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Case Report

Low-grade sinonasal non-intestinal type adenocarcinoma (Non-ITAC): A rare case report

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Abstract

Low-grade non-intestinal type sinonasal adenocarcinoma (SNAC) is a rare heterogenous group of tumours, distinct from intestinal and salivary type neoplasm. Low-grade type have more favourable prognosis compared to aggressive high grade. We report a case of low-grade non -intestinal type SNAC in a 50 year old female, presented with nasal discharge and blockage since one year. CT findings prompted a provisional diagnosis of pansinusitis with right choanal polyp. Microscopy revealed a neoplastic lesion arranged in tubulo-papillary and glandular architecture with glands lined by single layer of bland columnar cells with a foci of invasion and no mitotic activity. Immunohistochemistry revealed CK7 and SOX10 positivity with CK20 negativity, favouring a diagnosis of low-grade non-intestinal SNAC. This case underscores the importance of histomorphology and IHC in differentiating it from other benign lesions and intestinal type SNACs.

Keywords: Sinonasal adenocarcinoma, Low-grade non-intestinal type, Inverted papilloma, Immunohistochemistry.

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1. Introduction

Sinonasal adenocarcinoma (SNAC) is the second most common type next to squamous cell carcinoma, accounting for about 13% of all primary malignancy of sinonasal tract.[1] The World Health Organization classified SNAC into salivary and non-salivary SNAC. Non-salivary SNAC is categorized into intestinal type and non-intestinal type which are further classified into low grade and high grade based on histological and immunohistochemical characteristics.[2]

Low-grade non-intestinal type adenocarcinomas is uncommon subtype having histological overlap with benign lesions such as sinonasal papilloma and intestinal type adenocarcinoma making its diagnosis challenging.[3]

We present a case of 50-year-old female diagnosed as low-grade non-intestinal type sinonasal adenocarcinoma.

2. Case Report

A 50-year-old-female presented with right nasal watery discharge and blockage since one year with a history of recurrent cold, cough and sneezing. Medical history also includes diabetes mellitus on regular treatment. Sinus computed tomography (CT) (**Figure 1**) revealed right ethmoidal choanal polyposis, pansinusitis, deviated nasal septum (DNS) to right and mild concha bullosa of left middle turbinate.

Functional endoscopic sinus surgery (FESS) with septoplasty was planned and performed. A multilobated friable mass arising from medial aspect of right middle turbinate was excised and sent for histopathological examination. Other procedures performed include septoplasty, right middle meatal antrostomy, anterior and posterior ethmoidectomy.

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On histopathological examination, the mass was measuring 4X3.5cm in multiple soft tissue bits with microscopy showing a neoplastic lesion arranged in tubular, papillary and glandular pattern with back to back glands and intervening stroma (**Figure 2**, **Figure 3**). These glands and papillae are lined by single layer of columnar cells having uniform basally located round nuclei and abundant amount of eosinophilic cytoplasm. Focal invasion surrounded by chronic inflammatory infiltrates and areas of necrosis noted (**Figure 4**). No mitotic activity seen. Occasional calcispherules were noted (**Figure 5**). A PAS stain demonstrated focal intraluminal secretions.

On immunohistochemistry, the tumor was positive for CK7 showing diffuse membranous and cytoplasmic positivity (**Figure 6**), with CK20 negativity (**Figure 7**) and SOX10 showing diffuse nuclear positivity (**Figure 8**). Based on the above histological and immunohistochemical findings a diagnosis of low-grade non-intestinal type sinonasal adenocarcinoma was made.

Figure 1: CT scan showing right ethmoidal choanal polypoid lesion, bilateral maxillary and sphenoidal sinusitis (pansinusitis), mild concha bullosa of the left middle turbinate, and deviated nasal septum to the right

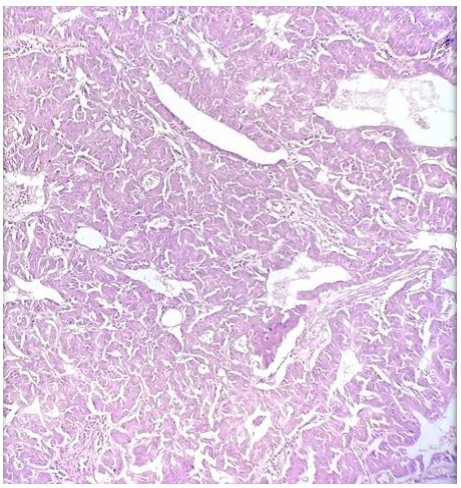

Figure 2: Hematoxylin and eosin (H&E) stain, low power (40×), showing neoplastic epithelial proliferation arranged in tubular and papillary architecture with minimal intervening stroma

