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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/15984
DOI URL: <http://dx.doi.org/10.21474/IJAR01/15984>



RESEARCH ARTICLE

BRAIN METASTASES FROM PRIMARY UTERINE CERVICAL CANCER: A CASE REPORT AND A LITERATURE REVIEW

F.Z Farhane^{1,2}, Z. Alami^{1,2}, W. Hassani^{1,2} and T. Bouhafa^{1,2}

1. Faculty of Medicine and Pharmacy, Sidi Mohammed Ben-Abdellah University, Fes, Morocco.
2. Radiotherapy Department, Oncology Hospital, Hassan II University Hospital, Fes, Morocco.

Manuscript Info

Manuscript History

Received: 05 November 2022

Final Accepted: 09 December 2022

Published: January 2023

Abstract

Background : Brain metastases from primary cervical cancer are very rare. We present this report, to describe a case of brain metastases from primary uterine cervical cancer and to conduct a literature review about clinical presentation, treatment, and prognosis of this disease.

Case Presentation : A 51-year-old woman, followed since 2017 for squamous cell carcinoma of the cervix for which she had undergone surgical treatment and received radiotherapy, being asymptomatic for 4 years after completion of treatment. She is brought to the Emergency Department in February 2021 for intracranial hypertension syndrome associated with behavioral troubles, symptoms that developed progressively during the last two months before her consultation. The clinical examination found a conscious patient without sensory or motor deficit and without damage to the cranial nerves. A cerebral Magnetic Resonance Imaging (MRI) revealed a left frontal tumor process 50 mm in diameter enhanced peripherally after injection of contrast product, necrotic and surrounded by significant cerebral edema determining a mass effect on the median structures with signs of engagement under falx (figure 1). The patient underwent a surgical resection of the tumor, the mass being removed en bloc. Histopathological and immunohistochemical examination of the resected tumor revealed a metastatic origin from a primary cervical squamous cell carcinoma. A postoperative brain scan revealed the persistence of a left frontal tumor process 14 mm in diameter with significant perilesional edema. The patient subsequently received total brain radiotherapy at a dose of 37.5 Gy (15 fractions of 2.5 Gy) then an additional dose on the tumor residue at a total dose of 10 Gy (4 fractions of 2.5 Gy). A control scan performed one month after the end of radiotherapy showed a regression in size of the lesion of the left frontal cerebral lesion and the perilesional oedema. Twelve months after the end of radiotherapy, a CT scan revealed progression of the secondary cerebral localization. Sixteen months after the end of radiotherapy, the patient was still alive and followed in oncology.

Conclusion: Brain metastases from primary uterine cervical tumors are extremely rare and generally have a poor prognosis. Multimodal therapy such as surgery and radiotherapy, depending on the clinical

Corresponding Author:- F.Z Farhane

Address:- Faculty of Medicine and Pharmacy, Sidi Mohammed Ben-Abdellah University, Fes, Morocco.

status of individual patients, should be recommended in patients with brain metastasis to improve survival.

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Introduction:-

Cervical cancer is the second most commonly diagnosed cancer and the third leading cause of cancer death among females in less developed countries. Surgery and radiation have prolonged the survival of patients with cervical carcinoma. Metastatic disease occurs typically by local extension and lymphatic dissemination. Hematogenous metastases usually occur less frequently and usually influence liver, lung and bone.

Brain metastases from primary cervical cancer are very rare. Even fewer cases have been pathologically confirmed.

We present this report, to describe a case of brain metastases from primary uterine cervical cancer and to conduct a literature review about clinical presentation, treatment, and prognosis of this disease.

Case Presentation

A 51-year-old woman, followed since 2017 for squamous cell carcinoma of the cervix for which she had undergone surgical treatment and received radiotherapy, being asymptomatic for 4 years after completion of treatment.

She is brought to the Emergency Department in February 2021 for intracranial hypertension syndrome associated with behavioral troubles, symptoms that developed progressively during the last two months before her consultation.

The clinical examination found a conscious patient without sensory or motor deficit and without damage to the cranial nerves.

A cerebral Magnetic Resonance Imaging (MRI) revealed a left frontal tumor process 50 mm in diameter enhanced peripherally after injection of contrast product, necrotic and surrounded by significant cerebral edema determining a mass effect on the median structures with signs of engagement under falx (figure 1).

The patient underwent a surgical resection of the tumor, the mass being removed en bloc. Histopathological and immunohistological examination of the resected tumor revealed a metastatic origin from a primary cervical squamous cell carcinoma. A postoperative brain scan revealed the persistence of a left frontal tumor process 14 mm in diameter with significant perilesional edema.

The patient subsequently received total brain radiotherapy at a dose of 37.5 Gy (15 fractions of 2.5 Gy) then an additional dose on the tumor residue at a total dose of 10 Gy (4 fractions of 2.5 Gy). A control scan performed one month after the end of radiotherapy showed a regression in size of the lesion of the left frontal cerebral lesion and the perilesional oedema.

Twelve months after the end of radiotherapy, a CT scan revealed progression of the secondary cerebral localization.

Sixteen months after the end of radiotherapy, the patient was still alive and followed in oncology.

Discussion:-

Brain metastases from primary cervical cancer are very rare, occurring in 0.4 to 2.3% of all patients [1]. To date, only approximately 140 cases of brain metastasis from cervical cancer have been reported [2].

