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"A Study on The Tonsillectomy Done Over Two-Year Period In A Tertiary Care Centre with Emphasis on Squamous Cell Tonsillar Carcinoma"

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Abstract
Tonsillar carcinoma is the type of squamous cell carcinoma. It is the most common tumour of the oropharyngeal carcinomas. Incidence of the tonsillar carcinoma is most common in the elderly people. Based on the number of tonsillar growth, tonsillar carcinoma is focused on this study to create an awareness of the tonsillar carcinoma, hygienic habits to follow to prevent carcinoma in the future. The main aim of the study is to analyse the tonsil cases and to interpret the incidence of the tonsillar squamous cell carcinoma over the two year period in the tertiary care centre. About 525 tonsillar tissues were obtained from the Department of Pathology, Sri Ramachandra Institute of Higher Education and research, Chennai over the two year period .From the above tonsil tissue samples , study was done to evaluate the incidence of the tonsillar carcinoma. Out of these, few cases were reported with unilateral enlarged growth of the tonsil, after fine needle aspiration cytology , (FNAC) which has been diagnosed with tonsillar squamous cell carcinoma with four varieties. Out of these four cases of tonsillar carcinoma , one case was well differentiated squamous cell carcinoma and other three cases were moderately differentiated squamous cell carcinoma. The case study was mainly done to know the incidence of tonsillar carcinoma. Finding out the incidence of these tonsillar squamous cell carcinoma cases will be helpful in the future to create awareness of the tonsillar squamous cell carcinoma and hygienic habits to follow and prevent carcinoma in the future.

Keywords: Tonsils, palatine Tonsils, Tonsillar carcinoma, oropharyngeal cancers. Tonsillar squamous cell carcinoma.

INTRODUCTION:

Tonsils are lymphoid tissues which help to fight against many infections and increase the immune response. The tonsil which is present near the roof of the nasopharynx is known as nasopharyngeal tonsil or adenoids. Tonsil which is located on either side of the oral cavity is called a palatine tonsil. On either side of the palatine tonsil, the tubal tonsil is located which is present near the auditory tube. The collection of all the tonsils together forms a lymphatic ring which is defined as Waldayer's lymphatic ring. This ring mainly helps in increasing the immune response of the body. Unhygienic habits, tobacco and smoking are the main causes of oral cavity infections and have become one the main reasons to cause tonsillar carcinoma. Tonsillar carcinoma is a type of squamous cell carcinoma(SCC) and is the most common tumor of oropharyngeal cancer. The incidence of tonsillar carcinoma is most common in elderly people. Based on the number of tonsillar growths, carcinoma is focused on this study to create awareness of tonsillar carcinoma, its site of normal occurrence, unilateral or bilateral involvement, and also distant metastasis, which commonly doesn't occur and hygienic habits and to know about the incidence of tonsillar carcinoma to prevent carcinoma in the future.

AIM AND OBJECTIVE:

The main aim of the study is to analyze the tonsil cases and to interpret the incidence of tonsillar squamous cell carcinoma over two years in tertiary care. The main objective is to collect the total number of tonsil samples, analyze the sample data, recognize tonsillar carcinoma, interpret the incidence of the tonsillar carcinoma in a tertiary center, to evaluate the frequency of unilateral, bilateral involvement with lymph nodes and distant metastasis.

MATERIALS AND METHODS:

The research had been conducted in the Department of Pathology, Sri Ramachandra Institute of Higher Education and Research Chennai over a two year period at tertiary care center. About 525 samples were collected and tonsillar tissues has obtained from the Department of Pathology. The targeted patients were mainly the patients who underwent tonsillectomy. Tissue block samples from 525

patients were taken. Hematoxylin and eosin sections of tonsillar tissues samples were stained. Hematoxylin and Eosin-stained sections of the tonsils were reviewed as well as appropriate sections chosen for the study. Further histopathological details were collected from the histopathological case files. These 525 cases of tonsillectomy samples were included in the research. All fully damaged tonsils/cases with inappropriate blocks, were excluded from the study.

RESULTS:

The investigation was done to evaluate the incidence of tonsillar carcinoma. Out of these 525 tonsil samples, 86 Tonsillitis cases, 37 Adeno tonsillitis cases and 4 cases were reported with unilateral enlarged growth of the tonsil, On examination, the gross appearance of the tonsil is seen as the deep red or whitish-grey fungating wounds, breaking the skin surface with central ulceration. The ulcerated wound sometimes fails to heal and it can result in bleeding. After excision biopsy, 4 cases were found to be Tonsillar SCC Out of these 4 cases, one case of well-differentiated SCC was detected, and three cases of moderately differentiated SCC were reported.

