Surprisingly, the Result of an Unplanned Pregnancy after Cranial Radiotherapy: A Case Report (Successful Childbirth after Brain Astrocytoma)

Abstract

The present study aimed to present a rare case of successful pregnancy within 6 months from cranial mass surgery and postsurgical radiotherapy. A 32-year-old female with gestational age of 19 weeks had been refereed with a past medical history of recently treated brain astrocytoma. Close obstetric monitoring had been planned; the pregnancy was complicated with severe preeclampsia at the gestational age of 36 weeks, which leads to successful delivery. Pregnancy in patients with a history of cancer has been the focus of studies today and in many cancers it is recommended to delay pregnancy for at least 2 years. The prognosis of such a patient after unplanned pregnancy conception could be more complex; and the present case report aimed to explain about it. The goal of this presentation was to emphasis on the possibility of fertility preservation in the patient with malignancy even after cranial mass surgery and radiotherapy.

Keywords: *Astrocytoma, cranial radiotherapy, infertility, malignancy*

Azar Danesh Shahraki, Leila Mousavi[1], Amirreza Farhadian Dehkordi[2]

From the Departments of Obstetrics and Gynecology and [2]General Medicine, School of Medicine, Isfahan University of Medical Sciences, [1]Department of Obstetrics and Gynecology, Division of Oncology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Introduction

Nearly 150,000 cases of cancer were detected in 2010 within reproductive age, and the brain mass was so rare with only rate of 2.6 cases per 100,000 patients.[1,2] Given the advances in cancer treatment and on the increase in life expectancy in recent decades, fertility and it's prognosis have been attracted the attention of many researchers and gynecologists.[1-3]

Astrocytoma is a reproductive age brain mass which could be treated successfully with surgery and radiation, but in regard to excellent 5-year survival, the pituitary and ovarian dysfunction could lead to sterilization or poor obstetric outcome.[2-6] Fetal demise, low birth weight, and preterm labor are the controversial outcomes in this population.[3,7]

The present study aimed to introduce a woman survived of brain astrocytoma cancer, who had an unplanned pregnancy less than 6 months after her last brain radiotherapy session, thus highlighting the importance of prenatal care in such patients of childbearing age.

Case Report

A 32-year-old female G2 L1 (vaginal delivery) was referred to the hospital at 19 weeks' gestation with a history of craniotomy due to left hemisphere low-grade astrocytoma (Stage 1) which was diagnosed <1 year ago with a severe headache complaint of the patient by magnetic resonance imaging (MRI) [Figure 1]. She were asked to fill the consent form to participate in the study.There was no other significant problem in her past medical or family history. The diagnosis was documented by obtaining stereotactic biopsy from the lesion and was treated with surgery after 2 months from diagnosis. Postoperatively adjuvant cranial irradiation weekly in 33 sessions (near a total dose of 60 GY) was prescribed for her till 6 months ago. She had irregular menstruation in this period of time. With close obstetric monitoring of mother and fetus growth assessment and Levebel (anticonvulsant) prescription, the patient remained stable until near-term cesarean delivery. Due to bone marrow suppression with radiation, the patient suffers from thrombocytopenia (mean, 45,000/L) which was treated by nor-plate during pregnancy (mean, 105,000/L) with no adverse effect. The patient was hospitalized preterm because of

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Address for correspondence:
Prof. Azar Danesh Shahraki, Department of Obstetrics and Gynecology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran.
E-mail: danesh@med.mui.ac.ir

