

Intracranial metastases from carcinoma of the cervix

Agrawal A, Kumar A, Sinha A K, Kumar M, Pandey S R, Khaniya S

ABSTRACT

Uterine cervix carcinoma usually spread by local extension and through the lymphatics to the retroperitoneal lymph nodes. Brain metastases are extremely rare in the course, are usually seen late and have poor prognosis. We report a 49-year-old woman with squamous cell carcinoma of the cervix who developed right parieto-occipital lobe metastasis after three years of treatment of the primary disease. The presenting symptoms of the metastatic disease were hemiparesis, headache, and vomiting. Her hemiparesis improved after surgical excision of the metastasis. Treatment in these cases is mainly palliative but may offer symptomatic relief and improvement in the quality of life.

Keywords: brain metastases, carcinoma of cervix, gynaecological malignancy, intracranial metastases

Singapore Med J 2007;48(5):e154–e156

INTRODUCTION

Carcinoma of the cervix usually spreads contiguously to the adjacent organs, by lymphatics to the pelvic and para-aortic lymph nodes and by the haematogenous route to distant organs.⁽¹⁾ The common sites of distant metastasis are lung, supraclavicular lymph nodes, liver, and bones.^(1,2) Central nervous system (CNS) involvement by cervical carcinoma is uncommon.⁽¹⁻⁶⁾ Because of the rarity of this event, there are very few reports in the literature regarding the optimal management and prognosis of these patients. We report a successfully-managed case of squamous cell carcinoma of the cervix with a right parieto-occipital lobe metastasis, and review the relevant literature.

CASE REPORT

A 49-year-old woman, a known case of carcinoma cervix, presented with headache and vomiting of three days duration, altered sensorium for one day, and left-sided hemiplegia for one day. Neurologically, she had altered sensorium (Glasgow coma score: eye opening nil, verbal response nil and localising to

pain). She had a left-sided hemiplegia of grade I with exaggerated deep tendon reflexes and extensor plantar. Her general and systemic examination was unremarkable. She was a known case of carcinoma of the cervix (Stage IIb) diagnosed three years ago; histologically, it was a moderately-differentiated squamous cell carcinoma. She received radiotherapy (EBRT 4000 rad in 18 fractions and three cycles of brachytherapy). The patient remained asymptomatic for three years after completion of treatment.

Computed tomography (CT) of the brain showed two lesions in the right posterior parietal and occipital regions, associated with extensive brain oedema, mass effect, and midline shift with haemorrhage (Fig. 1). Ultrasonography of the abdomen showed two small nodules in the liver. There was no evidence of local recurrence. She was started on anti-epileptics and anti-oedema measures. In view of the localised nature of the lesion and neurological deficits, surgical excision of the tumour was planned. Following a right parieto-occipital craniotomy with excision of the tumour, the postoperative recovery of the patient was uneventful and her neurological deficits improved. She became conscious, was obeying commands and her weakness improved to grade IV+/V. Histological examination of the resected specimen revealed that much of the tumour was necrotic. Surviving portions showed moderately-differentiated squamous cell carcinoma (Fig. 2). Whole brain irradiation was planned as adjuvant treatment, but was not performed because the patient refused further management.

DISCUSSION

Brain metastases from cervical cancer are extremely rare. However, an increase in the incidence of brain metastases from cervical cancer may be related to an improved treatment of the primary lesion and thus, a better survival of these patients.⁽⁵⁾ Few reports have been published on this clinical entity. The incidence of brain metastases in this setting has been reported to be 0.5%–1.2% in various clinical studies.^(3,7) These patients usually present in the sixth decade of life.⁽³⁾ The reported interval between the initial diagnosis of cervical cancer and presentation of the brain metastasis is variable in different cases, ranging from the time of first diagnosis of the primary tumour

Department of
Surgery,
BP Koirala Institute
of Health Sciences,
Dharan,
Nepal

Agrawal A, MCh
Assistant Professor in
Neurosurgery

Kumar A, MS
Professor and Head

Kumar M, MS
Associate Professor

Khaniya S, MS
Junior Resident

Department of
Pathology

Sinha AK, MD
Associate Professor

Pandey SR, MD
Assistant Professor

Correspondence to:
Dr Amit Agrawal
Tel: (977) 25 525 555
ext: 2047
Fax: (977) 25 520 251
Email: dramitagralwal
@gmail.com