SCC of the tonsil is the predominant tumor of the oropharynx. Tonsillar carcinoma is an abnormal growth of the malignant cells that develop in the tonsils. The risk factors include the *frequent use of alcohol* and *tobacco products. The most important virus involved in the tonsillar SCC was associated with H*PV infection. Poor oral hygiene has a vital role in increased incidence of tonsillar SCC. The common sites of the oropharyngeal tumors are base of tongue, palatine tonsil at the tonsillar fossa, soft palate as well as anterior pillar and posterior pharyngeal wall. The incidence of tonsillar carcinoma is more prevalent in males than in females. Carcinoma is more common with an increased age who is more than 40 years old. The total incidence of tonsillar carcinoma in males is 36% and less in females. Here we discuss four cases of tonsillar SCC detected from the total 525 tonsil sample tissues collected over 2 year period from tertiary care center. The incidence of tonsil cases was total of 66% cases of tonsillitis, and 23 % cases of Adeno tonsillitis were reported in younger children and 0.023 % cases of tonsillar SCC were reported in elderly people.

TABLE:1 CASE HISTORIES OF TONSILLAR CARCINOMA VARIETIES IN OUR PRESENT STUDY

S.NO	DETAILS	CASE -1 WELL DIFFERENTIATED	CASE - 2 MODERATELY DIFFERENTIATED	CASE – 3 MODERATELY DIFFERENTIATED	CASE – 4 MODERATELY DIFFERENTIATED
1.	**AGE IN YEARS**	77/Male	67/Male	47/Male	66/Male
2.	**CLINICAL HISTORY**	Enlarged left tonsillar growth for two months, sore throat, dysphagia, otalgia, trismus	Enlarged left tonsillar growth with neck swelling for 6 months, throat pain, dysphagia and fixation of tongue.	Enlarged left tonsillar growth with neck swelling for 20 days, sore throat.	Enlarged right tonsillar growth with neck swelling.
3.	**TISSUE EXAMINATION.OPERATIVE PROCEDURE AND BIOPSY:**	Neck swellings with FNAC – malignant cells. Tonsillectomy with biopsy –less aggressive pleomorphism, presence of keratin pearls.	Neck swelling-FNAC-Malignant cells – Tonsillectomy with Biopsy-Abnormal mitosis, more aggressive pleomorphism, absence of keratin pearls.	Neck swelling FNAC – Acinic cells noted. Tonsillectomy with biopsy-Abnormal mitosis, more aggressive pleomorphism, absence of keratin pearls.	Neck swelling – FNAC-Tumour cells. Tonsillectomy with biopsy – Tumor cells arranger in nests with central necrosis
4.	**LYMPH NODE INVOLVEMENT**	No lymph node involvement is seen.	Lymph node involvement is seen.	Lymph node involvement is seen	Lymph node involvement is seen.

Fig: 1 GROSS SPECIMEN: ENLARGED TONSILLAR GROWTH.

