Adenocarcinoma NOS of The Maxillary Sinus: Clinical and Histopathological Features with Therapeutic Considerations

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Abstract

Malignant tumours of the nasal cavities and paranasal sinuses are uncommon. They constitute less than one per cent of all tumours and less than three per cent of head and neck tumours. Carcinoma of the maxillary sinus is the most common of the sinonasal malignancies. In this anatomical site a case of adenocarcinoma, not otherwise specified, was documented, mainly from a histological perspective and discussed considering all types of differential diagnoses.

Keywords: Adenocarcinoma NOS; Immunohistochemistry; Differential diagnosis

Adenocarcinoma not otherwise specified (NOS), is a malignant epithelial salivary gland tumor with glandular or ductal adenocarcinomatous differentiation but without other specific histologic features, allowing for a more definitive classification and that characterize the other defined types of salivary carcinoma. The modifying term “not otherwise specified” should be included because most other epithelial salivary gland malignancies are also adenocarcinomas [1]. Clinically, it may be considered one of the more common malignant salivary gland neoplasms and third most common behind mucoepidermoid carcinoma and acinic cell adenocarcinoma. More common in women than in man it occurs over a wide age range, but is most frequently seen in the fifth-eight decades of life. It may occur in both major and minor salivary glands. Among minor salivary gland sites it most commonly occurs in intraoral sites, particularly the palate [1,2]. On the other hand adenocarcinoma can be considered a glandular malignancy of the sinonasal tract, excluding defined types of salivary gland carcinoma (also adenocarcinoma NOS). Two main categories of adenocarcinoma are recognized: intestinal-type, and non-intestinal-type adenocarcinoma, which can be further divided into low-grade and high-grade subtypes [3,4]. Overall, adenocarcinomas and salivary-type carcinomas (also adenocarcinoma NOS) comprise 10-20% of all sinonasal primary malignant tumours. In this case report we describe a case of adenocarcinoma, NOS, occurring in the maxillary sinus of a 65 aged female patient.

Case Report

A 65-year-old Italian woman was referred to the "Clinica Odontoiatrica" of the Second University of Naples, Napoli (Italy) complaining of swelling in the right upper edentulous molar area and fornix. A recent study has identified the role of work exposure to organic dusts in patients with malignant paranasal sinus tumors [5]. In our case, anamnestic exposure to wood dust was not documented, so that we have excluded an occupational disease. At the clinical examination (Figure 1A) the swelling appeared as a soft elastic mass, covered by a normal appearing. B). Patient showed cheek swelling that was extended to the sub-orbital area. C) The panorex showed radiopacity in the right maxillary sinus, and a slight resorption of the maxillary tuber in its caudal portion. D-E) Axial computed tomography images reported a large radiopaque neof ormation involving the alveolar process (D) and the right sinus eroding its postero-lateral and anterior wall (E) and involving the entire right palatal process.

Figure 1: Adenocarcinoma not otherwise specified (NOS): clinical (A-B) and radiographical (C-E) appearance. A) At the clinical examination the swelling appeared as a soft elastic mass, covered by a normal appearing. B) Patient showed cheek swelling that was extended to the sub-orbital area. C) The panorex showed radiopacity in the right maxillary sinus, and a slight resorption of the maxillary tuber in its caudal portion. D-E) Axial computed tomography images reported a large radiopaque neof ormation involving the alveolar process (D) and the right sinus eroding its postero-lateral and anterior wall (E) and involving the entire right palatal process.

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Malignant tumours of sinonasal tract are uncommon. They constitute less than 1% of all malignancies in the body and about 3% of head and neck cancers. The incidence is approximately 1 in 100,000 people per year [7]. Generally, the incidence in males is twice that of...
females. These tumors are most frequently found during the fifth to the seventh decades. Because a majority of them present at advanced stages, it is difficult to determine the primary site of the tumor. When these tumors do occur in the sinonasal tract, the most common site is the maxillary antrum; other sites, in order of decreasing incidence, include the nasal cavity, nasopharynx, and ethmoid sinuses. This pattern most likely reflects the relative distribution of minor salivary glands in this area of the upper aerodigestive tract.

Adenocarcinomas make up 4% to 8% of all sinonasal cancer [8]. Sinonasal tract adenomatous tumors have been presumed to arise from submucosal mucouserous glands or represent intranasal extension of minor salivary gland tumours of the sinus mucosa [5,9]. The antrum, ethmoid and nasal cavity are the most common locations for adenocarcinoma NOS. Acherson and Macbeth reported a significantly high incidence of adenocarcinoma of the paranasal sinus in High Wycombe, England, among furniture workers [10]. These tumors usually present with nasal obstruction and facial pain. They are sizable, partially capsulated tumors involving the adjacent bone, with a clear locally infiltrative growth pattern and with multiple necrotic areas. Many histological features have been described: low grade adenocarcinomas with mucin secreting ductular, tubulocystic and papillary structures; intermediate adenocarcinomas with prevalent trabecular pattern and high grade adenocarcinomas with marked pleomorphism, cellular atypia and high mitotic rate. Enteric-type adenocarcinomas of the sinus may also resemble moderately differentiated colon adenocarcinoma [11]. The location as well as the extent of the mucosal lesion within the maxillary sinus has prognostic significance. Historically (1933) Ohngren’s oblique line, connecting the medial canthus of the eye to the angle of the mandible, is used to divide the maxillary sinus into an anteroinferior portion (infrastructure), which is associated with a good prognosis, and a superoposterior portion (suprastructure), which has a poor prognosis. The poorer outcome associated with superoposterior cancers reflects early access of these tumors to critical structures, including the eye, cribiform plate, sphenoid sinuses, nasopharynx, skull base, pterygoids, and infratemporal fossa [12]. The currently used American Joint Committee TMN classification is based upon Ohngren’s original description. It emphasizes the size, as well as the extension of tumors. This uniform staging system is not perfect, but allows various different centers to report their experiences in a manner that lends itself to objective comparison and interpretation [12].

