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A Rarepaediatric Salivary Gland Tumor: Oncocytoma Of The Parotid

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ABSTRACT:
Oncocytomas are benign salivary gland tumors, primarily affecting adults. Pediatric cases are extremely rare. We present a unique case of a 12-year-old girl with a parotid oncocytoma. The patient presented with a painless, slow-growing mass in the parotid gland. Imaging studies confirmed a well-defined, homogenous mass. Histopathological examination revealed the characteristic features of oncocytes. Surgical excision was performed to achieve complete tumor removal. And further confirmation was done with immunohistochemistry with S100 showing strongly positive result. This case underscores the critical importance of considering oncocytoma, even in rare instances, within the differential diagnosis of pediatric salivary gland tumors.

Keywords: Oncocytoma, parotid , pediatric parotid swelling .

I. INTRODUCTION:

Oncocytomas are uncommon, benign neoplasms primarily affecting the salivary glands, most commonly the parotid gland. While typically seen in older adults, their occurrence in the pediatric population is extremely rare. On literature review only a single peadiatric case of PGO has been reported till date. In this regard, We report a unique case of a 12-year-old girl presented to us with swelling in the parotid region which was initially diagnosed as pleomorphic adenoma on fine needle aspiration cytology turned out to be oncocytoma on histopathological examination after surgical excision.

Hence, we want to emphasize the fact that PGO could also present in paediatric age group as seen in our case and PGO should always be considered as a differential diagnosis in evaluating salivary gland pathologies.

II. CASE PRESENTATION:

A previously healthy 12-year-old girl presented to department of otorhinolaryngology with a slowly growing, painless swelling in the right parotid region since 10 months(figure 1). There was no history of trauma, infection, or other significant medical comorbidities. Physical examination revealed a well-defined, firm, mobile, non-tender mass in the right parotid region.

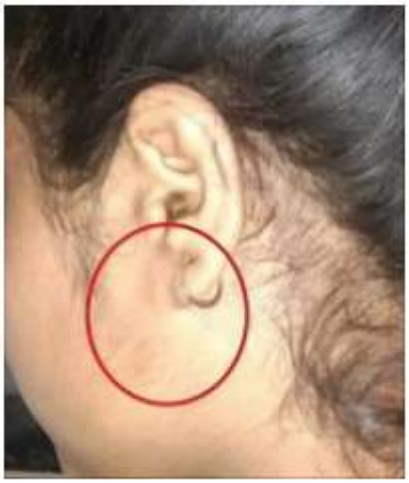

Figure 1: swelling in the parotid region

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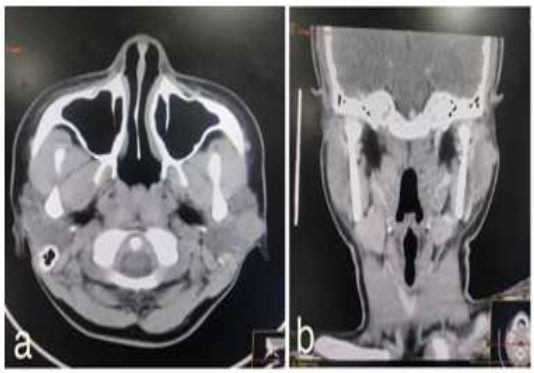

Figure 2: (a)axial CT image showing mass lesion in the left superficial parotid gland , (b)Coronal CECT section showing enhancing lesion within left parotid gland

Initial laboratory investigations, including complete blood count, renal function tests, and thyroid function tests, were within normal limits.

Ultrasound imaging of neck revealed a 1×1 cm well defined hypoechoiec solid cystic lesion in the superficial lobe of the left parotid gland.

Contrast-enhanced computed tomography (CT) scan confirmed the presence of a well-defined, oval shaped, 1.5*1.4*1.6cm homogenous mass in left superficial lobe of parotid gland.(figure 2)

Fine needle aspiration cytology of the lesion was done and the smears showed predominant ductal epithelial cells arranged in sheets, cluster and papillary formations. Few cells show oncocytic change with abundant granular eosinophilic cytoplasm. Plasmacytoid cells and few spindle cells against eosinophilic background were also seen. All features were in favour of pleomorphic adenoma.