Recently, there has been an increase in the number of brain metastases from cervical cancer; this is thought to be due to improved treatment of the primary cancer and therefore increased overall survival [3,4]. An increase in the incidence of brain metastasis is due also to earlier detection as a result of improved imaging methods [5].

The median age of the onset of brain metastasis was 48 years, ranging from 29 to 87 years [2, 6, 7].

While some patients had brain metastasis at the time of primary cancer diagnosis [8,9], the median interval between primary cancer diagnosis and brain metastasis was 17.2 months [2], and the longest interval reported was 127.2 months [10]. The interval in our case from the time of primary cancer diagnosis to brain metastasis was 30 months.

Nausea and vomiting typically occur as a consequence of increased intracranial pressure [11].

Topographic diagnosis is essentially based on magnetic resonance imaging. More than 80% of brain metastases are located in the supratentorial region of the brain. In a third of cases, the lesions are unique and frequently located in the frontal lobe [12,13], as in our report of case.

Similar to intracranial metastasis from other cancers, treatment of intracranial metastasis of cervical carcinoma includes surgery, radiation therapy, chemotherapy, or a combination of these therapies.

There is still no consensus on the most effective therapy for patients with this brain metastasis. Whole brain radiotherapy (WBRT) was suggested in the 1980s to prevent neurological death by reducing the tumor volume and treating micrometastases. WBRT is also an option for patients with uncontrolled primary disease or extensive systemic metastases; it is the treatment of choice in patients who are not suitable for surgery or stereotactic radiosurgery (SRS) [14] and is used as an adjuvant treatment to surgery or SRS to increase local and distant tumor control [15]. SRS may be preferred to WBRT in select patients who have undergone the total resection of one to three metastatic brain lesions. A stereotactic radiosurgery could not be performed due to lack of resources. In recent studies, WBRT was associated with various short-term and long-term radiation-induced injuries to the brain. Adding stereotactic radiosurgery to WBRT provides better local control than WBRT alone, as shown in a previously reported review and meta-analysis. Brown et al. [16] studied 194 patients who underwent brain metastasis resection and found no difference in survival between SRS and WBRT, while cognitive impairment was more frequent in patients who received WBRT than in those who received SRS at 6 months (85% vs. 52% of patients, $p < 0.001$).

Surgical resection is now considered for patients with a radioresistant primary histological type, those with a large tumor volume causing brain shift, those with symptoms refractory to medical treatment, and those with controlled disease at the primary site without systemic metastasis [5]. However, very little of this experience is in the field of cervical cancer. A small cohort study revealed that patients who underwent surgery for brain metastasis exhibited better survival than patients receiving only WBRT [17]. Favorable prognostic factors for prolonged survival after the surgical resection of central nervous system metastases are a good patient performance status, a long disease-free interval, an absence of other systemic diseases, and resectability, preferably with clear margins [18]. Additionally, resection allows for the histological confirmation of metastasis and differentiation with necrosis [19,20].

Chemotherapy including cisplatin plays an important role in the treatment of cervical cancer. Although the influence of the outcome for brain metastasis is still unknown, chemotherapy may be considered initially in patients with multiple brain metastases and other organ metastasis because it may control both brain metastasis and other metastatic organs [21].

Brain metastasis from cervical cancer carries a poor prognosis with a limited survival after diagnosis. [11,21]. The mean and median survival times after the diagnosis of brain metastasis were reported to be 7 and 4.6 months, respectively, in a literature review [2].

Conclusion:-

Brain metastases from primary uterine cervical tumors are extremely rare and generally have a poor prognosis. Multimodal therapy such as surgery and radiotherapy, depending on the clinical status of individual patients, should be recommended in patients with brain metastasis to improve survival.

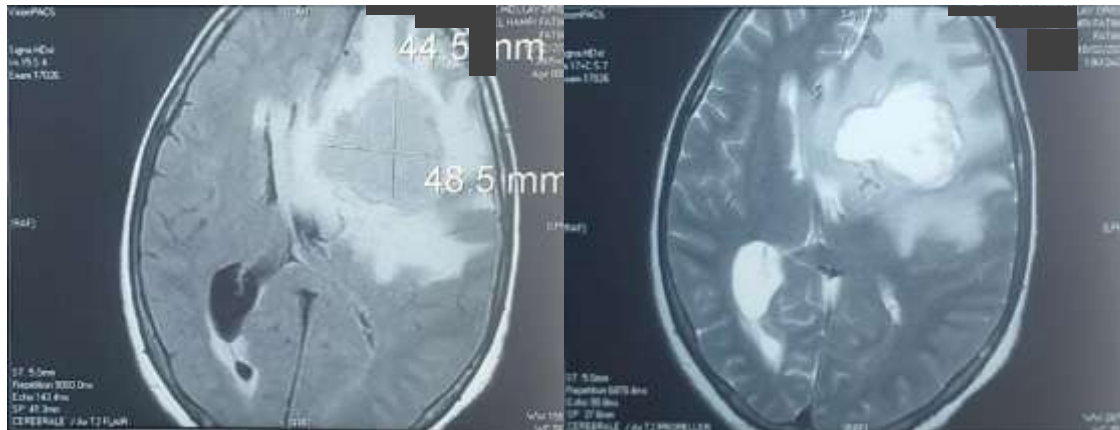


Figure 2:- A cerebral Magnetic Resonance Imaging (MRI) revealed a left frontal tumor process 50 mm in diameter enhanced peripherally after injection of contrast product, necrotic and surrounded by significant cerebral edema determining a mass effect on the median structures with signs of engagement under falcorie.

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