Case Report

Second primary squamous cell carcinoma of nasal cavity after successful curative radiotherapy and chemotherapy of the cavum (UCNT)✩✩

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A R T I C L E   I N F O

Article history:
Received 5 February 2022
Revised 22 April 2022
Accepted 28 April 2022

Keywords:
Second primary squamous cell carcinoma
Radiotherapy
Chemotherapy
Nasal cavity

A B S T R A C T

After nasopharyngeal carcinoma treatment, secondary malignant tumors of the nasal cavities in the irradiated zone are extremely rare, with an estimated frequency of 0.15%-0.75%. They are more common in young persons who do not have traditional risk factors. The clinical symptomatology is dominated by nasal obstruction. The major goal of the CT-MRI imaging workup is to figure out the optimal treatment plan. However, histological confirmation of the diagnosis is required. The purpose of this case report is to explain the radiological characteristics of squamous cell carcinoma as seen on MRI, as well as to examine the literature on the carcinogenic risk of radiotherapy and chemotherapy.

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Introduction

Despite the fact that curative radiation therapy is the most effective treatment for nasopharyngeal carcinoma, these patients are nonetheless at risk of developing subsequent head and neck cancers [1].

Second primary tumors were observed to arise in 0.7% with nasopharyngeal carcinoma after definitive treatment, with onset occurring 5-18 years after treatment. Despite the fact that the underlying mechanisms are unknown, there is plenty of cellular and molecular evidence to back up the idea of field metastasis [1].

We present the case of squamous cell carcinoma of the nasal cavity that developed in a patient who had previously been treated for nasopharyngeal carcinoma with radiotherapy and chemotherapy. The nasopharyngeal cancer was completely remiss, and the patient showed no indications of disease for the next 8 years.
Fig. 1 – In low signal T1 and heterogeneous signal T2, MRI of the Brain and Neck in sagittal T1 (A) and axial T2 (B) sections, demonstrates a tissue expansion process (orange arrow) of the left nasal cavity centered on the left middle turbinate, well restricted to regular outlines.

Fig. 2 – After injection of gadolinium, a T1 axial segment of the brain MRI demonstrates a strong and homogenous amplification of the process (orange arrow).

Clinical observation

A 52-year-old man nonsmoker, presented to the emergency room with left-sided epistaxis and a nasal obstruction. Eight years ago, the patient was effectively treated with radiotherapy for nasopharyngeal cancer (T4N0M0).

On examination, the patient was afebrile in good general health, without face discomfort, dysphagia, or lymphadenopathy in the neck. The rest of the physical examination without abnormalities.

MRI of the neck revealed a tissue process in the left nasal cavity, centered on the left middle turbinate with well limited to regular contours. It is in hypo signal T1 (Fig. 1A), heterogeneous signal T2 (Fig. 1B), intensely and homogeneously enhanced after injection of the PDC measuring: 24 × 51 × 28 mm (Fig. 2).

It extends to the upper and lower left turbinate, the proper bones of the nose, the subcutaneous tissue and the ipsilateral nasolabial fold. It exerts a mass effect on the nasal septum which is deviated to the right without contralateral extension (Fig. 3A). It obstructs the ostium of the left maxillary sinus which is filled. It exerts a mass effect on the median orbital wall which is bulging without orbital invasion (Fig. 3B). There was no evidence of metastasis to the neck lymph nodes.

A squamous cell carcinoma of the nasal cavity was discovered after a direct nasopharyngoscopy and biopsy of the mass. The remaining radiological exams revealed no distant metastases.

Surgery and radio-chemotherapy were used to treat the patient.
Discussion

After nasopharyngeal carcinoma treatment, secondary malignant tumors of the nasal cavities in the irradiated zone are extremely rare, with an estimated frequency of 0.15%-0.75% [2].

They are more common in young persons who do not have traditional risk factors (alcoholism or smoking) [2].

Squamous cell carcinoma of the nasal cavity is most likely related to the side effects of chemotherapy with radiotherapy in nasopharyngeal carcinoma with a poor prognosis (N2-N3). They raise the issue of differential diagnosis in the presence of local recurrence [2].

The most prevalent clinical manifestations Squamous cell carcinoma of the nasal cavity are nasal obstruction, epistaxis, rhinorrhea, and hyposmia [3,4].

The key objective of the CT-MRI imaging workup is to determine the therapeutic strategy. Certain symptoms on the CT scan, such as osteolysis, invasiveness, and the unilateral character of the lesion, indicate to the malignancy diagnosis. However, these signs are not pathognomonic. The tumor biopsy is required because some benign tumors might have a very aggressive look in the bone [4,5].

The CT scan determines how homogeneous the tumor is, how it responds to gadolinium injection, and whether or not bone lysis is present [5].

Since epidural invasion is difficult to detect on CT, MRI is used instead, allowing for a more accurate characterization of the tumor mass and assessment of tumor extension. In T1- and T2-weighted sequences, the tumor is hypo intense, with moderate enhancement after gadolinium injection [4,5].

A histological comparison with the primary tumor is required to rule out a recurrence [2].

The diagnosis based on the pathological analysis of the biopsy or surgical excision (primary and secondary tumor). There are several different anatomic-pathological kinds of malignant nasal tumors. Squamous cell carcinomas are irregular, red or yellowish tumors that are friable and bleed on contact. They are classed well, moderately, or poorly differentiated [2].

A cytogenetic investigation could confirm the radiation-induced notion. It may show an increase in the number of tumor suppressor gene mutations. These cytogenetic studies are uncommon and difficult to perform, especially since the culture of cells from irradiated tissue is difficult to get [6].

Several factors fosters secondary tumors, such as the doses of radiotherapy, the type of associated chemotherapy (cisplatin and alkylating agents) and the young age of irradiation. A genetic predisposition to multiple tumors is also mentioned [2].

Surgical intervention may be a viable therapeutic approach. Tumor mapping with CT and MRI allows for the formulation of operational approaches (single or double approach, extending to the orbit) [4,7].

Conclusion

Tumors in the irradiation fields of nasopharyngeal cancer are an extremely rare event with a poor prognosis. The Reducing
risk of the irradiation can be achieved by using other less tumorigenic molecules. Radiotherapy strictly limited to the tumor volume sparing healthy tissues or a reduction in radiotherapy doses in good responders to chemotherapy.

Patient consent

The patient declares his consent for the publication of his case.

Ethical statement

Article produced in compliance with legal, ethical, and institutional rules.

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