III. INTERVENTION

Pertaining to the radiological and cytological investigations, a provisional diagnosis of benign parotid neoplasm was made and Surgical management with superficial parotidectomy was performed. (figure 3).

Figure 3: (a)intraoperative image showing exposure of left parotid gland (b) excised superficial parotid gland (c) suture site (d) postoperative scar after 3 weeks of surgery.

Histopathological analysis:

Gross examination of the resected specimen revealed a solitary, well-circumscribed, 1×1 cm mass within the superficial lobe of the left parotid gland. The cut surface of the tumor was solid, yellow-brown, and homogeneous.

Microscopic examination revealed large, polygonal cells with abundant granular eosinophilic cytoplasm, characteristic of oncocytes. The cells had distinct cell borders and centrally located nuclei. The tumor cells were arranged in sheets and nests, separated by delicate fibrovascular septae(figure 4). Immunohistochemistry marker S100 came out to be strongly positive.(figure 5) thus confirming the diagnosis of – parotid gland oncocytoma.

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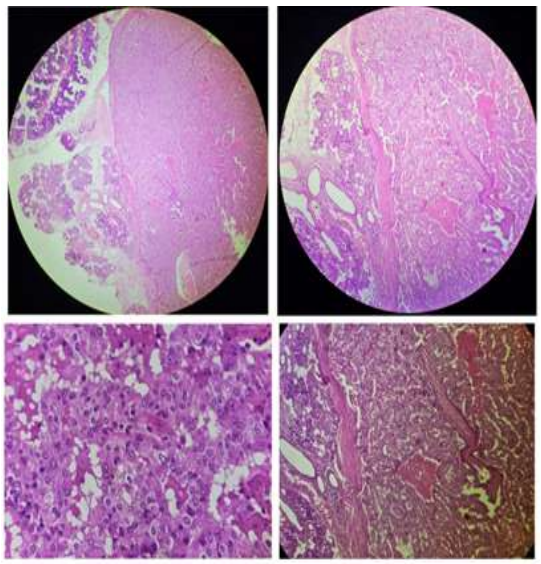

Figure 4: HE stain - showing granular eosinophilic cytoplasm, distinct cell borders and centrally located nuclei.

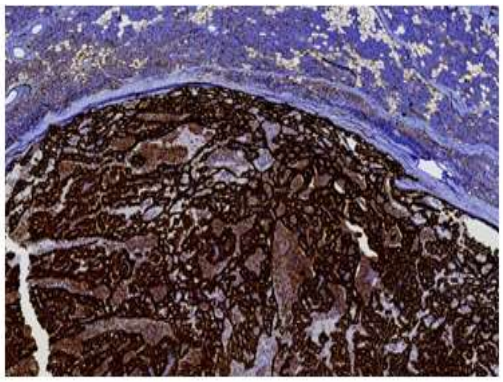

Figure 5: IHC showing S100 positive

IV. DISCUSSION

Oncocytomas of the salivary glands are rare, benign tumors that typically occur in older adults in their seventh- eighth decades (1). They account for less than 1.5% of all salivary gland neoplasms. (2)

The WHO classification of oncocytic neoplasms constitute 3 types: oncocytosis, oncocytoma and oncocytic carcinoma. (3)

Oncocytes are the epithelial cells charecterised by increased number of mitochondria giving them the distinctive appearance of granular eosinophilic cytoplasm on H&E stain. First described by Schaffer, and the term oncocyte is originated from Hamperl H et al in 1931.(4)

Oncocytes are found in different organs like salivary glands (particularly in parotid gland), thyroid gland(referred to as Hurthle cell), kidney, and also occasionally in breast, liver and stomach.

The pioneers who studied oncocytic cells like Hamperl observed that oncocytes are found in individuals of older age group. This is later confirmed by Meza-Chavez et al, in 1949, who studied 100 normal parotid glands and observed presence of oncocytes in people more than 49 years of age. (5)

The rich concentration of mitochondria is attributed to the oxidative enzymes- hence the predominance of oncocytoma in elderly age group. To the best of our knowledge, no case of parotid Oncocytoma was reported in pediatric age group. There was only one case of pediatric parotid oncocytoma reported in by zhou et al in 2009, who studied 21 cases of parotid oncocytomas which also includeda 6 year old male child. (6)

All other studies available in the literature till date report Oncocytoma in older patients.

