Brain metastasis from primary peritoneal carcinoma

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Abstract

Brain metastatic tumors are the most frequent type of cancer affecting central nervous system. Many sites can generates implants for the entire brain, but there are organs that rarely generate metastasis. Primary peritoneal carcinoma is a rare cancer, and its pathology is not well known as well as its metastatic pathways. It is reported a case of a female patient who presented with diffuse brain lesions due to a primary peritoneal carcinoma previously diagnosed. We also perform a brief review about the theme.

Key words: Neoplasm Metastasis, Peritoneal Neoplasms, Brain Neoplasms, Adjuvant Chemotherapy.

Introduction

Primary peritoneal carcinoma (PPC) is a rare epithelial malignant tumor that develops from peritoneum which coats pelvic and abdominal cavity. Several designations have been used for this disease, including serous surface peritoneal papillary carcinoma, multiple foci extra ovarian serous carcinoma and normal-size ovarian carcinoma syndrome. Therefore, it is a disease of recent description, whose behavior is not well comprehended yet. As well as in other aspects, regarding Central Nervous System (CNS) metastasis, it was used ovarian carcinoma as reference for primary peritoneal carcinoma, insofar as risk factors, clinical behavior and prognosis are similar. Although, there were not epidemiological data about brain metastasis of this tumor, the incidence is believed to be similar or less than ovarian carcinoma metastasis to CNS.

The aim of this paper is to report a case of a female patient with primary peritoneal carcinoma and CNS metastasis, besides discuss recent data from literature about this theme.

Case report

A 56 - year old female patient, native from...
eastern, presented to medical service in Japan with lower abdominal pain as the main symptom. There were no other relevant complaints. Total abdominal Computed Tomography (CT) had disclosed signs of carcinomatosis peritonitis, retroperitoneal lymphadenopathy, but ovaries with normal size. Upper digestive endoscopy and colonoscopy had excluded gastrointestinal cancer. Serum biomarkers CA125 and CA19-9 were increased, respectively, 1790 U/ml and 12,2 U/ml. Peritoneal lesions biopsy by laparoscopic approach had revealed primary peritoneal cancer, and serous adenocarcinoma in histopathological analysis.

Chemotherapy with intravenous carboplatin and paclitaxel was administered during one year (eight cycles of one week), besides intraperitoneal carboplatin infusion only in the beginning of the treatment. There was no indication of surgical approach to the peritoneal foci. Five months after the diagnosis, the patient presented with regression of this disease, no complaints of abdominal pain and other exams indicated control. Abdominal CT have showed vanishing of the peritoneal lesions.

In the following months there were no signs of tumor relapse (CA125 = 6,2 U/ml). However, two years after the diagnosis, it was detected high levels of CA125 (104 U/ml) and abdominal CT revealing disseminated peritoneal lesions with lymph node compromise. In the next three years it was established and suspended several chemotherapies cycles, according to detection of disease relapse. A few months after, the patient presented with epileptic generalized tonic-clonic seizures, but there were no other clinical findings in neurological examination. Brain Magnetic Resonance Imaging (MRI) had disclosed multiple supra and infratentorial lesions (Figures 1 and 2). Brain stereotactic biopsy and histopathological analysis were performed and revealed that it was peritoneal cancer metastasis. At this time the patient was referred to oncology department for chemotherapy with the same drugs previously used.

Discussion

Primary peritoneal carcinoma was firstly described by Swerdlow in 1959 as a pelvic peritoneum mesotelialoma. Most cases have serous histology, but others aspects could also be present such as mucinous lineage, clear cells, endometrioid, Brenner tumor and mixed mullerian tumors. Besides the histological differences, both serum and non-serum tumors present similar behavior and prognosis. The most common histological types are serous papillary and poorly differentiated adenocarcinoma (approximately 60% of all cases), and serous adenocarcinoma is the main malignant tumor with origin in ovaries and oviduct which are involved in carcinomatosis. It is important to highlight that in most cases, adenocarcinoma is the main histological type, generally in advanced stages (III and IV) on diagnosis occasion. However, in about 10 to 15% of all cases, no malignancy is found affecting ovaries, uterus and oviduct and the possibility of serous peritoneal papillary carcinoma (SPPC) increases. Some authors advocate that peritoneal adenocarcinoma and SPPC have similar prognosis, but clinical behavior of these two entities remain not very clear.

The real origin of SPPC remains not so clear, but is considered as a primary peritoneal cancer which has connection with one of these three theories: as a part of an ovarian cancer; a peritoneal malignancy from coelomic epithelium or an unknown primary site carcinoma. Considering its clinical, histological, dissemination pattern and prognosis, some theories support an ovarian carcinoma origin. Although,
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despite being very rare, some cases were described in man, the first was in 1998 by Shah et al\(^5\), so an exclusive ovarian etiology seems to be less probable\(^6\). In these cases the tumor probably coelomic epithelium origin.

The Gynecologic Oncology Group (GOG) had developed criteria for support the primary peritoneal carcinoma diagnosis and differentiates from ovarian carcinoma\(^4\).

They are above:
1. Both ovaries absent, with normal size or enlarged by benign pathologies.
2. Extra ovarian sites more compromised than ovaries surface.
3. Ovaries without tumor microscopic commitment or serous/cortical involvement less than 5 mm of thickness.
4. Tumor Cytological and histological characteristics predominantly of serous type.

Some authors evidence worse prognosis of SPPC comparing with ovarian carcinoma (life survival of 19 versus 31 months), although this difference was not statistically significant\(^4\). It is known that patients with SPPC survive few months less than general population, notwithstanding some remission periods, which reveal the complex prognosis of its disease\(^4\), despite the treatment.

Gynecological cancers are rare responsible for CNS metastasis\(^2\), and was first described in 1978 in a patient with ovarian carcinoma\(^7\). Metastasis incidence of ovarian carcinoma for CNS varies among series, from 0,29 to 2% and about 1,4% for primary peritoneal adenocarcinoma\(^2\). The spread pathways of SPPC remains not so clear, but is believed to be the hematological pathway and superficial implantation are the most important\(^2\).

Primary peritoneal carcinoma metastasis to CNS could present as headaches, difficulty writing, mood alterations, memories disturbances\(^8\) and epileptic seizures\(^2\), as in the case reported.

CNS metastasis treatment is similar to the peritoneal disease, with chemotherapy, such as in ovarian carcinoma\(^2\). Surgical approach has different pattern described in literature, but in general do not improve survival\(^2\). Due to the presence of diffuse commitment of CNS, neurosurgical treatment was not indicated.

The therapy included only chemotherapy with carboplatin and paclitaxel, oncology following and epileptic seizures control. Radiotherapy was not indicated for this patient, because of, on the contrary of chemotherapy with carboplatin and paclitaxel in PPC, radiotherapy application is uncertain, only being related in some case reports\(^2,8\).

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References


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