Clinical profile of patients with salivary gland tumours

Dr. Abhijit Medikeri and Dr. Praveen Kamatagi

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Abstract
In sublingual glands 85% are malignant and only 15% are benign. The incidence of malignancy in submandibular gland is higher than parotid gland and the prognosis is poorer than parotid malignancies. Risk factors linked to the development of salivary gland neoplasia include: radiation exposure; familial or genetic predisposition; tobacco use: strong association between tobacco use and the development of Warthin's tumor; microorganisms: Epstein Barr virus linked lymphoepithelial carcinoma; exposure to industrial chemicals. Total 20 cases clinically presenting as salivary gland tumours during the study period were taken for study. Each case was examined clinically and properly in a systematic manner. The cases were treated on their individual merits. All patients presented with swelling. Features of rapid growth, pain, and associated facial paralysis were considered as signs of malignancy. One out of 20 patients presented with pain in swelling, that was malignant. Features of fixity, facial paralysis and nodal involvement were considered as signs of malignancy. Hard in consistency suggests malignancy. All patients in this study had only swelling and no other signs.

Keywords: Salivary gland tumours, Warthin's tumor, fine needle aspiration biopsy

Introduction
The major salivary glands are the parotid, submandibular and sublingual glands and there are 750 minor salivary glands [1]. Salivary gland tumors account for between less than 1% of all neoplasms of the head and neck. Demographics vary according to tumor type, but in general salivary gland tumors are more common in women than in men and have a peak incidence in the sixth to seventh decades of life.

Salivary gland neoplasms are rare, constitute of less than 1% of head and neck tumours. 70-80% of salivary gland neoplasms occur in parotid gland, of which 80% are benign, 20% are malignant, out of 80% benign tumours are pleomorphic adenomas. Submandibular gland tumours constitute 22% of tumours and sublingual gland tumours constitute of 8% of all major salivary gland tumours. In submandibular salivary glands 50% benign and rest are malignant [2]. In sublingual glands 85% are malignant and only 15% are benign. The incidence of malignancy in submandibular gland is higher than parotid gland and the prognosis is poorer than parotid malignancies.

Risk factors linked to the development of salivary gland neoplasia include: radiation exposure; familial or genetic predisposition; tobacco use: strong association between tobacco use and the development of Warthin's tumor; microorganisms: Epstein Barr virus linked lymphoepithelial carcinoma; exposure to industrial chemicals [3].

As in the thyroid gland, fine needle aspiration biopsy (FNAB) represents the initial diagnostic modality in assessing the pathology of a salivary gland mass [1]. Salivary gland neoplasms are rare, constitute of less than 1% of head and neck tumours. 70-80% of salivary gland neoplasms occur in parotid gland, of which 80% are benign, 20% are malignant, out of 80% benign tumours are pleomorphic adenomas. Submandibular gland tumours constitute 22% of tumours and sublingual gland tumours constitute of 8% of all major salivary gland tumours. In submandibular salivary glands 50% benign and rest are malignant [2].

In sublingual glands 85% are malignant and only 15% are benign. The incidence of malignancy in submandibular gland is higher than parotid gland and the prognosis is poorer than parotid malignancies.

Risk factors linked to the development of salivary gland neoplasia include: radiation exposure; familial or genetic predisposition; tobacco use: strong association between tobacco use and the development of Warthin's tumor; microorganisms: Epstein Barr virus linked lymphoepithelial carcinoma; exposure to industrial chemicals [3].

As in the thyroid gland, fine needle aspiration biopsy (FNAB) represents the initial diagnostic modality in assessing the pathology of a salivary gland mass; FNAB is cost-effective and efficient; has a sensitivity rate reported to be 81-98%; has a specificity rate reported to be 60-75%; has a false-negative rate reported to be 5-10%; has a false-positive rate reported to be 0-6% [4].

