

Bony Calvarium as the Sole Site of Metastases in Squamous Cell Carcinoma of the Uterine Cervix

Niloofer Ahmadloo, Farzad Bidouei, Shapour Omidvari, Mansour Ansari, Ahmad Mosalaei, Mohammad Mohammadianpanah*

Radiation Oncology Department, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Isolated skeletal metastasis to the bony calvarium is extremely rare in patients with squamous cell carcinoma of the uterine cervix. We describe the clinical and imaging findings in a case of squamous cell carcinoma of the uterine cervix with metastases to the bony calvarium as the sole site of metastasis. The patient was a 65-year-old woman with squamous cell carcinoma of the uterine cervix, FIGO stage IIIB, whose initial treatment was chemoradiation therapy. After 22 sessions of external-beam radiation, she developed headaches. On physical examination she had skull bone tenderness. On plain skull X-ray, there were osteolytic bony lesions. Brain MRI showed multiple enhancing skull bone metastases. Eventually, a whole body bone scintigraphy revealed isolated diffuse increased activity in the bony calvarium. In the literature review, we found only three similar cases of cervical cancer with scalp metastases and involvement of the bony calvarium.

Keywords: Squamous cell carcinoma, Uterine cervix, Bony calvarium, Metastasis

Introduction

Squamous cell carcinoma of the uterine cervix is a major world health problem for women¹. It is highly prevalent in developing countries, where the vast majority of cases occur. Cervical cancer is the sixteenth leading cause of death from cancer in women and the third leading cause of death from gynecological cancer in Iran. Age-standardised incidence rate of cervical cancer have increased slightly from 394 to 469 per 100 000

population in Iran during 2003-2006.²

Lymphatic or hematogenous spread occurs depending on the tumor stage, but dissemination does not always follow an orderly sequence and occasionally a small carcinoma may be seen infiltrating the pelvic lymph nodes or producing distant metastasis.³ The most frequent sites of distant metastases are the lungs, extrapelvic nodes and liver. Bone metastasis in cervical cancer is uncommon and mostly involves

◆Corresponding Author:

Mohammad Mohammadianpanah, MD
Cancer Research Center,
Department of Radiation
Oncology, Namazi Hospital,
71936 13311 Shiraz, Iran,
Tel/Fax: +98-711-647 4320
Email: mohpanah@sums.ac.ir,
mohpanah@gmail.com

the vertebral column and pelvic bones.⁴⁻¹⁰

We report a patient with squamous cell carcinoma of the uterine cervix who developed metastases to the bony calvarium as the sole site of metastasis during treatment of the primary tumor.

Case report

In June 2009, a 65-year-old woman presented with progressive vaginal bleeding. On gynecological examination, she had a large (6×4×4 cm) fixed cervical mass invading the parametrium. A computed tomography (CT) scan of the abdomen and pelvis showed a large cervical mass extending to the pelvic sidewall, causing hydronephrosis. A biopsy of the cervical mass revealed well-differentiated nonkeratinizing squamous cell carcinoma. At that time, metastatic work-up including CT scan of the chest, complete blood count, liver and renal function tests were within normal limits and the patient's FIGO stage was IIIb.

Therefore, the patient underwent concurrent chemoradiation. Five weeks after the initial work-up, and following the 22 sessions of external-beam radiotherapy, the patient developed headaches. On physical examination, there was tenderness on the skull bones without a palpable mass. Plain X-ray of the skull showed osteolytic lesions in the

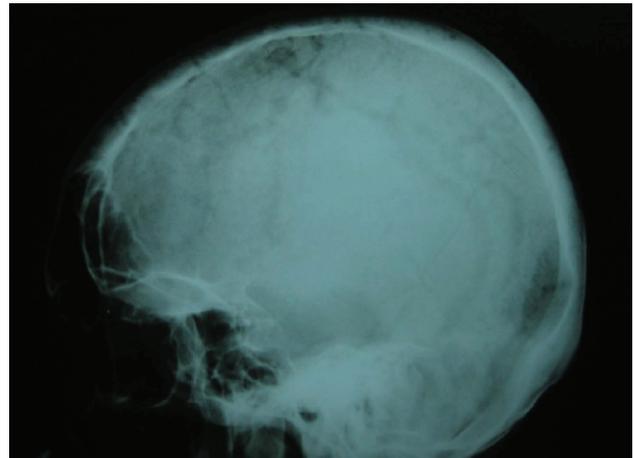


Figure 1. X-ray of the skull showing multiple osteolytic lesions in the bony calvarium.

