Case Report

Brain metastasis in soft-tissue sarcoma

Ashutosh Das Sharma, Jyoti Poddar, Sonal Patel, Ubrangala Suryanarayan Kunikullaya

Department of Radiotherapy, Gujarat Cancer Research Institute, Ahmedabad, Gujarat, India

ABSTRACT

Brain metastasis in soft-tissue sarcoma is an uncommon event. It usually follows lung metastasis, with a lag period between the occurrences of the two events. We present such a case of soft-tissue sarcoma with lung and brain metastases, with the intention of drawing attention toward this rare occurrence and need of anticipation of brain metastasis in patients who are asymptomatic for the same and have already developed lung metastasis.

Key words: Brain metastasis, lung metastasis, soft-tissue sarcoma

INTRODUCTION

Brain metastasis is a relatively uncommon occurrence in the natural history of soft-tissue sarcoma, accounting for 1–6% of total patients, and usually follows lung metastasis.[1-3] Among different histological subtypes, it is more frequently seen in leiomyosarcoma, rhabdomyosarcoma, and malignant fibrous histiocytoma.[1] The purpose of this case report is to increase the index of suspicion and a more vigilant workup to detect brain metastasis in these patients and an early intervention to improve the outcome of therapy and overall survival.

CASE REPORT

A 31-year-old male with a cystic swelling of the second toe of left foot was operated in October 2013 in rural setup and was sent to our department for further management with a histopathological report which was suggestive of malignancy. Slide review and immunohistochemistry reports confirmed the diagnosis of epithelioid sarcoma of large cell type (vimentin strongly positive, S-100 focal positive and negative for P63, HMB45, CD20, CD30, CD34, desmin, and epithelial membrane antigen). Abdominal and pelvic ultrasonography and chest X-ray studies were normal. However, computed tomography (CT) scan of thorax revealed multiple lung metastases [Figure 1]. Imaging for brain metastasis was not performed at that time due to the absence of any sign or symptom of central nervous system (CNS) involvement. In view of the metastatic status, six cycles of ifosfamide with doxorubicin were planned. He defaulted the treatment after three cycles only and was lost to follow-up. He returned 6 months later when a fresh CT scan of thorax showed that the lung metastases have partially responded to the therapy and, thus, chemotherapy was resumed. During the fourth cycle of chemotherapy, the patient had an episode of convulsions. CT scan of brain was suggestive of brain metastasis [Figure 2]. He was treated with palliative whole-brain radiotherapy (30 Gy in 10 fractions) with parallel opposed fields on a 6 MV linear accelerator. The patient showed progressive disease at the end of chemotherapy and was advised best supportive care.

DISCUSSION

In soft-tissue sarcoma, metastasis to brain is an unusual occurrence and mostly follows secondary in the lung with

Address for correspondence: Dr. Ashutosh Das Sharma, Department of Radiotherapy, Gujarat Cancer Research Institute, Ahmedabad, Gujarat, India.
E-mail: sharmaashutoshdas@gmail.com

Access this article online

Quick Response Code:

Website: www.ccij-online.org

DOI: 10.4103/2278-0513.186109

Cite this article as: Sharma AD, Poddar J, Patel S, Kunikullaya US. Brain metastasis in soft-tissue sarcoma. Clin Cancer Investig J 2016;5:336-8.