In general, the light microscopic features of salivary gland neoplasms are distinctive, such that immunohistochemistry is not necessarily required in order to arrive at a diagnosis; however, exceptions to this rule exist and immunohistochemical analysis may be required in the diagnosis and differential diagnosis of salivary gland neoplasms: the immunohistochemical antigenic profile of salivary gland neoplasms often correlates to the histogenetic derivation of the tumor.
Treatments of salivary gland tumours need good surgical skills, sound anatomical knowledge to avoid complication, as there are vital structures with both parotid and submandibular gland. Prognostic factors in salivary gland tumours include: clinical staging, microscopic grading, tumour location, facial nerve involvement, demographics [3, 9].

Methodology
Total 20 cases clinically presenting as salivary gland tumours during the study period were taken for study. Each case was examined clinically and properly in a systematic manner. The cases were treated on their individual merits.

Inclusion criteria
All patients admitted to surgical wards of KIMS Hubli with signs and symptoms of salivary gland tumours.

Exclusion criteria
- Non-neoplastic swellings of the salivary glands.
- Patients refusing for surgical treatment.
- Paediatric patients (less than 12 years)

All patients admitted were evaluated by documenting the history, thorough clinical examination, routine laboratory investigations and specific investigations. In history, importance was given to presenting complaints, duration of lump, rapid increased in size, associated symptoms of facial nerve involvement, previous surgical treatment or any medical problem.

Regarding physical examination, particulars mentioned in the proforma was noted. Importance was given to the site, extent of the tumor, deep lobe enlargement and fixity to the surrounding structures, nerve involvement and regional lymphadenopathy. Associated medical conditions like diabetes, hypertension, and anemia were managed and controlled before surgery with physician's advice.

As a part of general work up for surgery in all patients, hemoglobin level, bleeding time, clotting time, urine, sugar albumin, microscopy, chest screening, ECG, Blood urea, Serum creatinine, RBS was estimated. Specific investigations like FNAC, were done for all patients in the study group.

After evaluation of the tumor by clinical examination and specific investigations, a surgical plan was formulated. The final decision was taken per operatively by the surgeon. The specimen was sent for HPE.

Results

| Table 1: Age tumour cross tabulation |
|-------------------------------------|
| Age in years | Benign tumors | Malignant | Total No. of patients | % of total |
|-------------|-------------|----------|-----------------------|-----------|
| 11-20       | 3           | 0        | 3                     | 15        |
| 21-30       | 9           | 1        | 10                    | 50        |
| 31-40       | 3           | 0        | 3                     | 15        |
| 41-50       | 1           | 0        | 1                     | 5         |
| 51-60       | 2           | 1        | 3                     | 15        |
| Total       | 18          | 2        | 20                    | 100       |

The age incidence of the patients in the study group ranged from 16-60 years.

Most of the patients in this series were in the 2rd to 3th decade. Benign tumors are more common in 20-30 years. Malignant tumors are common between 21-60 years. Mean age for benign tumour is 35 years and for malignant tumours 40 years.

Table 2: Tumour sex cross tabulation

| Sex     | Benign | Malignant | Total | Percentage |
|---------|--------|-----------|-------|------------|
| Male    | 6      | 1         | 7     | 35         |
| Female  | 12     | 1         | 13    | 65         |
| Total   | 18     | 2         | 20    | 100        |

In this series, 7 (35%) patients were males and 13 (65%) were females. M:F ratio is 0.5:1. M: F ratio for benign tumours is 1:2. Male to female ratio for malignancy is 1:1.

Table 3: Tumour site cross tabulation

| Salivary gland | Benign | Malignant | Total | Percentage |
|----------------|--------|-----------|-------|------------|
| Parotid        | 16     | 2         | 18    | 90         |
| Submandibular  | 1      | 0         | 1     | 5          |
| Sublingual     | 0      | 0         | 0     | 0          |
| Minor salivary gland | 1 | 0 | 1 | 5 |
| Total          | 18     | 2         | 20    | 100        |

Parotid gland is the most commonest site accounting for 90% of all cases. Among parotid tumours 88.88% are benign and 11.11% are malignant.

Only two cases are reported involving submandibular gland and minor salivary gland and both are benign.