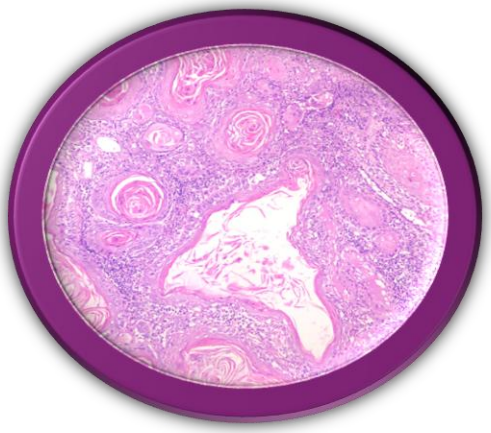

Fig:2 (CASE:1) WELL DIFFERENTIATED SQUAMOUS CELL TONSILLAR CARCINOMA (LOW POWER) - PATHOLOGICAL SLIDE

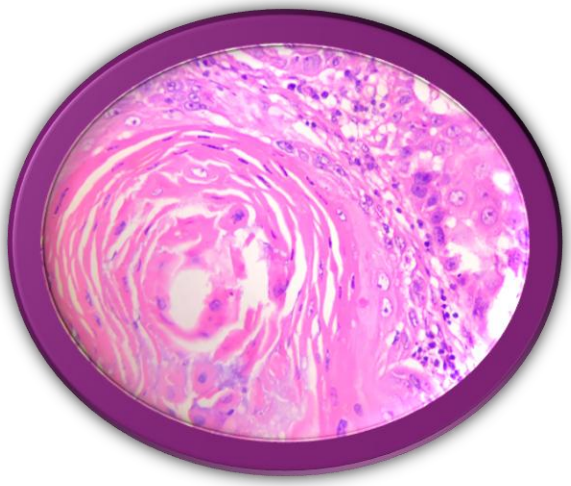

Fig:3(CASE:1) WELL DIFFERENTIATED SQUAMOUS CELL TONSILLAR CARCINOMA (HIGH POWER) - PATHOLOGICAL SLIDE

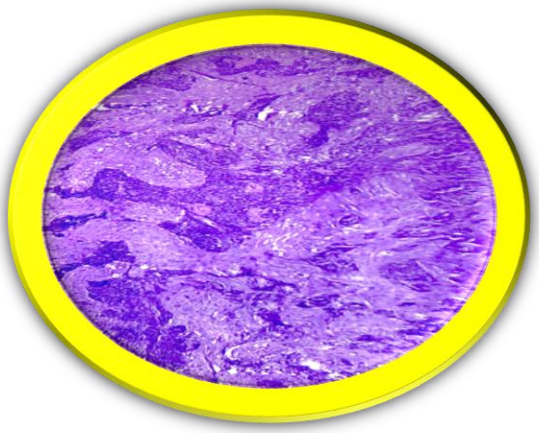

Fig: 4 (CASE:2 AND 3)MODERATELY DIFFERENTIATED SQUAMOUS CELL TONSILLAR CARCINOMA (LOW POWER) - PATHOLOGICAL SLIDE

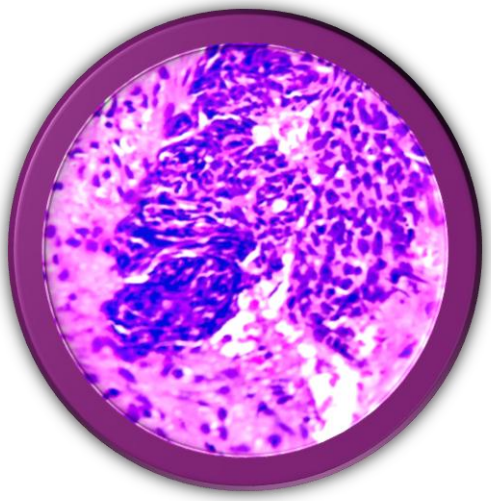

Fig: 5 (CASE:2 AND 3) MODERATELY DIFFERENTIATED SQUAMOUS CELL TONSILLAR CARCINOMA (HIGH POWER) - PATHOLOGICAL SLIDE

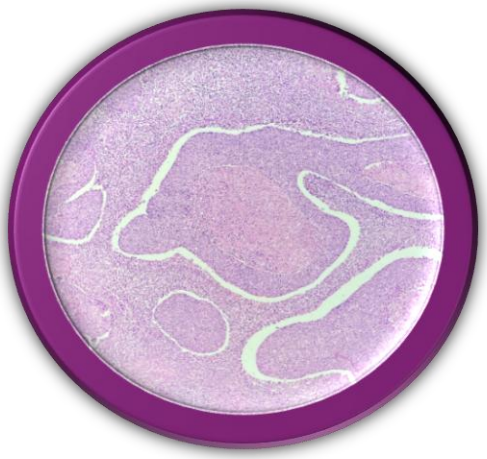

Fig: 6 (CASE:4) MODERATELY DIFFERENTIATED SQUAMOUS CELL TONSILLAR CARCINOMA (LOW POWER) - PATHOLOGICAL SLIDE.

