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Brain metastasis of nasopharyngeal carcinoma at presentation: a case report

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ABSTRACT

Background: Brain metastasis of nasopharyngeal carcinoma is very rare, and only a few cases have been reported. Typically brain metastasis reveals after diagnosis and treatment of the aggressive primary tumor. Diagnosis of metastatic nasopharyngeal carcinoma to the central nervous system at presentation is extremely rare. To the best of our knowledge, our patient is the first-ever reported case of brain metastasis of nasopharyngeal carcinoma at presentation.

Case presentation: A 30-year-old woman presented with repeated and severe headache and diplopia in November 2011, and clinical examination revealed increased intracranial pressure. Brain magnetic resonance imaging showed an enhancing mass in the right frontal lobe. A thorough evaluation of the whole body revealed no any other problem. Suboptimal resection of the mass by craniotomy revealed metastatic carcinoma. CEA, CK20, CK7 were negative, and TTF-1 was positive. Treatment was followed by whole brain radiotherapy and chemotherapy with the resultant complete improvement of the patient's symptoms during the following two years. 17 months after the operation, the patient noticed left neck adenopathy but did not care. Ultimately eight months later, when she was at five months of her first pregnancy, fine needle biopsy of her left neck mass revealed undifferentiated carcinoma. It was followed by Panendoscopy" of the head and neck, and advanced nasopharyngeal cancer was shown. Treatment conducted by chemotherapy after the 24th week of pregnancy, delivery at term and radiotherapy after that. The patient is alive with no evidence of disease, 15 months after completion of radiotherapy.

Conclusion: Probability of nasopharyngeal origin should be considered in rare instances of metastatic brain carcinoma with unknown origin. Close follow up after treatment of unknown primary brain metastases is mandatory to reveal and control the primary site in future. Successful treatment of nasopharyngeal carcinoma at the third trimester of the pregnancy is possible and recommended.

Keywords: Nasopharyngeal carcinoma, Brain Metastases

INTRODUCTION:

Nasopharyngeal cancer (NPC) has the highest potential of distant metastasis (mets) amongst head and neck cancers[1]. Common sites of mets from NPC are bone, lung, and liver respectively [2]. While the direct intracranial invasion of NPC is common, distant mets to the central nervous system (CNS) is extremely rare[1]. The authors present an unusual case of brain mets of NPC at presentation, several months before revealing the primary site. To the best of our knowledge, this is the first-ever reported case of brain mets of nasopharyngeal carcinoma at presentation.

CASE PRESENTATION:

A 30-year-old woman presented with repeated and severe headache and diplopia in November 2011. Headache was described as diffuse, exacerbated by the Valsalva maneuver, occasionally with pulsatile tinnitus. Her clinical examination revealed normal vital signs and horizontal diplopia.

Otherwise, physical examination was regular. Brain magnetic resonance imaging (MRI) revealed an enhancing mass in the right frontal lobe. Thorough radiologic evaluation of the whole body showed no other problems. A craniotomy was planned to do simultaneous treatment and diagnosis, but due to surrounding edema only suboptimal resection of the mass was performed. Pathology was reported as metastatic carcinoma. CEA, CK20, CK7 were negative, but TTF-1 was positive. Treatment was followed by whole brain radiotherapy, followed by systemic chemotherapy, with the resultant complete improvement of the patient's symptoms shortly after completion of procedures. Brain MRI in April 2013 showed encephalomalacia and gliosis at the previous tumor site (**Figure 1**). Unfortunately, after that, the patient didn't follow up and missed after that and a period of 8 months, when she noticed left neck adenopathy. Ultimately eight months later, when she was experiencing the fifth month of her first pregnan-

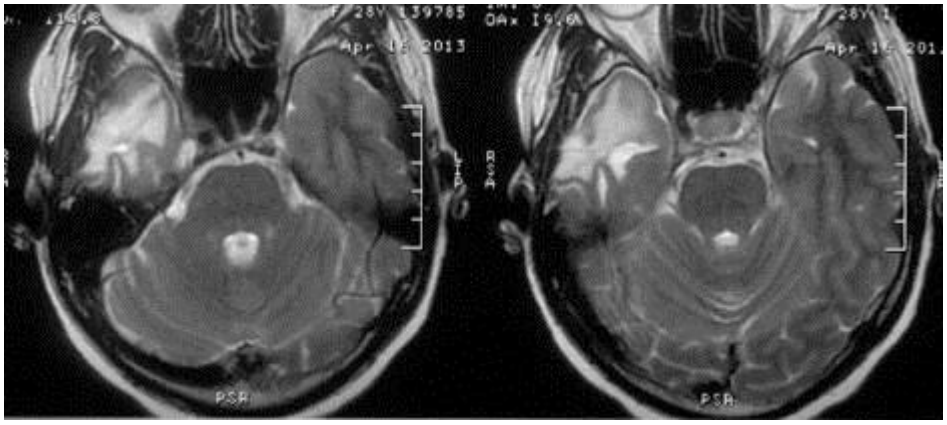

Figure 1. Axial T2 weighted brain MRI. Enhanced area of encephalomalacia and gliosis at right temporal is due to post treatment changes, without obvious signs of recurrence.

