Case Report

Prolonged survival in a patient with isolated skull recurrence of cervical carcinoma — Case report and review of the literature

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ABSTRACT

A 58 years old woman was diagnosed with squamous cell carcinoma of the uterine cervix FIGO stage IIB and was treated by concomitant radio-chemotherapy followed by simple hysterectomy. Several months later a single metastasis to the skull was diagnosed. The patient underwent craniotomy and radiotherapy and achieved a prolonged disease free survival of 20 months.

Bone metastases from cervical carcinoma are usually part of widespread metastatic disease. Skull metastases are extremely rare. Selected cases of solitary bone metastases can be treated radically and achieve long term disease free survival.

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Introduction

Squamous cell carcinoma of the cervix (SCC) is the second most common malignancy in women in the developing world. It spreads locally by direct extension and to the pelvic and extra-pelvic lymph nodes. Hematogenous spread mainly occurs in patients whose disease involved pelvic nodes. The most frequent sites of distant metastasis are the lungs, extrapelvic nodes and liver. Bone metastases in cervical cancer are uncommon. The exact frequency of bone metastasis of cervical cancer is not known but is estimated to be in the range of 0.8%–23% (Katz et al., 1979). These ranges differ mainly according to the methods used to detect bone metastasis. The most frequent site for bone metastasis is the vertebral column (Carlson et al., 1967) followed by the pelvis and long bones (Baid et al., 1992). Metastasis to the bony calvarium is extremely rare.

Metastatic cervical cancer is usually treated by chemotherapy, and median survival in the most recent reports is about 13.3 months. Incorporation of bevacizumab to chemotherapy significantly improved the median overall survival to 17 months (Tewari et al., 2014).

However, in patients that present with a solitary disease site, aggressive local treatment can sometimes result in prolonged survival. Selected cases with lung metastases can achieve long term remission following pulmonary resection (Anderson et al., 2001). In one report, the 5 year survival for patients who underwent pulmonary metastastectomy was 46.8% (Anraku et al., 2004). Patients with isolated recurrence in the paraaortic lymph nodes can be treated with concomitant chemo-radiotherapy and 5-year survival rates between 30 and 50% have been reported (Chou et al., 2001). It appears that asymptomatic paraaortic recurrence which is detected by routine imagining carries a higher salvage rate than symptomatic recurrence (Singh et al., 2005).

We report an unusual case of an isolated metastasis of cervical cancer to the fronto-parietal bone. The patient was treated by local surgery and radiotherapy and remained disease free for 20 months.

Case description

A 58 year-old woman presented with postmenopausal bleeding and was diagnosed with squamous cell carcinoma of the uterine cervix FIGO stage IIB. PET–CT was negative for lymph nodes metastases or distant spread. She underwent concomitant chemo-radiotherapy to the pelvis followed by intracavitary brachytherapy. PET–CT scan 8 months after completion of initial therapy detected a small area of positive uptake in the cervix without evidence of pelvic nodal involvement. Biopsies from the cervix were non-conclusive and the patient underwent a simple hysterectomy and bilateral salpingo-oophorectomy. Pathological assessment did not reveal evidence of residual tumor. Physical examination and PET–CT 5 months later were negative for metastatic disease.

Seven months after surgery the patient complained of headaches and a fast growing lump on the right forehead. A lesion on her right
fronto-parietal bone was palpated and no neurologic deficits were noted. CT scan of the brain revealed a solitary lytic lesion confined solely to the fronto-parietal bone. Bone scintigraphy and Single-photon emission computed tomography (SPECT) revealed the same finding as well (Fig. 1). A whole body bone scan was negative for other sites of metastasis. The patient underwent craniotomy and adjuvant skull radiotherapy. Pathology findings were consistent with SCC identical to the primary tumor (Fig. 2). The patient was well and free of recurrent disease for 20 months, when metastases to the para-aortic lymph nodes were diagnosed.

**Discussion**

Metastasis of cervical cancer to the skull is extremely rare. (Rath et al., 2000) reported a case with multiple metastases to the scalp in a patient treated with radiotherapy for a FIGO stage IIIB tumor. Yanuk
et al. (Yanuck et al., 1991) reported on a 21-year-old woman with stage IV cervical cancer that presented with a mass on the frontal bone. Cases with a solitary skull lesion are rare and only several were reported in the English literature (Niloofar Ahmadloo et al., 2010; Agarwal et al., 2002; Abhishek et al., 2008; Mohanty et al., 2010) (Table 1). In most of the cases that have been described skull metastases developed after treatment for advanced stage primary disease, reflecting the tendency of cervical cancer to spread to the lymphatic system before hematogenous spread occurs. In our unique case the clinical stage at diagnosis was II-B and the scalp metastasis was diagnosed after a relatively long (15 months) disease free interval.

The presenting symptoms of scalp metastases in the cases described were headache or a palpable mass in the calvarium. The clinician should be aware of this rare entity and its clinical presentation.

