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Squamous Cell Carcinoma of the Parotid Gland – An Analysis of 9 Cases and Review of Literature.

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Abstract
Background: *Primary Squamous cell carcinoma of the parotid gland is very rare with a reported incidence of about 0.3% to 1.5% of all salivary gland neoplasms.*
AIM – A review of 9 cases of primary squamous cell carcinoma of the parotid gland with a view to better understand the neoplasm.
Materials and Methods: *All records of patients with the diagnosis of salivary gland cancer were retrieved from register of pathological diagnoses in the Department of Histopathology in the period January 2006 to December 2015. Incidence of rare cases were isolated and all their histological sections stained with H&E were revisited. The data and clinical history were collated and those with metastatic complications were excluded from this study.*
Results: *The findings revealed that only 9 cases of primary squamous cell carcinoma of parotid gland were histologically confirmed during the study period. This is 0.002% (9/3933) of all malignant cases during the study period; 11.5% (9/78) of all salivary gland cancers and 2.1%(9/426) of all salivary gland neoplasms during the 10-year period. Of those affected, 77.8%(7/9) were males, and 22.2%(2/9) were females, with male to female ratio of 3.5:1. The mean age of patient was 42.3, with SD± 13.8, and the age range of (20-60) year. Squamous cell carcinoma occurred most frequently within the age range of 41-50 i.e. the 4th decade of life; Within this age group, 80%(4/5) of those with the condition were males while 20%(1/5) were females.*
Conclusion: *This study concludes that patients within age range of 41-50 i.e. the 4th decade of life and males are more predisposed to squamous cell carcinoma of the parotid gland in this region.*
Keywords *– Squamous cell carcinoma, Parotid gland, Sokoto.*

I. Introduction

Salivary gland tumours are rare and make up about 3% of all neoplasms of the head and neck [1]. The parotid, submandibular glands, and the minor salivary glands of the palate are commonly involved, and the sublingual gland is rarely affected. Salivary gland tumours vary widely in histopathological appearance, which prompted the development of a revised histopathological classification of tumours by the World Health Organization [2]. There are numerous studies on the incidence and histological types of salivary gland tumours from several countries [3-8] with the 62% - 80% of tumours being benign. Of the malignant lesions, most authors agree that the most common malignant conditions are mucoepidermoid carcinoma, Adenoid cystic carcinoma and the adenocarcinomas [3-8]. They also agree that the most commonly affected part is the parotid gland followed by the submandibular gland and then other minor salivary glands. Primary Squamous cell carcinoma of the parotid gland is very rare with a reported incidence of about 0.3% to 1.5% of all salivary gland neoplasms [9]. This is evidenced by the availability of just a handful of publications on this rare neoplasm [9-13].

II. Materials and Methods

All records of patients with the diagnosis of salivary gland cancer were retrieved from register of pathological diagnoses in the Department of Histopathology in the period January 2006 to December 2015. Incidence of rare cases were isolated and all their histological sections stained with H&E were revisited. The data and clinical history were collated and those with metastatic complications were excluded from this study.

III. Results

The findings revealed that only 9 cases of primary squamous cell carcinoma of parotid gland were histologically confirmed during the study period. This is 0.002% (9/3933) of all malignant cases during the study period; 11.5% (9/78) of all salivary gland cancers and 2.1%(9/426) of all salivary gland neoplasms during the 10-year period. Of those affected, 77.8%(7/9) were males, and 22.2%(2/9) were females, with male to female ratio of 3.5:1. The mean age of patient was 42.3, with SD± 13.8, and the age range of (20-60) year.

Squamous cell carcinoma occurred most frequently within the age range of 41-50 i.e. the 4th decade of life; Within this age group, 80%(4/5) of those with the condition were males while 20%(1/5) were females.