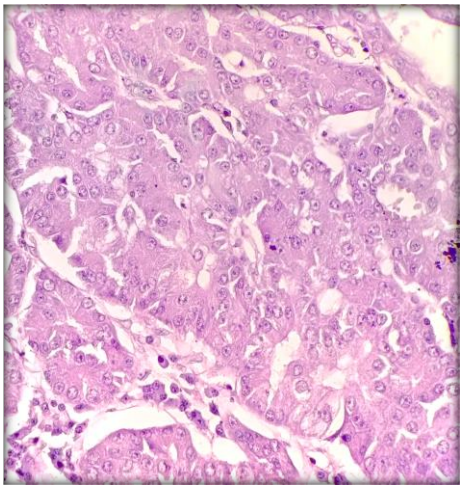

Figure 3: Hematoxylin and eosin (H&E) stain, high power (400×), showing uniform columnar cells with basally placed nuclei and abundant eosinophilic cytoplasm, without mitotic activity

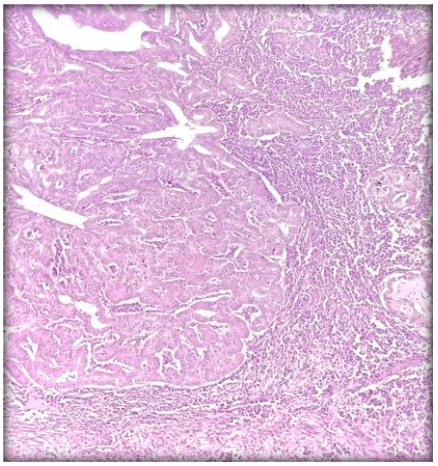

Figure 4: Hematoxylin and eosin (H&E) stain showing focal suspicious invasion of neoplastic glands into the stroma surrounded by dense inflammatory infiltrates

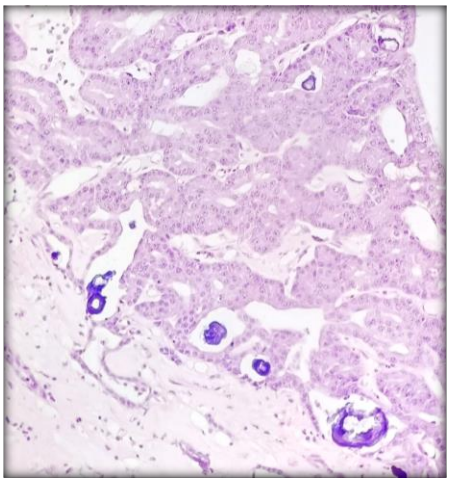

Figure 5: Hematoxylin and eosin (H&E) stain showing calcispherules (focal dystrophic calcification) within glandular structures

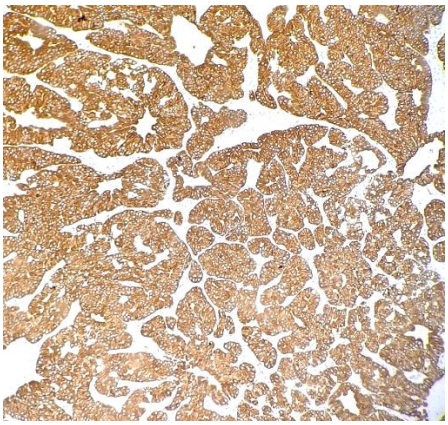

Figure 6: Immunohistochemistry (IHC) for CK7 showing strong diffuse membranous and cytoplasmic positivity in tumor cells

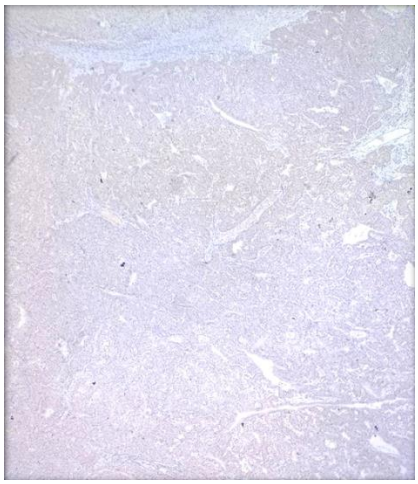

Figure 7: Immunohistochemistry (IHC) for CK20 showing complete negativity in tumor cells, excluding intestinal differentiation