Table 1
Reported cases of solitary skull lesions of squamous cell carcinoma of the cervix.

| Author | Age | Histology at the time of diagnosis | FIGO (stage) | Initial therapy | Time till relapse (months) | Clinical presentation at the time of relapse | Area of metastasis | Number of metastasis | Treatment at the time of recurrence | Vital status/ follow-up |
|--------|-----|----------------------------------|-------------|----------------|--------------------------|-----------------------------------------------|------------------|---------------------|-------------------------------|-----------------------|
| Present study | 58 | SCC | IIB | Concomitant radio-chemotherapy | 20 | Headache, local tenderness | Skull—parietal | 1 | Cranietomy and radiotherapy | Alive* |
| Niloofar Ahmadloo et al., 2010 (Mohanty et al., 2010) | 65 | SCC | IIib | Concomitant radio-chemotherapy | While treated | Headache | Bony calvarium | Many | Chemo radiation | Died |
| Agarwal et al., 2002 (Parsiacha et al., 2006) | 60 | SCC | IIib | Radio + brachytherapy | 2 | Local tenderness and vaginal bleeding | Skull—temporo-parietal | 1 | Radiotherapy | Alive* |
| Abhishek et al., 2008 (16) | 53 | Adenocarcinoma | Ila | Surgery + radiotherapy | 4 | Local tenderness, seizures | Frontal skull and superior sagittal sinus thrombosis | 1 | Chemo radiation | Alive* |
| Mohanty et al., 2010 (17) | 54 | SCC | IIib | Radio + brachytherapy | 2 | Local tenderness | Occipital lobe | 1 | Radiotherapy | Alive* |

* At current time of publication of article.

Conflict of interest statement
We, the authors of the following manuscript, declare that we have no conflicts of interest regarding this submitted paper.

References
Abhishek, A., Ouseph, M.M., Sharma, P., Kamal, V., Sharma, M., 2008. Bulky scalp metastasis and superior sagittal sinus thrombosis from a cervical adenocarcinoma: an unusual case. J. Med. Imaging Radiat. Oncol. 52 (1), 91–94 (Feb).
Agarwal, U., Daiyha, P., Chauhan, A., Sangwan, K., Purwar, P., 2002. Scalp metastasis in carcinoma of the uterine cervix—a rare entity. Gynecol. Oncol. 87 (3), 310–312 (Dec).
Anderson, T.M., McMahon, J.J., Nwogu, C.E., Pombo, M.W., Urschel, J.D., Driscoll, D.L., et al., 2001. Pulmonary resection in metastatic uterine and cervical malignancies. Gynecol. Oncol. 83 (3), 472–476 (Dec).
Anraku, M., Yokoi, K., Nakagawa, K., Fujisawa, T., Nakajima, J., Akiyama, H., et al., 2004. Pulmonary metastases from uterine malignancies: results of surgical resection in 133 patients. J. Thorac. Cardiovasc. Surg. 127 (4), 1107–1112 (Apr).
Baid, B.L., Kumar, L., Chander, S., Rath, G.K., Kumar, S., Kriplani, A., et al., 1992. Bone metastases in the patients of carcinoma cervix. Indian J. Cancer 29 (2), 71–75 (Jun).
Carlson, V., Delcos, L., Fletcher, G.H., 1967. Distant metastases in squamous-cell carcinoma of the uterine cervix. Radiology 88 (5), 961–966 (May).
Chou, H.H., Wang, C.C., Lai, C.H., Hong, J.H., Ng, K.K., Chang, T.C., et al., 2001. Isolated paraaortic lymph node recurrence after definitive irradiation for cervical carcinoma. Int. J. Radiat. Oncol. Biol. Phys. 51 (2), 442–448 (Oct 1).
Katz, R.D., Alderson, P.O., Rosenstein, N.B., Bowerman, J.W., Wagner Jr., H.N., 1979. Utility of bone scanning in detecting occult skeletal metastases from cervical carcinoma. Radiology 133 (2), 469–472 (Nov).
Mohanty, A., Dutta, D., Das, S., Samanta, D., Senapati, S., 2010. Skull metastasis from carcinoma of the cervix: a rare case and review of the literature. J. Obstet. Gynaecol. Res. 36 (2), 441–443 (Apr).
Niloofar Ahmadloo, F.B., Omidvari, Shapour, Ansari, Mansoor, Mosalaei, Ahmad, Mohammadanpanah, Mohammad, 2010. Bony calvarium as the sole site of metastases in squamous cell carcinoma of the uterine cervix. Middle East J. Cancer 18 (1), 185–188.
Parsiacha, R., Tiwari, A., Aggarwal, T., Lal, P., 2006. Carcinoma of uterine cervix with isolated scalp metastasis to fibula and its unusual behavior: report of a case and review of literature. J. Cancer Res. Ther. 2 (2), 79–81 (Apr–Jun).
Rath, G.K.M.B., Jayalakshmi, S., et al., 2000. Scalp metastasis of a uterine cervix carcinoma. Obstet. Gynaecol. Today 8, 488–489.
Singh, A.K., Grigsby, P.W., Rader, J.S., Mutch, D.G., Powell, M.A., 2005. Cervix carcinoma, concurrent chemoradiotherapy, and salvage of isolated paraaortic lymph node recurrence. J. Radiol. Oncol. Biol. Phys. 61 (2), 450–455 (Feb 1).
Tewari, K.S., Sill, M.W., Long 3rd, H.J., Benson, R.T., Huang, H., Ramondetta, L.M., et al., 2014. Improved survival with bevacizumab in advanced cervical cancer. N. Engl. J. Med. 370 (8), 734–743 (Feb 20).
Yanuck, M.D., Kaufman, R.H., Woods, K.V., Adler-Storchz, K., 1991. Cervical carcinosarcoma metastatic to the skull, heart, and lungs: analysis for human papillomavirus DNA. Gynecol. Oncol. 42 (1), 94–97 (Jul).