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An Uncommon Presentation of Brain Metastasis from Nasopharyngeal Carcinoma: A Case Report and Literature Review

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ABSTRACT
Brain metastases from nasopharyngeal carcinoma, either through a hematogenous route or through the cerebrospinal fluid, are uncommon. Imaging is crucial in evaluating the local extension. It also allows to determinate the irradiation field, to monitor the lesions progression or recession and to detect treatment complications. We aim to expose the case of a patient with metastatic undifferentiated nasopharyngeal carcinoma presenting a recurrence in central nervous system revealed by hemiparesis.

Introduction

Carcinoma represent more than 90 % of nasopharyngeal cancers, its undifferentiated variant is the most frequent [1,2]. Metastases are particularly frequent. They affect mostly the bone (28,4 %), lungs (21,6 %) and the liver (13,5 %) [3].

Central nervous system metastasis are exceptional, most of the time it is a direct intracranial invasion to the skull base [4].

We aim to expose the case of a patient diagnosed with an Undifferentiated Carcinoma of Nasopharyngeal Type UCNT, complicated by a solitary brain metastasis.

Case report

A 60-year-old female North African patient, with no history of chronic disease, presented rhinorrhea with right otalgia and hearing loss. Clinical examination found out multiple bilateral cervical lymphadenopathy. Endoscopy examination revealed a nasopharyngeal thickening. After which a Biopsy was performed. Histopathologic findings were in favor of an undifferentiated nasopharyngeal carcinoma. The brain MRI performed for the evaluation of loco regional extension revealed a voluminous process of the nasopharynx with a direct invasion of the skull base(Figure 1)and bilateral cervical lymphadenopathy, no brain metastases were identified

Total body CT-scan was run for staging which determined the presence of a cystic hepatic metastasis (Figure 2) and axial skeleton metastasis with dorsal epiduritis (Figure 3).The patient was diagnosed with T4N2M1 UCNT. Thereafter, she received a concurrent radio-chemotherapy. After treatment completion, the patient remained well until six month later; she experienced right hemiparesis and dysarthria. MRI scan of the brain demonstrated a left parietal lobe cystic lesion with post gadolinium peripheral enhancement, invading the left calvarium with a soft tissue component extending under the galeal plane (Figures 4).

Considering the patient neurological deterioration, a removal surgery was performed. Pathologic findings were in favor of an UCNT-like carcinoma brain metastasis. She was reported dead after 7 months of her treatment.

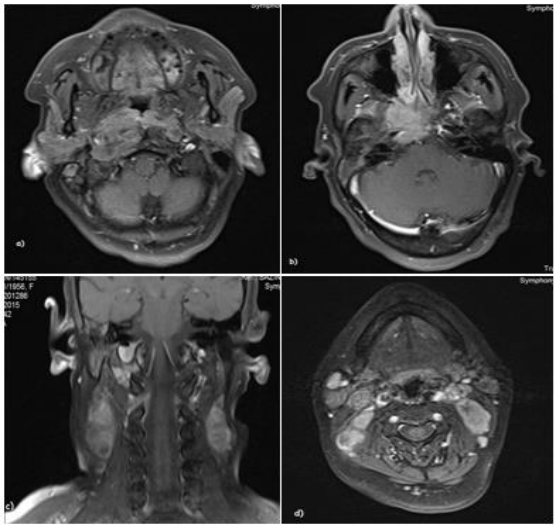

Figure 1. Brain & cervical MRI FS T1 + post Gadolinium: Nasopharyngeal tumor with skull base extension and bilateral cervical lymphadenopathy.

Figure 2. Abdominal CECT: Cystic hepatic metastasis.

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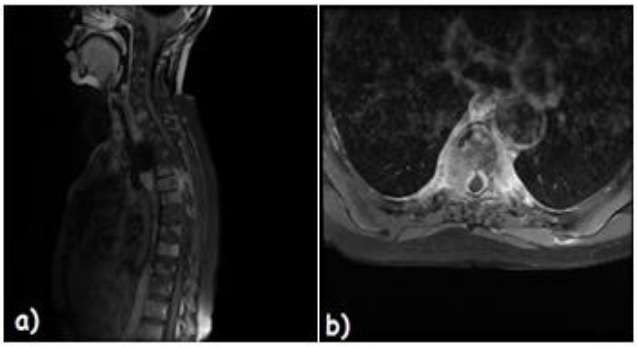

Figure 3. Spine MRI T1 post Gadolinium: bone metastasis with epiduritis.