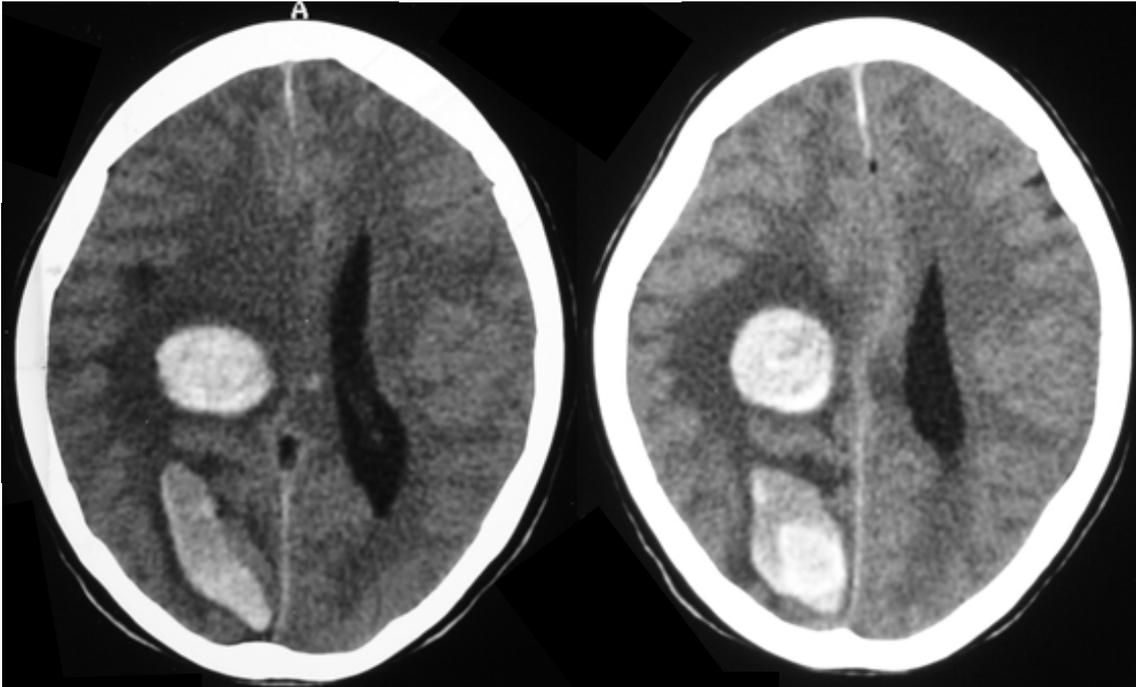


Fig. 1 Axial CT images of the brain show a metastasis in the right parieto-occipital region with haemorrhage, perilesional oedema and mass effect.