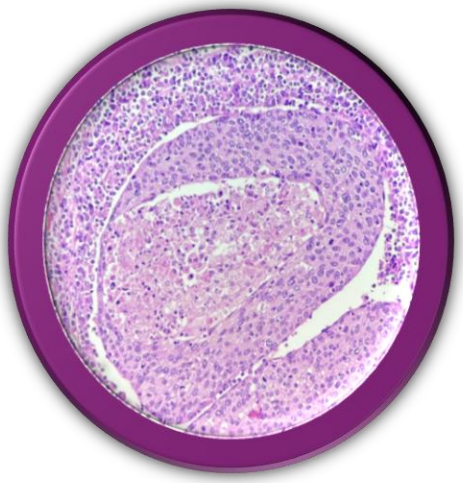

Fig: 7 (CASE:4) MODERATELY DIFFERENTIATED SQUAMOUS CELL TONSILLAR CARCINOMA (HIGH POWER) - PATHOLOGICAL SLIDE.

DISCUSSION:

HPV is a double-stranded DNA virus associated with several carcinomas in the body. HPV-16 exhibits strongest correlation with oropharyngeal malignancies, but other carcinogenic strains, such as HPV-18, are comparatively rarer. P16 a tumour-suppressor protein that accumulates in HPV-positive tumours, even serves as consistent surrogate marker for HPV in tonsillar carcinoma.

The 4th edition of the WHO's Classification of Head and Neck Tumours had been implemented numerous modifications to align with contemporary insights into disease. Oral as well as oropharyngeal malignancies are now distinct clinical entities because of the existence of lympho- epithelial tissues in regions like the tonsils. The majority of tonsil malignancies are SCCs. The WHO categorization presently classifies this into 2 separate morphological categories: HPV positive as well as HPV negative. HPV-positive SCC originate from deep lymphoid tissue of tonsillar crypts as well as exhibits a non-keratinizing appearance. HPV negative SCC arises from surface epithelium of oropharynx/tonsil as well as it is linked to keratinizing dysplasia.

TABLE 2. CASE REPORTS OF SQUAMOUS CELL TONSILLAR CARCINOMAS OF VARIOUS AUTHORS WITH DIFFERENT HISTOPATHOLOGY.

S.NO	AUTHOR (YEAR)	AGE IN YEARS	CLINICAL HISTORY	HISTOPATHOLOGY	LYMPH NODE INVOLVEMENT
1.	Kaylan Kelly (2024)	34 year old male	Weight loss, dysphagia, enlarged mass over the right-side oral cavity.	Poorly differentiated Invasive tonsillar SCC	Lymph node involvement was seen.
2.	Hassan Tariq(2018)	57 year old male	Fatigue, weakness, dizziness, enlarged mass over the left	Left poorly differentiated tonsillar SCC.	Lymph node involvement was seen. Nodal lesions are also seen in the colon and caecum.
3.	Nicolas Rossi(2022)	49 year old male	Symptoms of spitting of tissues, and occasional hemoptysis, tonsillar mass over both sides of oral cavity.	Bilateral poorly differentiated tonsillar SCC with basaloid features over the right side and absence of basaloid features over the left side.	Lymph node involvement is seen.
4.	Amikar Seh dev(2012)	53yr old female	Lump in the right neck	poorly differentiated carcinoma over the right tonsil.	No lymph node involvement.

Tonsillar carcinoma can occur due to a variety of conditions. According to [2]Kaylan Kelly et.al; 34yr old male who presented with an enlarged left tonsillar mass, (Table: 2) diagnosed to be a poorly differentiated invasive tonsillar SCC with lymph node involvement. This example necessitates an investigation of unidentified elements that may contribute to the development of Head and Neck SCC in a low-risk individual. This case indicates that there should be an increased incidence of carcinoma which occurred due to unhygienic habits. The poly microbial wound infection in this case had led to tonsillar SCC. Specialized wound care might boost outcomes and mitigate health hazards among incarcerated populations.

[3]Hassan Tariq et al. elucidates that in 57yrold male who presented with an enlarged left tonsillar mass (Table:2). In this case, there is a poorly differentiated tonsillar carcinoma with lymph node metastasis. The prevalence of tonsillar cancer in the US has quadrupled in current decades, likely attributable to a rise in human papillomavirus (HPV) infections. The tumour stage signifies the probability of metastasis. The SCC of the head and neck typically metastasis to lungs, bones, as well as liver, in that order of frequency. Tonsillar carcinoma infrequently metastasizes to the small bowel, and a literature analysis did not uncover any documented cases of metastasis to colon or large bowel. But Hassan Tariq et al; study reveals that the metastatic carcinoma was treated with tonsillectomy, pharyngectomy with neck node dissection. Even after the complete surgical procedure and neck dissection, the patient again presented with bony metastases and colonic polyps. When biopsy was done in the colon, the colon had 3 to 4 mm nodular polypoidal lesions, which showed the invasive tonsillar SCC with colonic metastases which is a very rare case. This became the increased incidence risk factor for these tonsillar carcinomas in which the carcinoma had metastasized up to the colon and the caecum.