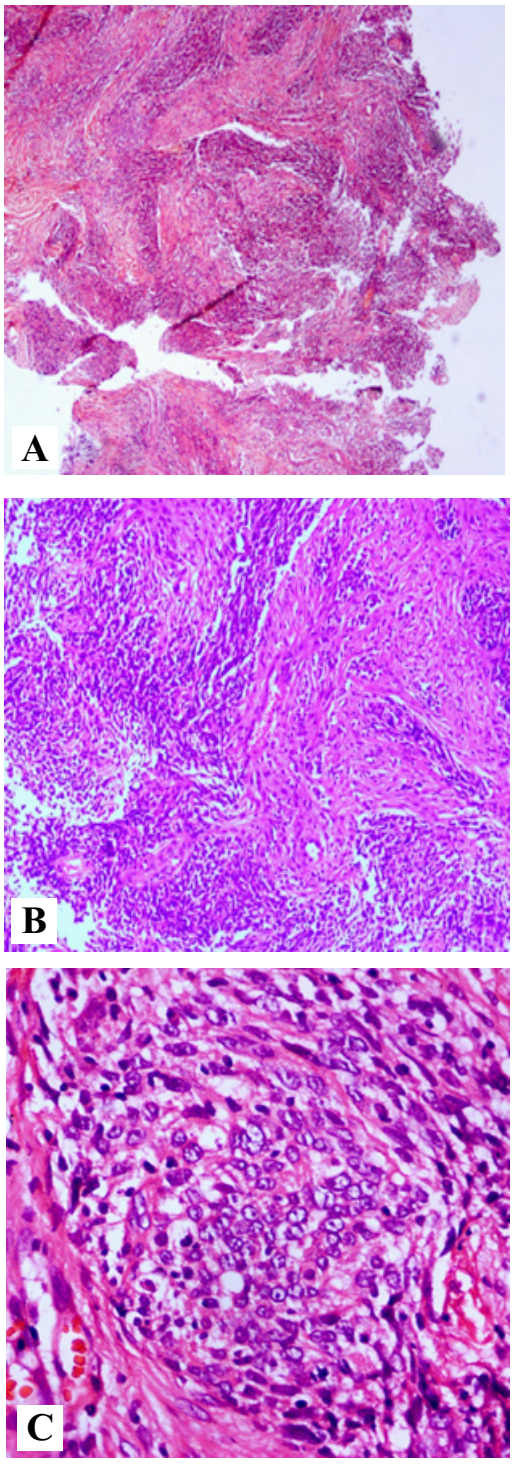

Figure 2. Sheets of large undifferentiated cells and frequent non-neoplastic lymphocytes amongst tumor cells.

cy, a fine needle biopsy (FNA) of the left neck mass indicated undifferentiated carcinoma. It was followed by panendoscopy of the head and neck, during which advanced nasopharyngeal cancer was revealed. Histopathology of biopsy materials of NPC mass showed a tumor composed of sheets of mostly undifferentiated cells, containing a population of non-neoplastic small lymphocytes (**Figure 2**).

Chemotherapy conducted treatment after the 24th week of pregnancy, caesarian section delivery at term and radiotherapy after that. The patient is alive with no evidence of disease, 15 months after completion of radiotherapy.

DISCUSSION:

Brain mets account for more than 50% of brain tumors. Ten to 30 percent of adults and 6 to 10 percent of children, suffering from systemic malignancies, have Brain mets[3]. A study from Iran on 129 patients with MRI proving brain metastases, showed that breast, lung, kidney and colorectal malignancies are the most common primary sites for brain metastases, followed by lymphoma and melanoma[4].

NPC has the tendency of early mets, usually to regional lymph nodes. On diagnosis, lymph node and distant metastases are present in 75 to 90 and 5 to 11 percent of cases respectively[5].In spite of frequent direct intracranial invasion in locally advanced cases, true brain mets from NPC is extremely rare, and may present after definitive treatment of the primary site[6]. CNS mets may also occur without any symptom, in a known NPC patient, while being evaluated by 18F-FDG PET/CT[7]. To the best of our knowledge, CNS mets from NPC has not ever been reported in the literature at presentation. Our reported case is considered the first one of brain mets from occult primary NPC, at presentation, when signs and symptoms and radiologic clues of primary malignancy were not evident.

CONCLUSION:

The probability of nasopharyngeal origin should be considered in rare instances of metastatic brain carcinoma with unknown origin. Close follow up after treatment of unknown primary brain metastases is mandatory to reveal and control primary site in the future. Successful treatment of nasopharyngeal carcinoma at the third trimester of the pregnancy is possible and recommended.

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