Brain Metastasis of Papillary Ovarian Adenocarcinoma: A case presentation

ABSTRACT :

Brain metastasis is an uncommon diagnosis in patients with epithelial ovarian cancer, with reported incidences of 1-2% [3]. Serous epithelial ovarian cancer (OC) has an overall grim prognosis and is the major histological subtype that metastasizes to the brain. The average time lapse between the first diagnosis and the onset of cerebral lesions is a direct function of the primary tumor grade and stage. Median survival after diagnosis of brain metastases is 6 months. We would propose that patients treated for ovarian carcinoma could include brain imaging on the list of follow-up studies. In the present study, we identified a patient with brain metastasis of ovarian adenocarcinoma that was treated by removal via surgery followed by six cycles of chemotherapy for 3 years.

KeyWords: Brain metastases • Surgery • Stereotactic radiosurgery • Whole-brain radiotherapy • Chemotherapy

Introduction

Brain metastasis, which commonly arises in patients with lung cancer, breast cancer and melanoma, is associated with poor survival outcomes and poses distinct clinical challenges[5]. Most brain metastases are the product of primary tumors that originate in the lung (40%–50%), breast (15%–20%), skin (5%–10%), or gastrointestinal tract (4%–6%)[6,7]. Ovarian brain metastasis is a rare finding, as the most common sites of metastatic ovarian cancer include spread to the peritoneum, liver and lymph nodes [8-10]. In the present case report, we presented a patient with brain metastasis of ovarian adenocarcinoma and treated by surgery.

Case Presentation:

A 47-year-old female was brought to the emergency department due to headache and vomiting. She presented with a 2-month history of progressive headaches that's accompanied by projectile vomiting.

Has a history of blurry vision and memory loss. Also, she reports a history loss of balance that made it difficult for her to walk without support and with a positive history of vertigo. Has no history of convulsions or LOC. Has no prior history of trauma.

The patient had undergone a laparotomy and meropenem plus cisplatin selective intraperitoneal hyperthermic chemotherapy 5 years ago following diagnosis with stage III high-grade serous epithelial ovarian carcinoma of the left ovary with peritoneal metastasis. The patient was submitted to total abdominal hysterectomy, bilateral sauphingo-oophorectomy and omentectomy.

The definitive histopathology revealed a high-grade serous epithelial ovarian carcinoma.

The patient received 6 cycles of chemotherapy after the surgery and was on regular follow-up.

His follow-up was uneventful for 1.5 years with no recurrence of FUO or splenomegaly to suggest relapse. Lost to follow upLast serum CA-125: 10.6 1U/ml

Subsequently, a non-contrast CT (NCCT) scan of the brain revealed ring-enhancing lesion in right cerebellum. The lesion shows necrotic fields surrounded by hypodense regions. The v4 is compressed. Ischaemic brain pathology [1, 2], suspicion of consecutive metastasis on MR. He was diagnosed as primary tumor in the right cerebellum by MRI. His brain imaging showed right lateral ventricle colloid cyst and he subsequently underwent a right suboccipital craniectomy. Grossly, a total resection biopsy was done and Gross examination showed multiple grey-brown to grey-white in color tissue fragments (6x4x2 cm together) of soft friable tissue. Histological examination identified the presence of
These fragments correspond to a cerebellar parenchyma harboring a carcinomatous process composed of large cells with reduced eosinophilic cytoplasm devoid of signs of mucosecretion and with atypical, voluminous, anisokaryotic nuclei, often clearly nucleolated and richly mitotic. These cells are arranged in trabeculae of variable size or in tubes and papillae in a fibro-inflammatory stroma.
. A final diagnosis of metastatic deposits from papillary adenocarcinoma of the ovary was made.

DISCUSSION:

Brain metastases from epithelial ovarian cancer (EOC) are an unusual diagnosis; they account for 1–2% of all CNS malignant tumors, and poor prognosis was reported [1]. 1 Epithelial ovarian carcinoma first spreads by intraperitoneal dissemination and frequently invades metastasis to the pleural cavity, liver, and lung. Brain metastases are more primary tumors of the lung (20–50%), breast, renal, colorectal carcinomas, and melanoma.
Piura and Piura found in their study that the ovarian malignancy is considered to be twice as frequent for CNS metastases of any gynecological cancers, compared with cervical or endometrial cancer [18]. Serous carcinomas are the most common histologic subtype associated with brain metastasis, followed by mixed epithelial, endometrioid adenocarcinoma, mucinous, undifferentiated, and clear cell type 3.