Tonsillar carcinoma usually presents in the oral cavity as a unilateral lesions. But in this Nicolas study, it has been found that instead of unilateral carcinoma, it presented as a bilateral tonsillar carcinoma with lymph node lesions which is one of the rare cases. (Table: 2). Here the bilateral tonsillar carcinoma becomes the increased incidence risk factor.[4]Nicolas Rossi(2022) et al proposed that in his case report, there is a bilateral poorly differentiated tonsillar SCC with basaloid features over the right side and absence of basaloid features over the left side. According to [6]Sujata et al, basaloid SCC is an unusual as well as aggressive variant of tonsillar SCC. It was 1st found out by Wain et al. in 1986. So, in Nicolas et al case study revealed that the presence of basaloid features indicates that there is an aggressive form of SCC over the right-side tonsil and absence of the basaloid features specifies that it is a less aggressive form of tonsillar SCC over the left side. (Table: 2)

According to [5]Amikar Sehdev (2012), it is one of the rare form of cancer. Amikar Seh Dev's case report indicates that tonsillar carcinoma is small-cell carcinoma which is one of the rare and aggressive variants of tonsillar carcinoma. (Table:2) The incidence of small cell carcinoma is only 10%.

In our present study, out of the four cases seen, in first case, there is a pleomorphic squamous malignant epithelial cells arising from the epidermis extending into the dermis seen along with the lymphatic nodules, abundant eosinophilic cytoplasm, less aggressive vesicular nucleus pleomorphism is seen. (Table:1). Central keratinization is seen surrounded by abnormal squamous neoplastic cells which reveals the presence of keratin pearls (Fig:2) indicating that is a Well-differentiated tonsillar SCC. These tumours show a high degree of resemblance to normal squamous cells, with cells looks like healthy tissue. They grow more slowly, and it will have a better prognosis. The incidence of the well-differentiated carcinoma is 15 -20% of all the oropharyngeal carcinoma.

Out of the four cases, rest of the other three cases, more aggressive nuclear pleomorphism, abnormal mitosis, and also there is an absence of keratin pearls (Fig:4) and neoplastic cells are seen which specifies the Moderately differentiated SCC. (Table:1) These tumours exhibit some features of both well-differentiated and poorly differentiated cancers, with cells showing some abnormality but still retaining some resemblance to normal tissue. They tend to grow faster than well-differentiated tumours, but not as fast as poorly differentiated tumours. The incidence of moderately differentiated tonsillar SCC remains about 37% incidence rate than poorly differentiated carcinoma with a survival rate of 5 years.

The treatment includes *surgery, chemotherapy, radiotherapy, combined surgery, chemotherapy and radiotherapy.* After surgery and before radiation, speech therapy should be given. Dental work starts before radiation. Radiation with or without chemotherapy should be considered depending upon the patient's condition. Finally, the reconstructive mid-surgical technique is advised.[1]Untreated tonsillar carcinoma will lead to progressive growth and infiltration of adjacent tissues. The invasion of pterygoid plates, lateral pterygoid muscle, skull base, lateral nasopharynx, encasement of carotid artery indicates unresectable illness in HPVp16 negative tumours. *So here tonsillar SCC with the absence of keratin pearls is associated with HPV Associated- P16 positive infections which gives a bad prognosis and higher recurrence rate. Tonsillar SCC without HPV P16 infection along with the presence of keratin pearls indicates a good prognosis.* The prevention includes the following hygienic habits quitting smoking,

avoiding tobacco products, avoid being in the smoking area. Once in 6 months dental checkup is necessary to detect early stages of carcinoma. Vaccination is mandatory in children. One-to-one relationship is maintained to avoid HPV infection.

CONCLUSION:

• *This* present *study was mainly done to know the incidence of tonsillar carcinoma and to detect HPV-related infections with tonsillar carcinoma which is used to find the good or worst prognosis. Finding out the incidence and HPV-related infections associated with Tonsillar SCC cases will be helpful in the future to create an awareness of tonsillar SCC and hygienic habits to follow and prevent carcinoma in the future decades.*

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