The clinical presentation is often nonspecific, with patients presenting with a painless, slow-growing mass and almost indistinguishable from other common benign tumors. They usually appear as firm, small nodules, less than 3-4cm in maximum diameter.(7)
Ultrasonography and computed tomography (CT) imaging play crucial roles in the diagnosis and surgical planning of parotid oncocytomas.

Ultrasound Characteristics:

- **Well-defined borders:** The tumor is clearly distinguishable from surrounding tissues.
- **Homogeneous echotexture:** The internal structure of the tumor appears uniform.
- **Hypoechoic:** The tumor appears darker than the surrounding normal salivary gland tissue on ultrasound.
- **Cystic areas:** Some oncocytomas may contain fluid-filled spaces.

CT Scan Characteristics:

- **Well-defined margins:** The tumor is clearly separated from adjacent structures.
- **Homogeneous attenuation:** The tumor appears uniformly dense on CT scans.
- **Possible central scar or cystic component:** Some oncocytomas may show a central non-enhancing area or fluid-filled spaces. (8)

These imaging features help differentiate oncocytomas from other salivary gland tumors. Additionally, both ultrasound and CT scans provide valuable information for surgical planning:

- **Tumor extent:** The size and location of the tumor are precisely visualized.
- **Facial nerve relationship:** The proximity of the tumor to the facial nerve is assessed to

minimize the risk of nerve damage during surgery.

- **Retromandibular vein relationship:** The position of the tumor relative to this major blood vessel is determined to guide surgical approach.

Whilst fnac is the primary procedure of choice for initial diagnosis of salivary gland lesions, the sensitivity of this preocedure to diagnose oncocytomas is reported to be only 29%. (9) The salivary glands are well known for having overlapping morphological features, obtaining a confirmatory cytological diagnosis from fnac often becomes a predicament for the clinicians and pathologists resulting to misdiagnosis. In our case, the initial FNAC of the lesion was reported to be pleomorphic adenoma.

A similar case of a parotid gland oncocytoma in a 69 year old woman which was reported to be pleomorphic adenoma in initial fnac examination was reported by Diouf et al, in 2012.(10).

The definitive diagnosis of oncocytoma is made by histopathological examination, which reveals the characteristic features of oncocytes. Immunohistochemistry can be helpful in confirming the diagnosis and differentiating oncocytoma from other salivary gland tumors like warthins tumor, mucoepidermoid carcinoma, oncocytic carcinoma and acinic cell carcinoma.

Oncocytic changes can also occur in pleomorphic adenoma and Warthin's tumor. While S100 immunohistochemistry (IHC) may demonstrate mild positivity in these neoplasms due to the presence of oncocytic cells, the strong S100 positivity observed in our case strongly supports a diagnosis of oncocytoma.

Given the rarity of parotid oncocytoma, particularly in children, the possibility of metastasis from renal cell carcinoma needed to be excluded. An abdominal ultrasound was performed to investigate this possibility, and the results were unremarkable. These findings support a diagnosis of primary parotid oncocytoma in our case.

Complete surgical excision is the standard treatment for parotid oncocytomas, regardless of age. In our case, a superficial parotidectomy was performed to achieve complete excision of the tumor while preserving facial nerve function.

Recurrence is rare, but is known to be about 20% in cases with incomplete excision. Malignant transformation and metastasis are rare. (11)

V. CONCLUSION

This case report highlights the rare occurrence of pediatric parotid oncocytoma. It also a emphasizes the importance of multifaceted approach for accurate diagnosis. Although oncocytomas are typically benign, surgical resection is recommended for definitive diagnosis and treatment. Further research is needed to better understand the pathogenesis and clinical behavior of pediatric parotid oncocytomas.

Conflict of interest: The authors declare there is no conflict of interest.

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