areas. The tumour cells had hyperchromatic and pleomorphic oval to spindle-shaped nuclei with scattered mitoses, arranged in a fascicular pattern. Also a prominent vascular pattern was evident. Differential diagnosis included sarcoma and sarcomatoid carcinoma. Immunohistochemistry (IHC) helped differential diagnosis. Surgical resection being impossible and the gynaecological oncologist believing it to be squamous cell carcinoma of cervix and to decrease the patient's symptoms, radiation therapy with weekly 40 mg/m² cisplatin was started; IHC results became available 11 days

Figure 1 CT scan shows a large cervical mass.

Figure 2 H&E staining sections reveal a cellular neoplasm in the entire tissue having extensive areas of necrosis.

Figure 3 Tumour cells are S-100 positive.

later (following nine fractions of radiation therapy and two courses of cisplatin). Tumour cells were positive for S-100 (figure 3), Vimentin and Desmin (focally). Such cells did not show immunoreactivity for cytokeratin (CK) AE1/3, CK 20, epithelial membrane antigen (EMA), chromogranin, synaptophysin, smooth muscle actin (SMA), CD45, C-kit and melanosome (HMB-45). According to IHC, MPNST was diagnosed.

DIFFERENTIAL DIAGNOSIS

Other spindle cell tumours are in differential diagnosis such as: leiomyosarcoma, fibrosarcoma, monophasic synovial sarcoma, spindle cell melanoma and undifferentiated endocervical stromal sarcoma. Immunohistochemical staining can be helpful. Leiomyosarcoma is positive for Desmin and SMA. EMA and CK 7 are reactive in synovial sarcoma. Spindle cell melanoma is positive for melanocytic markers, such as S-100 protein, HMB-45 and Melan-A. A positive immunostain for CD10 is helpful for the diagnosis of an endometrial stromal sarcoma.² S-100, Leu-7 and myelin basic protein can be used to identify nerve sheath differentiation and are immunoreactive for Vimentin.³

TREATMENT

Radiation therapy was continued; however, cisplatin was stopped. After 50-Gy radiation dose the patient was re-assessed. The patient had some degree of pain relief. Tumour had a slight shrinkage but brachytherapy was not possible. Four weeks rest considered with the hope of tumour response and CT scan was repeated.

OUTCOME AND FOLLOW-UP

Tumour response was less than 50%. The patient returned to the gynaecological oncologist for reassessment and for determining the possibility for surgical resection, but she did not refer until 2 months later when the tumour had grown and filled the vaginal canal totally. The patient was referred to the medical oncologist for palliative chemotherapy.

DISCUSSION

MPNSTs, also reported as 'malignant schwannoma', 'neurogenic sarcoma' and 'neurofibrosarcoma', are rare tumours of the neural sheath.^{1 4} MPNSTs constitute about 10% of soft tissue sarcomas and most MPNSTs arise in association with major nerve trunks, including

the sciatic nerve, brachial plexus and sacral plexus.⁵ Secondary malignant peripheral nerve sheath tumours can arise from prior radiation treatment, with a latency period of longer than 10 years.⁶ Only a few cases have been reported in the female genital tract.⁵ To our knowledge, only nine cases of MPNST of the cervix had been reported previously and none of them had evidence of NF syndromes. About 40–50% of MPNSTs are associated with a family history of NF-1.³ Among patients with NF-1, the ultimate risk of developing MPNST is approximately 2–4%.³ Ducatman *et al* estimated that the risk of developing MPNST in von Recklinghausen disease (VRHD) patients is 4600 times greater than in the general population.⁷ The mean age of presentation of MPNST in patients with VRHD is 28.7 years compared with 39.7 years in patients free of this disease.⁸ Thirty-eight per cent of the patients without history of NF who develop MPNST experience recurrence and 16% develop metastasis, most commonly in the lung, soft tissue, bone or liver. Five-year survival for these patients has been reported to be 53% and 10-year survival of only 38%.⁴ They have poorer prognosis than sporadic cases.⁴ Only a few cases of MPNST have been reported in the female genital tract.⁵ Patients with VRHD and large tumour (>5 cm) and incompletely resected tumours have the most dismal prognosis.^{4 8} Although malignant and benign lesions cannot be reliably distinguished by imaging criteria, certain findings should raise the suspicion of a malignant tumour. Malignant peripheral nerve sheath tumours tend to be larger (>5 cm). They may exhibit ill-defined margins suggesting infiltration of adjacent tissues and associated oedema. Heterogeneity with a central necrosis on cross-sectional imaging is common in malignant lesions although benign lesions with degeneration can also have a heterogeneous appearance. Similarly, calcification, more commonly associated with malignant lesions, can also be present in ancient schwannomas. MPNST can arise within a previous radiation field.⁶ MRI is the investigation of choice because it can reveal the nerve of origin and its relationship to adjacent structures. Clinical behaviour of the disease with radiological correlation can also guide one to plan the treatment.⁹ Because this tumour is a high-grade sarcoma, preoperative metastatic work-up, especially a contrast enhanced thoracic CT scan, is essential. Histologically, the tumour is composed of spindle cells arranged in cellular fascicles. Pseudocystic change or haemorrhage may be found. Varying degrees of mitosis and necrosis are seen.^{9 10} Management of patients with MPNST involves a multimodality approach. The goal of surgery is complete resection with negative margins. Adjuvant irradiation is associated with improved local control of disease. Response to chemotherapy is poor. In summary, from our findings compared with nine previous cases, we must say that the mean age of the previously reported cases was 46.5 years and the most commonly presenting symptom was vaginal bleeding and all of them having polypoid masses. Our patient was a 53-year-old woman and her presenting symptoms were purulent vaginal discharge and fever. She had the largest tumour (7 cm) size and an infiltrative tumour in contrast to other patients. In all patients except for ours, surgery was possible and therefore it is clear that they had better outcome.

Learning points

- ▶ Malignant peripheral nerve sheath tumour (MPNST) is very uncommon in the cervix.
- ▶ Surgical management is essential for MPNST management.
- ▶ Positive S-100 is an important immunohistochemistry marker for the diagnosis of MPNST.

Competing interests None.

Patient consent Obtained.

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