Prior to a major exploration or resection, a tissue diagnosis must be made. This can be achieved by an intranasal biopsy using endoscopic sinus surgery techniques or by transoral or transcutaneous procedures such as Caldwell-Luc or external ethmoidectomy [13].

Adenocarcinoma NOS is characterized by a considerable variability in cytology and architectural structures, an infiltrative growth into parenchyma or surrounding tissues and lack of features that characterize other types of adenocarcinomas. Moreover, the cytologic variability is useful for grading these tumors. We have to remember that in low-grade tumours often the bland nuclear morphology could erroneously suggest benignity. Our case was previously treated by a conservative enucleation, that has not been radical. The wrong diagnosis of benignity could be due to the superficially observation of minimal variability of cell nuclear size, shape, and rare mitoses.

Because this tumour does not have pathognomomic histopathologic features, the differential diagnosis is the rule. While immunohistochemical studies may be useful in this evaluation, it should be remembered that adenocarcinoma NOS has non-specific immunoreactivity.

We excluded the possibility of an intestinal type of adenocarcinoma, not only morphologically, but also because the mass did not stain for CK20. When performing a histological diagnosis of an adenomatous lesion of the sinonasal tract, acinic cell carcinoma could be considered in differential diagnosis, although larger nuclei and abundant cytoplasm are usually distinguishing histological features of adenocarcinoma – NOS [14,15]. Also the negativity for CEA excluded the diagnosis of acinic cell carcinoma. Pleomorphic adenoma, basal cell adenocarcinoma, adenocarcinoma with prevalent trabecular pattern and high grade adenocarcinomas have marked pleomorphism, cellular atypia and high mitotic rate. Enteric-type adenocarcinomas of the sinus may also resemble moderately differentiated colon adenocarcinoma [11]. The location as well as the extent of the mucosal lesion within the maxillary sinus has prognostic significance. Historically (1933) Ohngren’s oblique line, connecting the medial canthus of the eye to the angle of the mandible, is used to divide the maxillary sinus into an anteroinferior portion (infrastructure), which is associated with a good prognosis, and a superoposterior portion (suprastructure), which has a poor prognosis. The poorer outcome associated with superoposterior cancers reflects early access of these tumors to critical structures, including the eye, cribiform plate, sphenoid sinuses, nasopharynx, skull base, pterygoids, and infratemporal fossa [12]. The currently used American Joint Committee TMN classification is based upon Ohngren’s original description. It emphasizes the size, as well as the extension of tumors. This uniform staging system is not perfect, but allows various different centers to report their experiences in a manner that lends itself to objective comparison and interpretation [12].

Generally, a specific tumor should not be forced into one of the recognized salivary type neoplasm diagnostic categories. It is often reasonable to withhold a salivary gland type diagnosis for most high grade, poorly differentiated adenocarcinomas of the sinonasal tract.

The possibility of a metastasis from distant region should always be considered. Carcinomas from the kidney, prostate, lung, breast, gastrointestinal tract, uterus, testis, thyroid, adrenal gland, pancreas, cutaneous sebaceous carcinoma and melanoma have all been reported to rarely metastasize to the nasal cavity and paranasal sinuses [16-18].

Positron emission tomography, also called PET imaging or a PET scan, is a type of nuclear medicine imaging. Nowadays, PET and PET/CT scans are performed to detect a cancer (particularly unknown primitive cancer), determine whether a cancer has spread in the body, assess the effectiveness of a treatment plan, such as cancer therapy, determine if a cancer has returned, relapsed or metastasized after treatment. The information provided by nuclear medicine examinations is unique and often unattainable using other imaging procedures. For many diseases, nuclear medicine scans yield the most useful information needed to make a diagnosis and to determine appropriate treatment, if any. Nuclear medicine is less expensive and may yield more precise information than exploratory surgery. By identifying changes in the body at the cellular level, PET imaging may detect the early onset of disease before it is evident on other imaging tests such as CT or MRI. Anyway, in our case patient did not undergo PET. Only by axial computed tomography a large radiopaque neoformation involving the right sinus, the alveolar process of the right maxilla and the entire right palatal process was reported, without images of other body lesions. This fact helped us to consider sinus mass as a primitive tumor. Generally, when a differential diagnosis between a primary tumor of the maxillary sinus and a metastasis has to be carried out, detailed immunohistochemical analysis should be taken into account and performed.
References