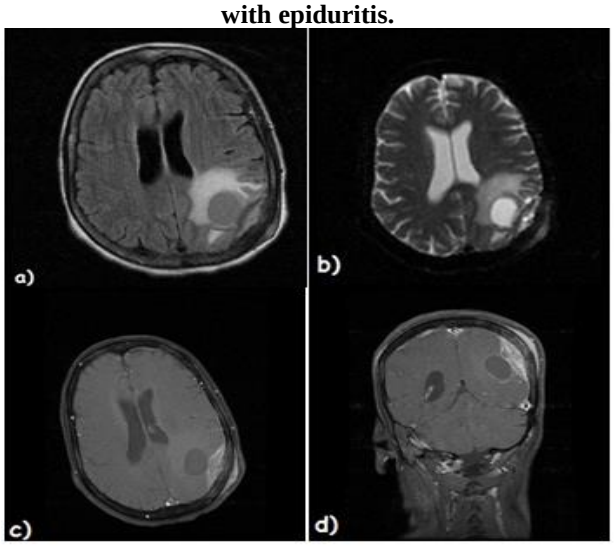

Figure 4. Brain MRI a) T2 FLAIR, b) T2, c+d) T1 post Gadolinium: left parietal cystic lesion with peripherical enhancement, invading the left calvarium and soft tissue.

Discussion

Nasopharyngeal carcinoma has a distinctive ethnic and geographic distribution, it's incidence is variable, intermediate for the Maghreb, very high for Southeast Asia (in South China) and weak in Western countries[1,2].A male preponderance is observed with a bimodal age distribution a first peak in late childhood and a second peak in people aged 50 years. Genetic and environmental factors play an important role in the pathogenesis. Exposure to Epstein-Barr virus infection is associated with NPC [5].Clinical symptomatology is misleading with otologic, rhinologic and even neurologic presentation and results in a delay in diagnosis.

The current (TNM) staging allows for better correlation with the prognosis of the disease. Endoscopy is the first-line exploration because it allows establishing the positive diagnosis by means of biopsies. Imaging is crucial in evaluating the local extension, as well as detecting nodal metastases. It also allows to determinate the radiation field, to monitor the progression or recession of the lesions and to detect treatment complications. CT is the modality of choice for tumor staging and assessment of early bony involvement. Nasopharyngeal carcinomas appear as soft tissue masses most commonly centered at the fossa of Rosenmüller. Aggressive tumors may extend in any direction, eroding the skull base and passing via the Eustachian tube, foramen lacerum, foramen ovale, or directly through bone into the clivus, cavernous sinus and temporal bone. The bone irregular margins are also characteristic of an aggressive process [6, 7].

MRI is more sensitive to perineural spread and for demonstrating early infiltration of bone marrow, although not all bone marrow changes represent tumor extension. Similarly, dural thickening may be an evidence of either tumor infiltration or reactive hyperplasia. It is also superior for differentiating recurrent disease from radiation-induced tissue changes [8].

F-18 FDG-PET is highly sensitive for nodal metastases and is the modality of choice to detect recurrence. However, there is still limited access in low income countries [9].The mainstay of treatment is external beam radiotherapy, supplemented in some cases with chemotherapy. Surgery has little role in the management of nasopharyngeal carcinoma other than for the purposes of diagnostic biopsy. Surgery is also considered in radiation-resistant tumors and in local recurrence[10, 11].

Undifferentiated Carcinomas have a high potential for ganglionic invasion and metastatic localization. They affect in decreasing order the bone (28,4 %), lungs (21,6 %) and the liver (13,5 %) [3].Though intracranial invasion by direct extension of locally advanced disease is not uncommon, metastases to the CNS, either through hematogenous route or through the cerebrospinal fluid (CSF), from NPC have rarely been reported [12,13,14].In our case we cannot exclude any of the hypothesis. Our patient presented with skull base involvement upon admission with a possibility of CSF extension. She was also diagnosed with hepatic and bony metastasis which is a proof of hematogeous extension.

Intracranial metastases can be identified at the time of diagnosis or occur after a period of remission during the course of a recurrent or metastatic disease. The average time of their appearance is15 months [13].They can be unique or multiple and preferentially sit above the tent of the cerebellum [13].Brain represents an unfavorable site of metastasis for RPC, being associated with poorer prognosis compared to other metastatic sites.

Surgery can be discussed at young patients in good general condition, if the disease is absent or minimal outside of a brain [15].It is also proposed for patients suffering from a Intracranial hypertension syndrome, in case of sensitive motor deficit or in case of Brain herniation [16].In our case a removal surgery procedure was performed upon the neurological deterioration of our patient. The association of surgery and radiotherapy is superior to surgery alone [17].

Postoperative radiotherapy improves the local control rate and reduces the risk of death from neurological causes [18].Chemotherapy is indicated in case of polymetastatic disease. The prognosis for cerebral metastases is unfavorable and depends on the age of the patient, the possibility of complete surgery and the existence of extra cerebral metastasis [19].Median survival is two months in patients receiving only corticosteroids but is six months after radiotherapy [12, 19].

Conclusion

Metastases of the central nervous system due to nasopharyngeal carcinoma (PNC) are rare. Direct intracranial invasion to the skull base, is the most common. The diagnosis is suspected by brain MRI and confirmed by histological study. Our report was of a case of multisite metastasis of nasopharyngeal carcinoma with a relapse after 06 months radio chemotherapy with a solitary brain metastasis which was removed with surgery.

Competing interests

The authors declare no competing interest.

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