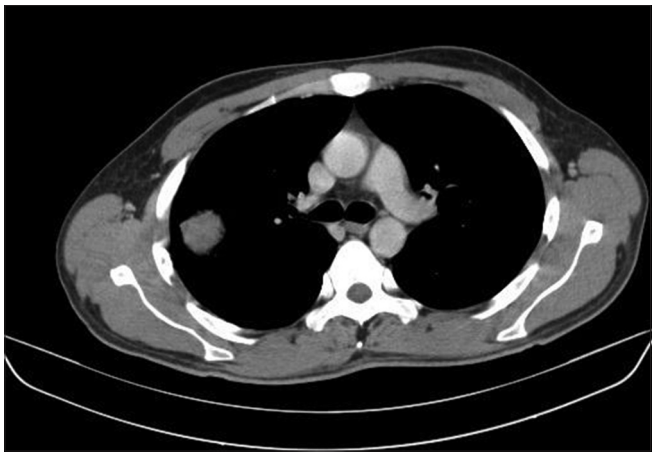

Figure 1: Computed tomography scan thorax showing lung metastasis

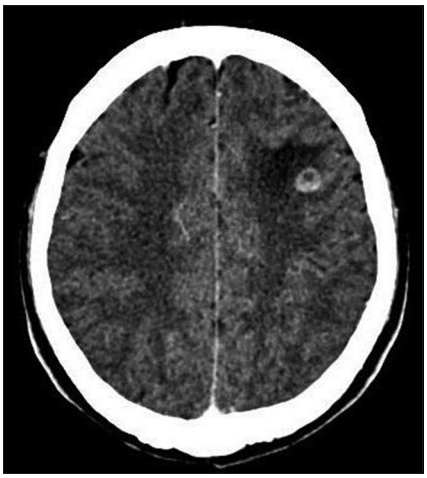

Figure 2: Computed tomography scan brain showing brain metastasis

a considerable lag period (average 49.5 weeks).[1,2] The incidence of brain metastasis is estimated to be <1–6% by various authors.[2-4] The increased incidence of brain metastasis in soft-tissue sarcomas in these later studies may be attributed to the prolonged survival achieved by successful systemic chemotherapy and the poor penetration of the blood–brain barrier by these agents.[5] This predisposes the brain to secondary while the patient lives with the benefits of chemotherapy. Higher probability of brain metastasis is associated with leiomyosarcoma, liposarcoma, malignant fibrous histiocytoma, and rhabdomyosarcoma of the extremities.[2] Furthermore, the histological grade is considered an independent risk factor for the development of lung and brain metastases.[6] It is imperative to be more vigilant in patients with these histological subtypes and grades, and these groups should be screened for lung metastasis as soon as the diagnosis is confirmed by histopathology. These patients should also be screened for brain metastasis at the first appearance of signs and symptoms of CNS involvement or 6–8 months (lag period) after the appearance of lung metastasis, whichever is the earliest. The management options of a case with brain metastasis are metastasectomy, palliative whole-brain radiotherapy, or gamma knife surgery.[7] On postmetastasectomy, survival benefit of 7–8 months has been shown in case series.[2] A good performance score and parenchymal metastasis are candidates for surgical resection while the presence of lung metastasis is not a contraindication for cranial surgery.[8] Leptomeningeal metastases, which are three times less frequent than parenchymal metastases, are not amenable to surgical resection.[2] For these cases, gamma knife surgery is another option. For patients who are not suitable candidates for craniotomy or gamma knife surgery, whole-brain radiation therapy is a commonly used modality of palliation. Therapy in soft-tissue sarcoma with brain metastasis increases the medial survival to 4–6 months from that of 1–2 months in case of untreated patients.[9] Considering the long lag period between the appearance of lung and brain metastases, prophylactic chemotherapy using BCNU, CCNU, MeCCNU, or prophylactic cranial irradiation could be an interesting approach to prevent CNS involvement.[1] Pazopanib, a multitargeted tyrosine kinase inhibitor, has shown to be effective in increasing progression-free survival in metastatic disease after failure of standard chemotherapy.[10] However, the overall outcome is poor even with the best intervention.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. España P, Chang P, Wiernik PH. Increased incidence of brain metastases in sarcoma patients. Cancer 1980;45:377-80.
2. Espat NJ, Bilsky M, Lewis JJ, Leung D, Brennan MF. Soft tissue sarcoma brain metastases. Prevalence in a cohort of 3829 patients. Cancer 2002;94:2706-11.
3. Wronski M, Arbit E, Burt M, Perino G, Galicich JH, Brennan MF. Resection of brain metastases from sarcoma. Ann Surg Oncol 1995;2:392-9.
4. Aronson SM, Garcia JH, Aronson BE. Metastatic neoplasms of the brain: Their frequency in relation to age. Cancer 1964;17:558-63.
5. Gercovich FG, Luna MA, Gottlieb JA. Increased incidence of cerebral metastases in sarcoma patients with prolonged survival from chemotherapy. Report of cases of leiomysarcoma and chondrosarcoma. Cancer 1975;36:1843-51.
6. Sawamura C, Matsumoto S, Shimoji T, Ae K, Okawa A. Lymphadenectomy and histologic subtype affect overall survival of soft tissue sarcoma patients with nodal metastases. Clin Orthop Relat Res 2013;471:926-31.
7. Flannery T, Kano H, Niranjan A, Monaco EA 3rd, Flickinger JC, Kofler J, *et al*. Gamma knife radiosurgery as a therapeutic strategy

for intracranial sarcomatous metastases. Int J Radiat Oncol Biol Phys 2010;76:513-9.
8. Bindal RK, Sawaya RE, Leavens ME, Taylor SH, Guinee VF. Sarcoma metastatic to the brain: Results of surgical treatment. Neurosurgery 1994;35:185-90.
9. Gupta T, Laskar S, Gujral S, Muckaden MA. Brain metastases in soft tissue sarcomas: Case report and literature review. Sarcoma 2005;9:147-50.
10. van der Graaf WT, Blay JY, Chawla SP, Kim DW, Bui-Nguyen B, Casali PG, *et al*. Pazopanib for metastatic soft-tissue sarcoma (PALETTE): A randomised, double-blind, placebo-controlled phase 3 trial. Lancet 2012;379:1879-86.