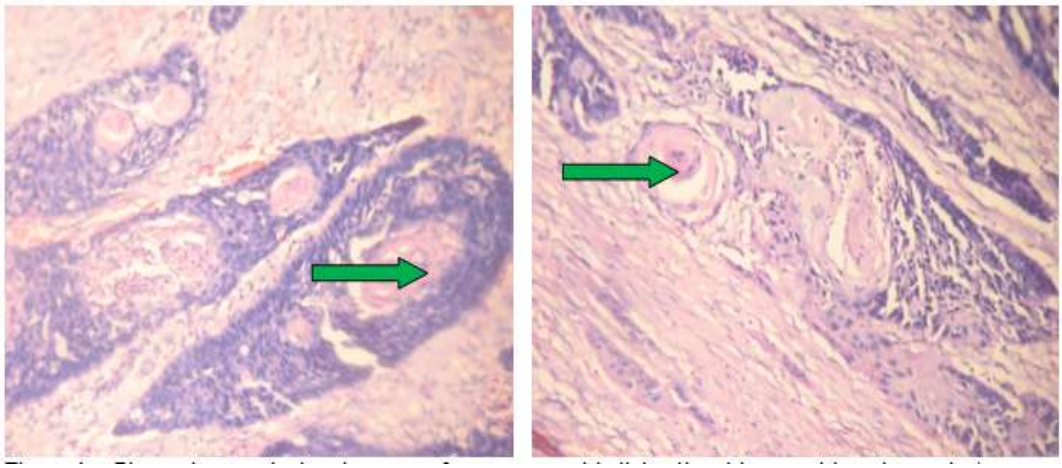

Figure 1 – Photomicrograph showing nest of squamous epithelial cells with central keratin pearls (green arrow) (H&E Mag. X200)

Table 1 – Sex and Age distribution of patients with primary squamous cell carcinoma of the parotid gland.

Age Group	Female	Male	Total (%)
20	0	2	2 (22.2)
21-30	-	-	0 (0.0)
31-40	-	-	0 (0.0)
41-50	1	4	5 (55.6)
51-60	1	1	2 (22.2)
Total	**2**	**7**	**9 (100.0)**

Table 2 – Clinico-surgical details of patients in the study

Characteristics	Frequency (%)
Co-Morbidities	
Facial Nerve Involvement	7
Cervical Node Involvement	1
None	1
Fine Needle Aspiration Result:	
Squamous Cell Carcinoma	2
Pleomorphic Adenoma	2
Mucoepidermoid Carcinoma	5
Tumour Grade	
Well Differentiated	6
Moderately Differentiated	2
Poorly Differentiated	1
Treatment Given:	
Surgery	2
Systemic Chemotherapy	1
Radiotherapy	1
Immunotherapy	0
Combination	5
Non-Specific/Supportive Rx	0
Surgical Treatment	
Parotidectomy Only	5
Parotidectomy + Radial Neck Dissection	3
Parotidectomy + Facial Nerve Biopsy	1
Parotidectomy + Facial Nerve Sacrifice	0
Post Op Complications	
Skin Graft Infection	0
Complete Skin Graft Loss	0
Flap Tip Necrosis	0
Recurrence	
Local	1
Regional	0
Distant Metastases	0

IV. Discussion

Primary Squamous Cell Carcinoma (PSCC) of salivary glands has been defined by WHO as 'A primary malignant epithelial tumour composed of epidermoid cells, which produce keratin and/or demonstrate intercellular bridges by light microscopy.' Around 80% of the cases arise in the parotid gland while the rest are found in submandibular gland; sublingual gland is a highly unusual place of occurrence of this lesion [14]. It is imperative to restrict the diagnosis of primary SCC to major salivary glands only because in squamous cell carcinoma of minor salivary glands, it is not possible to distinguish whether the tumour is arising from the glands themselves or from the adjacent mucosa [14]. Our findings presented with a mean age of 42 years with males almost 4 times the number of females. This is at variance with the reported mean age of 64 years [15] and 72 years [13] with a male-female ratio of 2:1 [15]. Other clinical and surgical information as presented in the results were basically in agreement with other finding [13] except the fact that more benign results (pleomorphic adenoma) was obtained during Fine Needle Aspiration Cytology in our study.