Breast cancer gene 1 (BRCA-1) mutations are also somehow linked to brain metastases in ovarian carcinoma, according to other studies. The BRCA-1 and -2 genes are mutated in up to 10% of ovarian carcinoma cases, linked with aggressive behavior and high rates of metastasizing disease. 4

The brain is the most common location for metastases, with the cerebrum being its predilection site, followed by leptomeninges, and lastly the tocerrebellum. 3 The commonest pathology occurs in the frontal region of the lobe. Four: Symptoms of brain metastases were as follows: headache, nausea/vomiting, confusion/dizziness, decreased mental status/weakness. gait disturbance (general or limb-specific), urinary incontinence/gait disorder, and ataxia/visual symptoms, including diplopia/syncope & seizures. References Most accurate imaging modalities: Combine of contrast-enhanced MRI Brain + CT Scan Based on a CT scan, metastasis appears as a heterogeneously enhancing lesion.

This multimodal treatment strategy is comprised of resection, WBRT, and chemotherapy.

Surgery should be done in case of single brain metastasis and an approachable site or producing a mass effect. If there are multiple metastases, a multimodal treatment approach is recommended. The reported median time from primary diagnosis to the onset of cerebral lesions was between 11 and 46 months and documented association with original tumor grade and stage. [3,5] 1,4 The median time from grade 3 (poorly differentiated ovarian carcinoma) to brain metastasis was as long as 1.5 years in a German study, which had a minority of cases and probably the most conservative screening policy. Well- to moderately differentiated ovarian carcinoma patients (Grades 1 and 2): median time interval = 4.73 years After the diagnosis of brain metastases, survival was 6 months, but there is a good outcome for patients with a multimodal treatment approach.
Presentation 1 A treatment with surgery, radiotherapy, and chemotherapy has a median survival time of around 20 months; 17 monthsfor surgery + radiotherapy ;9.1 months for chemotherapyPlus Radiotherapie ; 4.5 monthsonly for radiotherapieonly ;7.5 months for chemotherapy only; and 18 months for stereotactic radiosurgery (SRS) or gamma-knife radiosurgery (GKRS). Out of all these, SRS and GKRS yielded better survival results.[1]

Although serum CA-125 is part of their routine follow-up, its sensitivity for detecting CNS relapse was very low. Brain imaging modalities should be included in the routine post-therapy surveillance of patients with ovarian carcinoma. 1,2

The patient was started on chemotherapy but seen only 6 months later. Additional treatment information was not provided.

CONCLUSION :

Ovarian cancers seldom spread to the brain, but when they do, the outcome is often unfavorable. However, through meticulous medical assessments and effective treatments like chemotherapy and radiation therapy, it's possible to extend the lifespan of patients with this condition.

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REfERENCES

1. Piura E, Piura B. Brain metastases from ovarian carcinoma. ISRN Oncol. 2011.;2011: 527453. PMID: 22191058. PMCID: PMC3236423. https://doi.org/ 10.5402/2011/527453.
2. Thakur S, Fotedar V, Gupta M. Brain metastasis in epithelial ovarian carcinoma: case series. J Radiat Cancer Res. 2020;11(1):34-7. https://doi.org/10.4103/ jrcr.jrcr_11_20.
3. Kato MK, Tanase Y, Uno M, Ishikawa M, Kato T. Brain metastases from uterine cervical and endometrial cancer. Cancers (Basel). 2021;13(3):519. PMID: 33572880. PMCID: PMC7866278. https://doi. org/10.3390/cancers13030519.
4. Longo R, Platini C, Eid N, et al. A late, solitary brain metastasis of epithelial ovarian carcinoma. BMC Cancer. 2014;14:543. PMID: 25069863. PMCID: PMC4122771. https://doi.org/10.1186/1471-2407-14- 543.
5. Chhabra S, Dalal N, Singh S. Brain Metastasis of Papillary Ovarian Adenocarcinoma. PJP. 2022 Apr 22;7(1):50-2.