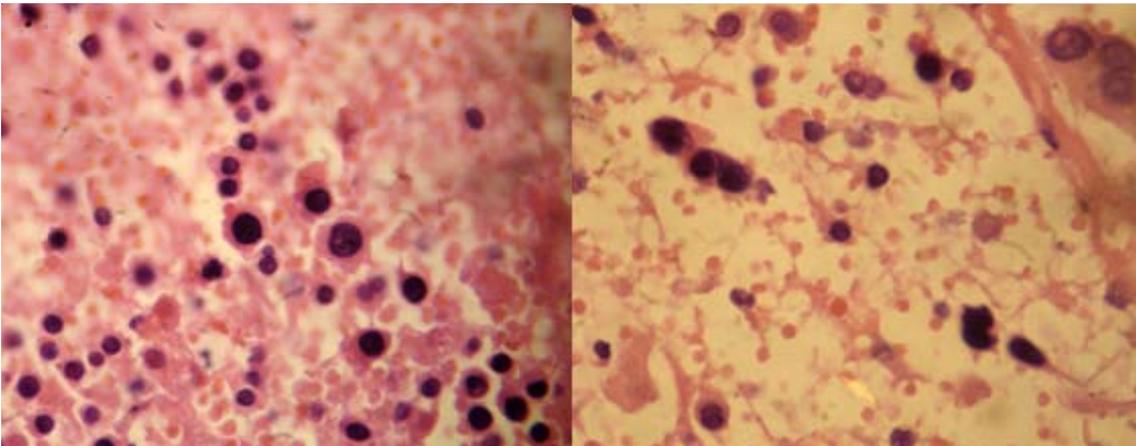


Fig. 2 Photomicrographs of the clot show keratinised epithelial cells with hyperchromatic irregular nucleus. Few cells are multinucleated. Cells are scattered in a haemorrhagic background (Haematoxylin & eosin, $\times 1000$).

to eight years, with an overall mean of three months.^(2-4,8) The route of spread to the brain from cervical cancer is haematogenous. However, the presence of intravascular tumour cells in the cerebral circulation does not always lead to the development of brain metastases. The development of brain metastases depends on the host immune response, tissue neovascularisation, the number of tumour emboli, and characteristics of the tumour.^(9,10)

Brain metastases are more frequently seen with poorly-differentiated cervical tumours.⁽¹⁰⁾ More than 80% of brain metastases are located in the supratentorial region of the brain, a phenomenon that

may be related to the vascularity and the spatial characteristics of this region.^(3,10) In our case, the tumour was also located in the supratentorial region. Although the clinical presentation of a patient with brain metastasis is likely to depend on the site of the lesion, the metastatic tumour, surrounding tissue oedema, or both, is responsible for the neurological symptoms. Headache and hemiparesis are the most commonly-reported signs and symptoms in these settings.^(3,6,11)

The treatment of brain metastasis usually involves radiation therapy, surgery, or both, depending on the clinical situation. In general, surgical excision is

Table I. Summary of management options and outcome.

Authors	Types of treatment given	Outcome
Salvati et al ⁽¹⁴⁾	palliative radiotherapy	poor
Tajran and Berek ⁽¹⁵⁾	steroids and radiation therapy	poor
Schneider et al ⁽¹⁶⁾	surgery	poor
Kastritis et al ⁽¹⁷⁾	palliation	poor but may offer symptom relief
Lefkowitz et al ⁽⁵⁾	palliation	poor
Friedman et al ⁽²⁾	palliation	poor
Kumar et al ⁽⁴⁾	surgery and palliative radiation therapy	poor
Nagar et al ⁽¹⁾	palliative radiotherapy	poor
Erhan et al ⁽¹⁸⁾	adjuvant radiotherapy and chemotherapy	died four months after disease recurrence
Viswanathan et al ⁽⁹⁾	prophylactic cranial irradiation	little benefit
Ziainia and Resnik ⁽²⁰⁾	palliative radiation therapy	poor prognosis and little benefit
Amita et al ⁽⁶⁾	surgery and whole brain radiotherapy	six months disease free
Ikeda et al ⁽¹²⁾	surgery and radiotherapy (three cases), and radiotherapy (five cases)	median survival of three months
Gaussmann et al ⁽²¹⁾	radiotherapy	spontaneous remission

performed in cases with a solitary lesion or adjacent multiple metastases, cases with diagnostic uncertainty, or with life-threatening and critically-located metastases. Patients with nonadjacent, multiple, or inoperable lesions are usually treated with palliative whole brain radiotherapy. Surgical excision of the solitary lesion combined with adjuvant postoperative radiotherapy yields a better survival rate than radiotherapy alone.^(6,12) Radiation surgery, stereotactic radiation therapy, and chemotherapy have also been used for the management of brain metastases with variable success. Surgery should be strongly considered in patients of cervical carcinoma with solitary resectable brain metastases.⁽⁶⁾ CNS metastases from cervical cancer carry a poor prognosis. Most studies have reported a median survival of only a few months, but there are a few anecdotal reports of long-term, disease-free survival in these patients.⁽¹⁻²¹⁾ (Table I). In conclusion, our case

provides an example of successful management of brain metastasis in a case of cervical carcinoma with the use of surgery, and improvement in the quality of life.