Primary squamous cell carcinoma (PSCC) of parotid origin is an invasive neoplasm with ill-defined margins. In general, metastatic squamous cell carcinoma outnumber primary squamous cell carcinoma of the salivary gland [16]. The histology of Primary Squamous Cell Carcinoma of salivary origin is similar to that of well to moderately differentiated squamous cell carcinoma originating elsewhere in the head and neck. The tumour infiltrates the salivary parenchyma in irregular nests and trabeculae, accompanied by a fibrous to desmoplastic stromal response. Squamous metaplasia and dysplasia of salivary ducts are occasionally identified in association with Primary squamous cell carcinoma [2]. Perineural invasion and extension into adjacent soft tissue are common [2] as seen in our patient.

Another factor for the rarity of his case is that the parotid gland tends to have predilection for benign tumours while the sublingual and other minor salivary glands have higher predilection for malignant tumours [7, 16].

Cytogenetic studies in several cases of Primary Squamous Cell Carcinoma (PSCC) have yielded somewhat variable results, although it appears that various 6q deletions may be common, similar to the findings in other salivary carcinomas [17]. Cytogenetic studies of the tumour could not be performed in our patient because of the peculiarity of our environment and lack of this technology. Interestingly, this karyotype is unusual in squamous cell carcinoma of other head and neck sites [17].

The most critical distinction in the differential diagnosis of Primary Squamous Cell Carcinoma of the parotid gland is ruling out the possibility of metastatic squamous cell carcinoma, whose incidence is greater [9-13]. It must also be distinguished from mucoepidermoid carcinoma [2, 11]. Mucoepidermoid Carcinoma is typically composed of a variable cell population, including mucocytes, basaloid, and intermediate cells, in addition to epidermoid cells. However, prominent keratinization is not characteristic of mucoepidermoid carcinoma [18]. Mucoepidermoid carcinoma may exhibit cystic areas and focal clear cell differentiation, features not observed in squamous cell carcinoma [18, 19]. Histochemical stains for intracellular mucin to rule out high-grade Mucoepidermoid carcinoma are recommended before making a definitive diagnosis of PSCC [2, 14]. Squamous metaplasia in infarcted or surgically manipulated tumours can be misinterpreted as PSCC [11, 14].

When Squamous Cell Carcinoma is identified in the parotid gland, an effort must be made to identify the origin and/or aetiology. When no other primary or cutaneous lesion exists, it seems logical to consider the cancer a primary tumor of the parotid gland. Primary Squamous Cell Carcinoma of the parotid gland is unusual. Therefore, when it is identified in the parotid gland, one must consider all possibilities so that the proper treatment plan for a particular setting is selected. After therapy, all patients require lifelong follow-up [20]. Keratocystoma is a recently described rare lesion of salivary glands that may be confused with squamous cell carcinoma [21-23]. It is characterized by multi-cystic spaces lined by stratified squamous cells containing keratotic lamellae and focal solid epithelial nests [2]. The consistent absence of metastasis, necrosis or invasion, as well as the lack of cytological atypia and minimal cellular proliferative activity in keratocystoma is essential in distinguishing this lesion from squamous cell carcinoma [22, 23].

Primary squamous cell carcinoma is usually a high-grade tumor [11]. There is widespread invasion and frequent lymph node involvement at the time of presentation [20]. About half the patients develop locoregional recurrence [11], as seen in our patient who developed recurrence and the five-year survival rates varied from 21% to 50% in two major series. The treatment of choice is usually surgery, with or without adjuvant radiotherapy [11-13]. In our case patient, had surgery and radiotherapy Because of the high rate of regional lymph node metastasis, elective neck dissection should be considered. Ying et al. are of the opinion that tumour stage was the most important prognostic factor [13]. Other reported adverse factors include patients over 60 years, ulceration, and fixation [11, 12].

V. Conclusion

Primary squamous cell carcinoma of the parotid is a rare neoplasm of the salivary glands. It is very invasive with high recurrence rate. Care should be taken to make accurate diagnosis because most squamous cell carcinoma of the head and neck are of metastatic origin. This report also aims to enlighten clinicians and pathologist of the possible manifestation of this rare tumour.

Competing Interests

Authors have declared that no competing interests exist.

Authors' Contributions

All authors contributed accordingly to this work

Consent

All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images.

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