bony calvarium (Figure 1). A brain MRI disclosed multiple enhancing lesions in the bony calvarium highly suggestive of skull bone metastases associated with normal brain parenchyma (Figure 2). Eventually, a whole-body bone scintigraphy revealed isolated diffuse increased activity in the bony calvarium (Figure 3). In addition, her serum level of alkaline phosphatase was elevated. Therefore, the patient's locoregional treatment was terminated and she was scheduled for systemic chemotherapy with palliative cranial radiotherapy. The patient received three cycles of chemotherapy that consisted of cisplatin 80 mg/m²

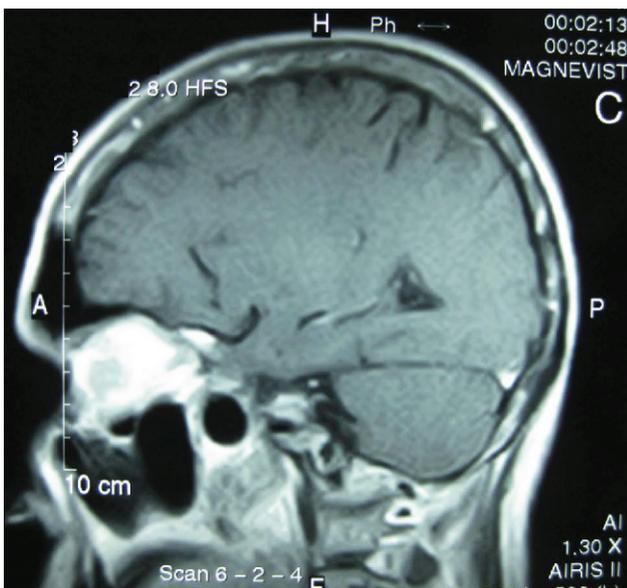


Figure 2. Sagittal contrast-enhanced T1-weighted MR image of the brain showing multiple enhancing lesions in the bony calvarium.

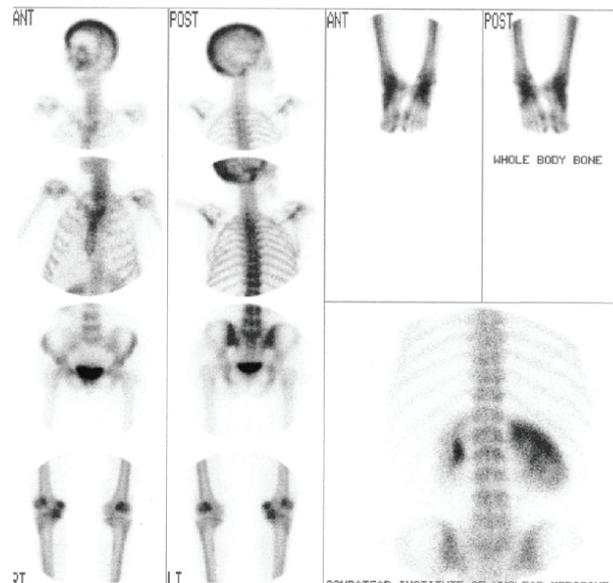


Figure 3. Whole-body bone scintigraphy showing isolated diffuse increased activity in the bony calvarium.

Table 1. Patient characteristics, treatment and outcome in the literature and present study.

Author	Age stage	FIGO (months)	DFS	Vital status	Treatment	OS (months)
Agarwal et al., 2002	60	IIIb	1	alive*	EBRT + ICBT (primary)	>7*
Abhishek et al., 2008	53	IIA	4	alive*	WBRT (metastatic) EBRT (primary)	>7*
Present study	65	IIIb	0	died	ChT + WBRT (metastatic) CRT (primary) ChT ± WBRT(metastatic)	8*

* Until the last follow up time

EBRT= External beam radiotherapy; ICBT= Intracavitary brachytherapy; WBRT= Whole brain radiotherapy; ChT= Chemotherapy; CRT= Chemoradiation; DFS=Disease-free survival; OS=Overall survival

on day 1 and 5-fluorouracil 750 mg/m² on days 1 to 3, followed by four cycles of chemotherapy that consisted of docetaxel 75 mg/m² and cisplatin 80 mg/m² on day 1 and 5-fluorouracil 750 mg/m² on days 1 to 3; however, the patient did not achieve response and died six months later due to extensive locoregional disease.