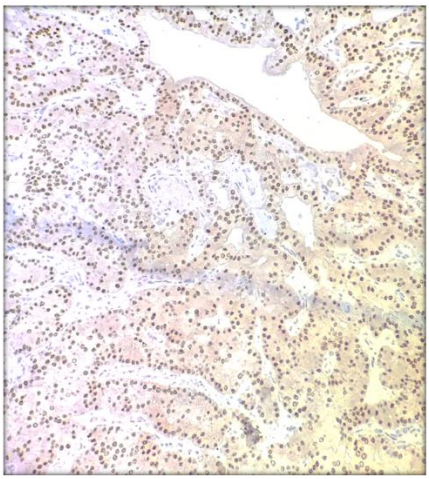

Figure 8: Immunohistochemistry (IHC) for SOX10 showing strong nuclear positivity in tumor cells, supporting seromucinous origin

3. Discussion

Low-grade non-intestinal type adenocarcinoma (non-ITAC) of the sinonasal tract is an uncommon epithelial tumor, representing 13% of all sinonasal adenocarcinomas.[1] It differs from intestinal-type adenocarcinoma (ITAC), which generally originates in the ethmoid sinus and is linked to wood dust exposure.[4]

Chronic inflammation, allergic rhinitis, and systemic comorbidities such diabetes mellitus may lead to mucosal injury and reparative glandular hyperplasia, potentially triggering neoplastic change. Patients exhibit nonspecific symptoms like nasal blockage, discharge, or face pressure. The patient in our case presented with a one-year history of nasal obstruction and serous discharge, initially diagnosed via imaging as ethmoidal choanal polyposis with pansinusitis. These lesions are frequently seen in the ethmoid sinus or turbinates.

Histopathologically, low-grade non-intestinal type adenocarcinomas display diverse architectural configurations characterized by exophytic papillae and tubular or glandular patterns. The papillae and glands are typically bordered by a monolayer of homogeneous columnar or cuboidal cells with little cytological abnormalities. The cytology exhibits a monotonous low-grade appearance characterized by spherical, homogeneous nuclei and inconspicuous nucleoli. Mitotic figures are uncommon. In these bland tumors, the intricacy of the growth pattern and localized invasive growth are indicators that substantiate a diagnosis of malignancy. Immunohistochemistry is employed for diagnosis, as the tumors typically exhibit positive staining for CK7 and negative staining for CK20, CDX2, and villin, indicating a respiratory-type profile rather than an intestinal-type profile.[5]

Different types of adenocarcinoma, respiratory epithelial adenomatous hamartoma (REAH), and inverted papilloma must be considered in the differential diagnosis.[3]

Inverted papilloma may be mistaken for low-grade non-intestinal SNACs; however, the epithelium of inverted papillomas comprises 5–30 layers of thick non-keratinizing cells and lacks true glandular lumina. Immunohistochemical analysis of inverted papilloma demonstrates positive expression of CK7, CK8, CK19, p63, and HMWK. REAH features discrete glands of medium to large dimensions that extend to the surface, with a tendency for the basement membrane to thicken. Furthermore, it possesses a stratified ciliated respiratory epithelium, contrasting with non-intestinal SNACs that have a single layer of cuboidal to columnar cells. In immunohistochemical labelling, p63 and high-molecular weight keratin (HMWK) exhibits positivity, in contrast to non-intestinal SNACs.[3]

ITAC exhibits goblet cells, mitotic activity, necrosis, and positive immunostaining for CK20 and CDX2.[6] Metastatic gastrointestinal adenocarcinoma necessitates clinical

exclusion and immunohistochemical markers, including CK20/CDX2 positive.[7]

Due to their significant heterogeneity, these tumors are challenging to identify, making immunohistochemistry essential for diagnosis.[5]

The tumor in our case exhibited diffuse positivity for CK7, indicative of non-ITAC and respiratory-type epithelium. CK20 negativity, excluding intestinal differentiation. SOX10 positivity, indicative of seromucinous lineage support. This profile corroborates a diagnosis of low-grade non-ITAC and negates ITAC and gastrointestinal metastases.[8,9]

Complete surgical excision constitutes the primary therapeutic modality. The prognosis is favorable, characterized by low recurrence rates and infrequent metastases.

4. Conclusion

Low-grade non-intestinal sinonasal adenocarcinoma is an uncommon condition that can clinically and radiologically resemble benign polyps or papillomas. Histopathology and immunohistochemistry are essential for diagnosis. Recognizing this entity is essential for precise classification and effective management.

5. Source of Funding

None.

6. Conflict of Interest

None.

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