Meningitis revealing pancreatic carcinoma

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ABSTRACT

Meningeal carcinomatosis is an uncommon metastatic complication of systemic solid tumors. The diagnosis is based on the presence of malignant cells in the cerebrospinal fluid. The sensibility of cerebrospinal fluid testing in detecting the neoplastic cells improves when repeating lumbar punctures. Magnetic resonance imaging could help in establishing the diagnosis. The prognosis of carcinomatous meningitis is poor, especially when the primitive neoplasm is initially unknown. We report the case of a patient presenting with sudden bilateral visual decrease, headaches, and vomiting. Signs of meningeal irritation were found. Cerebrospinal fluid analysis showed malignant cells consistent with an adenocarcinoma. Abdominal echography and MRI concluded in a nodule of the cephalic portion of the pancreas. Carcinomatous meningitis rarely complicates pancreatic cancers.

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Meningeal carcinomatosis, also called carcinomatous meningitis, is an uncommon complication of disseminated neoplasia; it can nevertheless, present as the initial manifestation.[1-3] Hematological cancers are found in most cases.[4] Sometimes, systemic solid tumors are complicated by such metastasis; it is uncommon to find a digestive location as the primitive site of a meningeal carcinomatosis.[5] Meningeal invasion occurs when the neoplastic cells spread from the primitive neoplastic location to the meninges.[1,6,7] Clinical presentation and physical examination of patients with carcinomatous meningitis are not specific, delaying the diagnosis. Generally, an infectious disease is initially suspected. Brain imaging, especially MRI, helps in establishing the diagnosis of meningeal carcinomatosis and excludes any contra-indications of lumbar puncture. The CSF testing remains the base of the definite diagnosis by showing malignant cells.[1,8] Repeating lumbar punctures improves the sensibility of CSF analysis.[5] We report on a male patient presenting with a meningeal metastasis, the primary lesion was a pancreatic carcinoma.

Case Report. A 55-year-old man without any noticeable pathological antecedents, presented with a 2-week history of vomiting, headaches, and visual acuity decrease associated with rotatory vertigo and walking instability. On admission, he was somnolent. Neurological examination revealed meningeal irritation (neck stiffness) and hyporeflexia; somatic examination was normal. The fundus oculi showed a bilateral papilledema. A CT of the brain was unremarkable. The usual biology (glycemia, blood count, creatininemia, transaminases) was normal except a high sedimentation speed (117 at the first hour). A lumbar puncture was performed and displayed a mildly xanthochromic CSF with 80 cells (100% lymphocytes); glucose and protein levels were 3.2 mmol/l and 0.32 g/l; the bacteriological examination was negative. Tuberculin test was positive. Tuberculous meningitis was initially suspected, and the patient was started on tuberculostatic drugs. Four days later, the patient developed cutaneous and mucous jaundice. The biology revealed hepatic cytolysis and cholestasis. The anti tuberculous drugs were stopped. The presence of a biologic cholestasis leads to the practice of an abdominal echography. The cephalic portion of the pancreas was the seat of a 2.3 x 3.5 cm hypo echogenic nodule compressing intra and extra hepatic biliary ducts (**Figure 1**). No biopsy was performed. An MRI showed a globular mass of the pancreas with a peripheral enhancing after Gadolinium injection (**Figure 2**). The histological examination of the CSF revealed the presence of big cells with atypical high-chromatic core pent up to the periphery by an abundant cytoplasm; the presence of mucin evoked an adenocarcinoma (**Figure 3**). At the same, the measuring of tumor markers showed high level of adenocarcinoma marker: the carcino embryonic antigen CEA. Surgery was suggested, but his condition worsened with drowsiness. He progressed to coma and died after 7 weeks from cardio-respiratory arrest.

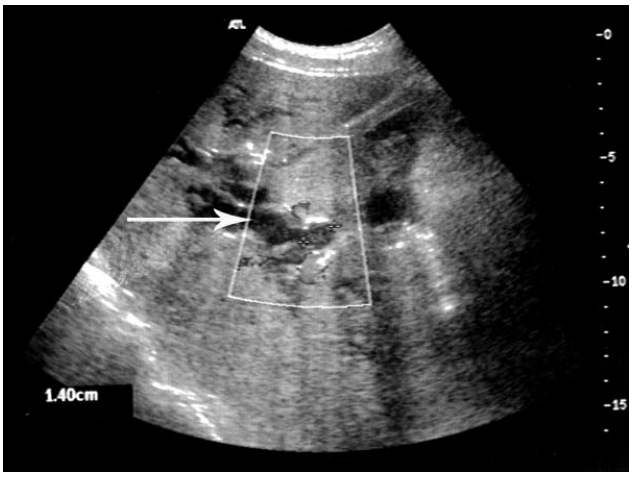

Figure 1 - Abdominal echography showing an important dilation of intra and extra biliary ducts (arrow).

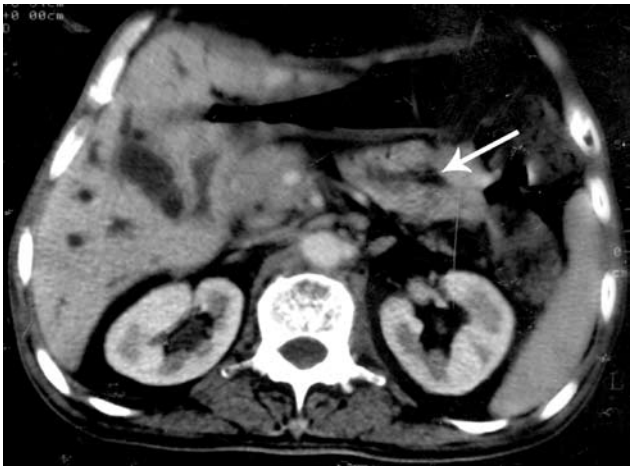

Figure 2 - Abdominal MRI displaying a globular nodule of the cephalic portion with peripheral enhancement (arrow).

