CASE REPORT

Carcinomatous Meningitis: A Rare Complication of Pancreatic Adenocarcinoma

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ABSTRACT

Carcinomatous Meningitis (CM) is a relatively uncommon metastatic complication of systemic solid tumors. The condition is mostly diagnosed by presence of malignant cells in the cerebrospinal fluid. The prognosis of the condition is generally poor. CM very rarely complicates pancreatic cancers and very few cases have been reported in the literature. We present a case of a 58-year old female patient operated for pancreatic head carcinoma. She made an immediate uneventful recovery after her pancreatico-duodenectomy. She presented 3 weeks post-surgery with acute confusional state and was diagnosed as a case of CM.

Key Words: *Carcinomatous meningitis. Metastasis. Pancreas carcinoma.*

INTRODUCTION

Carcinomatous Meningitis (CM), also called as neoplastic meningitis, leptomeningeal metastasis and meningeal carcinomatosis, is the seeding of cancer cells, via the cerebrospinal fluid into the central nervous system.[1] The main feature of carcinomatous meningitis is multifocal cranial nerve and spinal root involvement. According to an estimate, this condition can complicate 3 - 8% of solid body tumors.[2] In 2 - 4% of cases, the primary cancer remains undetermined. However, CM as a complication of pancreatic cancer is extremely rare.

The authors describe this rare condition in a female patient.

CASE REPORT

A 58-year old female patient was admitted with a 3-week history of painless progressive jaundice and weight loss. Biochemical investigations confirmed obstructive jaundice with bilirubin level of 80 μmol/L, alkaline phosphatase level of 386 U/L and Gamma GT level of 225 U/L. Radiological imaging showed intra and extrahepatic biliary dilatation with a suspicious obstructing lesion 3.2 x 2.5 cm in the pancreatic head region and was localized (Figure 1). Due to her age and fitness she was prepared for a potentially curative procedure. The patient underwent an uneventful pylorus preserving pancreatico-duodenectomy (PPPD). Her postoperative recovery was unremarkable and she was discharged home on 5th postoperative day. Pathological examination of the resected specimen confirmed the presence of poorly differentiated tumor pT4 N1 M0 with 09 of the 16 resected lymph nodes positive for malignancy.

Three weeks after her operation she was re-admitted to the hospital with acute confusional state and increasing agitation. Clinical examination did not show any haemodynamic instability or obvious neurological deficits. All the baseline blood tests were in normal limits. Due to her increasing ailment, she underwent a head CT scan, which suggested generalized cerebral swelling with effacement of the sulcal pattern over both cerebral hemispheres (Figure 2). After review by the neurophysicians, lumbar puncture was performed, which showed WBC of 12/μl and RBC of 18/μl and bacteriological/viral examination was negative. Cytological analysis of the CSF revealed the presence of numerous malignant cells with morphology consistent with an origin from the patient's known pancreatic adenocarcinoma (Figure 3). Hence, a diagnosis of carcinomatous meningitis was made and patient was started on intravenous steroids and supportive care but her clinical condition rapidly worsened and she died 7 days after her second admission.

DISCUSSION

Authors believe this to be the first reported case when a patient with pancreatic adenocarcinoma has acutely presented with this manifestation after successful surgical resection of pancreatic adenocarcinoma.

Carcinomatous Meningitis (CM) is defined as an infiltration of meninges by malignant cells. It is relatively a rare complication of disseminated neoplasia. The clinical features which should alert the physician about this condition is un-explained headache, nausea, vomiting and neurological signs in the absence of any evidence of metastasis on imaging. In most of the cases

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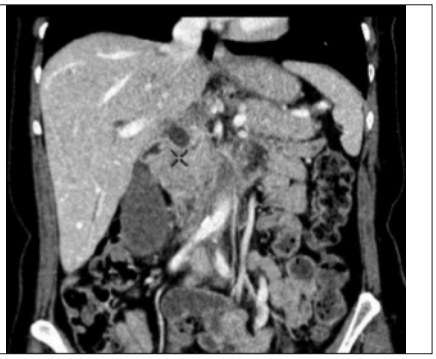

Figure 1: Pancreatic lesion on pancreatic protocol CT abdomen.