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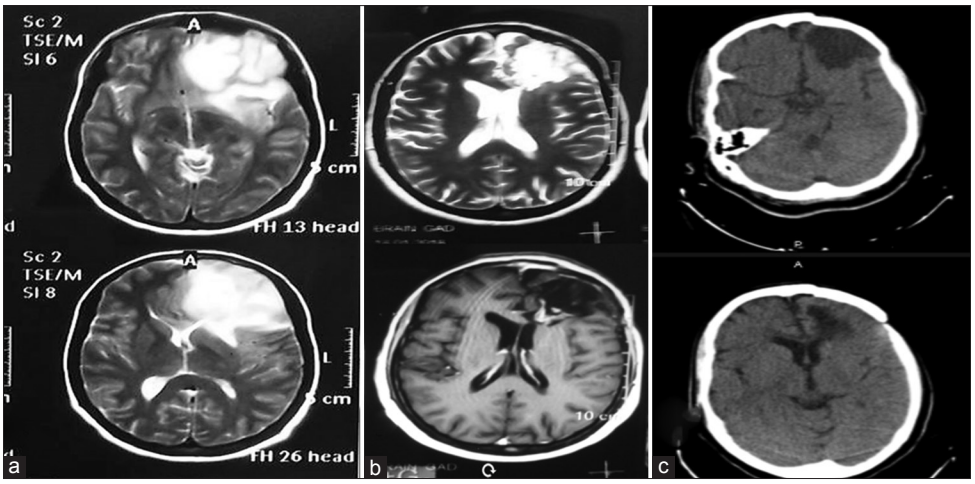

Figure 1: Brain imaging. (a) Magnetic resonance imaging (± GAD): A heterogeneous high signal mass in the left frontal lobe with peripheral sulci effacement and pressure on the left lateral ventricle and mild midline shift to the right side with involvement of the genu of corpus collusion is seen. (b) Magnetic resonance imaging (± GAD): Left frontal lobe and corpus callosum postsurgical porencephaly with peripheral gliosis with old hemorrhage were detected. (c) Computed tomography scan: Postsurgical effect, no sign of recurrences was detected after pregnancy termination

severe preeclampsia which complicated her pregnancy at 36 weeks. Intrapartum and postpartum, the patient neurological condition did not worsen. Postpartum brain MRI revealed no sign of recurrences, and no additional treatment was planned for her. The child was normal at birth and is still in good health after 2 months.

Discussion

Fertility impairment due to antineoplastic therapeutic method is of great concern in recent years.[2] Astrocytoma is one member of low-grade glioma family, the most prevalent brain mass which progressively infiltrated throughout the brain.[1,4,5,8]

Hypopituitarism and gonadotropin deficiency are one of the common head-and-neck radiotherapy adverse effects.[2,6] Infertility may occur which depends on the patient age and the area of treatment and the radiotherapy prescription dose.[2,9] A prior study revealed hypothalamus–hypophysis axis dysfunction in nearly 70% of postpubertal patients with a median time of 2.5 years after cranial irradiation.[10-12]

Brain mass and pregnancy outcome are a controversial issue; unplanned pregnancy occurrence could complicate that more. Due to brain glioma growing risk by pregnancy-induced cerebral blood flow and growth factor increasing, seizure accident is a predicted complication within pregnancy.[1,4,8] Therefore, the present patient began anticonvulsant medication as soon as she was diagnosed. However, the probable fetal deficit by anticonvulsant therapy is under debate,[3,7] but in regard to Levebel consumption, there was no gross anomaly in the child.

The next worrying and serious complication is the possibility of cancer during pregnancy, which is why a delay of at least two years is recommended for fertility efforts.[13] No signs of recurrence were seen in the present patient despite the short time interval between diagnosis and treatment.

The recurrence sign of brain mass could be masked by usual complaints such as headache, vomiting, and visual disturbance in pregnancy,[14] which emphasizes the low threshold for consultation planning during pregnancy within the obstetrician and the neuro-oncologist.

Although the pregnancy was terminated by cesarean section due to severe preeclampsia, there is no limitation; unless shortening of the second stage of labor with surgical delivery is advised to decrease the maternal bearing-down efforts.[8,14]

We have some unanswered questions which need further research, such as: What is the most effective contraception method in this patient? Is there Really needed permanent contraception method? If they intend to have more pregnancy, what is the best interval duration between the last childbirth and new pregnancy? What is the best consultation and approach in preconception period and after that?

Conclusion

The first goal of this presentation was to fundamental role of patient and caregiver education for the prevention of unwanted high-risk pregnancy and in the other word emphasis on the necessity of appropriate consultation with the patient for rigorous prenatal care due to pregnancy-related comorbidity.

The next target of this case report was to clearance the fertility preservation possibility in the patient with malignancy even after cranial radiotherapy.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given

her consent for her images and other clinical information to be reported in the journal. The patient understands that name and initial will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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