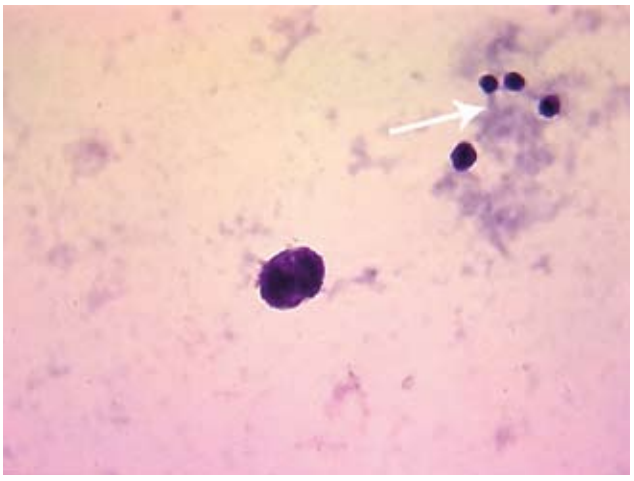

Figure 3 - Cerebrospinal fluid cytological testing revealing the presence of big cells with atypical high-chromatic core pent up to the periphery by an abundant cytoplasm with a mucinous component (arrow).

Discussion. Carcinomatous meningitis is a rare clinical situation that occurs in only 5-8% of adult cancer patients.[1,2,8-10] Hematological cancers, such as leukemia and lymphoma are the most likely found.[4] Rarely, meningeal carcinomatosis could complicate systemic solid tumors, particularly breast cancer, lung carcinoma, melanoma, and sometimes digestive neoplasms.[5] In 2-4% of cases, the primitive cancer remains undetermined.[11] It is important to emphasize the rarity of meningeal carcinomatosis as the revealing manifestation of pancreatic adenocarcinoma; in our case, the usual manifestations of pancreatic tumors, such as jaundice and cholestasis appeared later.

Meningeal involvement consists in the spread of malignant cells from a lesion located outside the central nervous system.[1,6,7] The diagnosis of carcinomatous meningitis is difficult because of the paucity and the variability of clinical manifestations. The most frequent complaints are headache, neck pain, and seizures; clinical examination frequently reveals signs of meningeal irritation, mental status disturbances and cranial nerve and spinal root irritation. These manifestations could be more or less associated. Clinical signs of meningeal irritation are not frequently observed at the first examination.[8] The variability of clinical presentations causes a pejorative delay in the diagnosis. Frequently, viral or tuberculous meningitis is initially suspected.

Magnetic resonance imaging can contribute to the diagnosis by showing an abnormal enhancement in the basilar cisterns, cortical convexities, the meninges, the sub arachnoid space, or the cranial nerves after Gadolinium injection. These findings are not specific. Magnetic resonance imaging is interesting in case of a contra-indication to lumbar puncture and mainly when the CSF examination is negative. The CSF testing remains the gold standard for the definite diagnosis by showing the presence of neoplastic cells.[1,8] The positivity of the first lumbar puncture is obtained in 50-70% of cases.[5,8] Repeating lumbar punctures improves the sensibility of CSF cytological analysis.[5,12] In our case, the lumbar puncture was positive from the first time. Cerebrospinal fluid cytological examination revealed the presence of big cells with atypical high-chromatic core pent up to the periphery by an abundant cytoplasm with a mucinous component; this microscopic aspect evoked an adenocarcinoma (**Figures 3 & 4**). The pancreatic lesion was located on the abdominal echography and confirmed by the abdominal MRI (**Figures 1 & 2**). The diagnosis of pancreatic adenocarcinoma was made on the presence of radiological malignancy signs and the high level of CEA; the patient was dead before surgery and autopsy was not performed.

Meningeal carcinomatosis is an important differential diagnosis of chronic meningitis especially tuberculous.

It requires specific treatment: local chemotherapy or radiation therapy.[1,6,8] Methotrexate is the most commonly used chemotherapeutic agent in addition to cytarabine; thiotepa is less frequently used. Radiation therapy is usually administered at a fractional dose of 30 Gy.[8] Meningeal carcinomatosis is associated with poor prognosis, especially with disseminated carcinomatous invasion. Treatment results are frequently disappointing; the median survival is approximately 4-6 weeks for untreated patients and 3 months with therapy.

Meningeal carcinomatosis due to pancreatic adenocarcinoma is rare. Clinical manifestations are not specific. The diagnosis is made on the cytological examination of the CSF. The treatment with intra thecal chemotherapy offers palliative control of the neurological manifestations. The prognosis remains poor. In our case, tuberculous meningitis was initially evoked because of the acceleration in sedimentation speed, the positivity of the tuberculin test, and the absence of systemic neoplastic signs. After achieving the diagnosis of pancreatic cancer with meningeal metastasis, the patient's clinical state rapidly worsened. No specific treatment was administered.

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CASE REPORTS

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