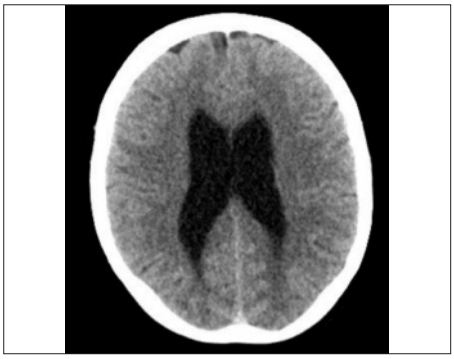

Figure 2: CT scan brain showing cerebral oedema only.

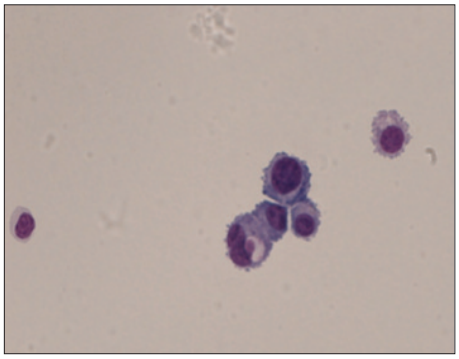

Figure 3: Cytological analysis of the CSF showing malignant cells.

hematological malignancies are the primary tumors.[3] Most often leptomeningeal infiltration is associated with carcinoma of breast, lung and malignant melanoma and rarely with the gastrointestinal tract.[4,5] In 10 - 20% of cases, symptoms secondary to CM may precede diagnosis of the primary tumor.[6] Pancreatic cancer is a very rare cause of CM and as per our knowledge only 2 cases have been reported in the literature so far,[7,8] but none after a potentially curative resection.

Patients with Carcinomatous Meningitis (CM) usually present with a mixture of cranial nerve, cerebral and spinal signs and symptoms, reflecting the multifocal nature of this disease.[3] Hence the diagnosis of CM can be challenging due to the mixed nature of clinical signs and a degree of variability of clinical manifestations. Common symptoms include headache, nausea, vomiting, a change in mental status such as acute confusional state, limb weakness, muscular incoordination and vague sensory complaints. Signs may include change in mental status, cranial nerve and spinal root irritation, lower motor neuron weakness and rarely sensory loss of varying degree.[3] Signs of meningeal irritation are present in only 7 - 17% of cases and fever is typically absent.[9]

A CT or MRI scan may show hydrocephalus, brain oedema, non-specific contrast enhancement in the basilar cisterns, cortical convexities, sub-arachnoid space, cranial nerves or the leptomeninges which should be accounted very cautiously. The gold standard for diagnosing CM is cytological confirmation of malignant cells in the Cerebrospincal Fluid (CSF). The CSF findings are abnormal in almost all cases of CM.[10] A decrease in the glucose concentration in 30 - 50% of cases which may be less than 70% of the serum concentration at the time of lumbar puncture, an elevation in the protein concentration in 70 - 90% of cases and an elevation in the white cell count which is lymphocyte predominant, usually to less than 100 cells/mm^3.

The treatment options available for CM are palliative only. Either intrathecal chemotherapy or radiotherapy is used to palliate the symptoms. Without treatment, CM secondary to solid tumors leads to a rapid progression of neurological signs resulting in early death. Such patients generally have a median survival of 4 - 6 weeks if left untreated and 2 - 3 months with treatment. A small number of patients may have a better survival, with nearly 10% surviving for one year. This applies more to the breast cancer patients but much less patients with melanomas or lung carcinomas. Methotrexate administered through intrathecal route is the most common chemotherapeutic agent used to palliate the symptoms in this condition but the overall prognosis remains poor.

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