REFERENCES

- Nagar YS, Shah N, Rawat S, Kataria T. Intracranial metastases from adenocarcinoma of cervix: a case report. *Int J Gynecol Cancer* 2005; 15:561-3.
- Friedman M, Nissenbaum M, Lakier R, Browde S. Brain metastases in early cancer of the uterine cervix. A case report. *S Afr Med J* 1983; 64:498-9.
- Cormio G, Pellegrino A, Landoni F, et al. Brain metastases from cervical carcinoma. *Tumori* 1996; 82:394-6.
- Kumar L, Tanwar RK, Singh SP. Intracranial metastases from carcinoma cervix and review of literature. *Gynecol Oncol* 1992; 46:391-2.
- Lefkowitz D, Asconape J, Biller J. Intracranial metastases from carcinoma of the cervix. *South Med J* 1983; 76:519-21.
- Amita M, Sudeep G, Rekha W, Yogesh K, Hemant T. Brain metastasis from cervical carcinoma - a case report. *MedGenMed* 2005; 7:26.
- Saphner T, Gallion HH, Van Nagell JR, Kryscio R, Patchell RA. Neurologic complications of cervical cancer. A review of 2261 cases. *Cancer* 1989; 64:1147-51.
- Robinson JB, Morris M. Cervical carcinoma metastatic to the brain. *Gynecol Oncol* 1997; 66:324-6.
- Nielsen SL, Posner JB. Brain metastasis localized to an area of infarction. *J Neurooncol* 1983; 1:191-5.
- Weed JC, Graff AT, Shoup B, Tawfik O. Small-cell undifferentiated (neuroendocrine) carcinoma of the uterine cervix. *J Am Coll Surg* 2003; 197:44-51.
- Kishi K, Nomura K, Miki Y, Shibui S, Takakura K. Metastatic brain tumors. A clinical and pathologic analysis of 101 cases with biopsy. *Arch Pathol Lab Med* 1982; 106:133-5.
- Ikeda SI, Yamada T, Katsumata N, et al. Cerebral metastasis in patients with uterine cervical cancer. *Jpn J Clin Oncol* 1998; 28:27-9.
- Sawa H, Taomoto K, Tamaki N, Obayashi C, Nishimura R. Metastatic bronchogenic carcinoma with human chorionic gonadotropin production manifesting as cerebellar hemorrhage - case report. *Neurol Med Chir (Tokyo)* 2001; 41:406-10.
- Salvati M, Caroli E, Orlando ER, et al. Solitary brain metastases from uterus carcinoma: report of three cases. *J Neurooncol* 2004; 66:175-8.
- Tajran D, Berek JS. Surgical resection of solitary brain metastasis from cervical cancer. *Int J Gynecol Cancer* 2003; 13:368-70.
- Schneider J, Barrenetxea G, del Mar Centeno M, et al. [Cerebral metastasis of a cervix carcinoma] *Zentralbl Gynakol* 1990; 112:1245-8. German.
- Kastritis E, Mouloupoulos LA, Politi E, et al. Intramedullary spinal cord and leptomeningeal metastases in a patient with carcinoma of the uterine cervix. *Gynecol Oncol* 2006; 102:124-7.
- Erhan Y, Dikmen Y, Yucebilgin MS, et al. Large cell neuroendocrine carcinoma of the uterine corpus metastatic to brain and lung: case report and review of the literature. *Eur J Gynaecol Oncol* 2004; 25:109-12.
- Viswanathan AN, Deavers MT, Jhingran A, et al. Small cell neuroendocrine carcinoma of the cervix: outcome and patterns of recurrence. *Gynecol Oncol* 2004; 93:27-33.
- Ziainia T, Resnik E. Hemiballismus and brain metastases from squamous cell carcinoma of the cervix. *Gynecol Oncol* 1999; 75:289-92.
- Gaussmann AB, Imhoff D, Lambrecht E, Menzel C, Mose S. Spontaneous remission of metastases of cancer of the uterine cervix. *Onkologie* 2006; 29:159-61.