Discussion

Squamous cell carcinoma of the uterine cervix is highly prevalent in developing countries.¹ Distant spread in this cancer is a late process and mostly involves the liver, lungs and bones, especially with poorly differentiated subtypes.^{9, 10} The incidence of bone metastases in cervical cancer is low, ranging between 0.8% and 23% in different studies, and involvement of bony calvarium is rare.⁴⁻⁹ We reviewed the literature and found three similar cases with cervical cancer metastases to the scalp and calvarium involvement.^{7, 10, 11} Table 1 compares the patients' characteristics, treatment and outcome in the present study and the literature.

The prognosis in patients with cervical cancer and bone metastases is poor and the best treatment for these patients should be based on their quality of life, rather than aggressive approaches.¹²

Some studies recommend bone scintigraphy for all patients diagnosed with cervical cancer even in its early stages;¹³ however, it is not yet considered part of the standard work-up. Radiotherapy provides good palliation for

symptomatic skeletal metastases in these patients.^{6, 9} Combined cisplatin-based chemotherapy may also be considered for some patients with good performance status and adequate renal function.¹²

References

1. Parkin DM, Bray F, Ferlay J. Global cancer statistics, 2002. *CA Cancer J Clin* 2005;55:74-108.
2. Mousavi SM, Gouya MM, Ramazani R, Davanlou M, Hajsadeghi N, Seddighi Z. Cancer incidence and mortality in Iran. *Ann Oncol* 2009 Mar;20(3):556-63.
3. Ferrandina G, Salutari V, Testa A, Zannoni GF, Petrillo M, Scambia G. Recurrence in skeletal muscle from squamous cell carcinoma of the uterine cervix: A case report and review of the literature. *BMC Cancer* 2006;6:169.
4. Hong JH, Tsai CS, Lai CH, Chang TC, Wang CC, Chou HH, et al. Recurrent squamous cell carcinoma of cervix after definitive radiotherapy. *Int J Radiat Oncol Biol Phys* 2004;60:249-57.
5. Mosalaei A, Mohammadianpanah M, Omidvari S, Ahmadloo N. High-dose rate brachytherapy in the treatment of carcinoma of uterine cervix: Twenty-year experience with cobalt after-loading system. *Int J Gynecol Cancer* 2006;16:1101-5.
6. Ratanatharathorn V, Powers WE, Steverson N, Han I, Ahmad K, Grimm J. Bone metastasis from cervical cancer. *Cancer* 1994;73:2372-9.
7. Agarwal U, Dahiya P, Chauhan A, Sangwan K, Purwar P. Scalp metastasis in carcinoma of the uterine cervix- a rare entity. *Gynecol Oncol* 2002;87:310-2.
8. Matsuyama T, Tsukamoto N, Imachi M, Nakano H. Bone metastasis from cervix cancer. *Gynecol Oncol* 1989;32:72-5.
9. Kim RY, Wepplemann B, Salter MM, Brascho DJ. Skeletal metastasis from cancer of the uterine cervix: Frequency, pattern and radiotherapeutic significance.

- Int J Radiat Oncol Biol Phys* 1987;13:705-8.
10. Abhishek A, Ouseph MM, Sharma P, Kamal V, Sharma M. Bulky scalp metastasis and superior sagittal sinus thrombosis from a cervical adenocarcinoma: An unusual case. *J Med Imaging Radiat Oncol* 2008;52:91-4.
 11. Katsarkas A, Seemayer TA. Bilateral temporal bone metastases of a uterine cervix carcinoma. *J Otolaryngol* 1976;5:315-8.
 12. Mountzios G, Dimopoulos MA, Bamias A, Vourli G, Kalofonos H, Aravantinos G, et al. Randomized multicenter phase II trial of cisplatin and ifosfamide with or without paclitaxel in recurrent or metastatic carcinoma of the uterine cervix: A Hellenic Cooperative Oncology Group (HeCOG) study. *Ann Oncol* 2009;20:1362-8.
 13. Kumar R, Gupta R, Khullar S, Padhy AK, Julka PK, Malhotra A. Bone scanning for bone metastasis in carcinoma cervix. *J Assoc Physicians India* 2000;48:808-10.