Table 4: Symptoms of salivary gland tumours

| Symptom                  | No. of patients | Percentage |
|--------------------------|-----------------|------------|
| Swelling                 | 19              | 95         |
| Pain                     | 1               | 5          |
| Facial palsy             | 0               | 0          |
| Recurrent tumor          | 0               | 0          |
| Parapharyngeal mass      | 0               | 0          |
| Cervical lymphnode swelling | 0              | 0          |

All patients presented with swelling. Features of rapid growth, pain, and associated facial paralysis were considered as signs of malignancy. One out of 20 patients presented with pain in swelling, that was malignant.

Table 5: Signs of salivary gland tumours

| Signs                     | Benign | Malignant |
|---------------------------|--------|-----------|
| Swelling                  | 19     | 1         |
| Fixity                    | 0      | 0         |
| Deep lobe involvement     | 0      | 0         |
| Facial nerve involvement  | 0      | 0         |
| Nodal involvement         | 0      | 0         |
| Metastasis                | 0      | 0         |

Features of fixity, facial paralysis and nodal involvement were considered as signs of malignancy. Hard in consistency suggests malignancy. All patients in this study had only swelling and no other signs.

Table 6: Duration of symptoms

| Duration of symptoms | Benign | Malignant | Total |
|----------------------|--------|-----------|-------|
| 1 month -1 year      | 11     | 1         | 12    |
| 1-5 years            | 6      | 1         | 7     |
| 6-10 years           | 0      | 0         | 0     |
| 11-20 years          | 1      | 0         | 1     |
| Total                | 18     | 2         | 20    |

Duration of symptoms ranged from 1 months to 15 years. 95% of all cases presented within 5 years.
Discussion

Table 7: Average age distribution of salivary gland tumors in various studies

| Series                              | Average age in year |
|-------------------------------------|---------------------|
|                                     | Benign | Malignant |
| S Shashinder et al. [17]            | 52     | 52        |
| Rekesh Kumar et al. [19]            | 44     | 50        |
| Nitin M et al. [9]                  | 49     | 49        |
| Nasrollah Saghravanian et al. [10]  | 37     | 45        |
| Present study                       | 35     | 40        |

Analysis of the above data shows that, in most studies, benign tumor occurs at a younger age group than malignant tumor.

Table 8: Sex distribution of salivary gland tumors in various studies

| Series                              | Male | Female | Total | Ratio (M:F) |
|-------------------------------------|------|--------|-------|-------------|
| S Shashinder et al. [17]            | 29   | 47     | 76    | 1:15        |
| Rekesh Kumar et al. [19]            | 57   | 31     | 88    | 2:1         |
| Nitin M et al. [9]                  | 19   | 17     | 36    | 2:1.5       |
| Present study                       | 7    | 13     | 20    | 0.5:1       |

Results of this study resembles the study by S Shashinder et al. Present study shows female preponderance. The male: female ratio is 0.5:1 in total. The male: female ratio for benign tumours is 0.5:1.

Table 9: Site distribution in various studies

| Series                              | Total | Parotid | Submandibular | Sublingual/Minor saliva gland |
|-------------------------------------|-------|---------|---------------|-------------------------------|
| N. Saghravanian et al. [10]         | 165   | 10      | 15            | 140                           |
| Nitin M et al. [9]                  | 36    | 24      | 3             | 9                             |
| Present study                       | 20    | 18      | 1             | 1                             |

Salivary gland malignancies present at an earlier age than most other malignancies.

Table 10: Frequency of benign and malignant salivary gland tumors in various studies

| Series                              | No. of cases | Benign (%) | Malignant (%) |
|-------------------------------------|--------------|------------|---------------|
| N Saghravanian et al. [10]          | 165          | 51.5%      | 48.5%         |
| Nitin M et al. [9]                  | 36           | 75%        | 25%           |
| Present study                       | 20           | 80%        | 10%           |

In this study, benign tumours are more common than malignant tumours, similar to other studies.

Table 11: Frequency of site distribution of malignant tumors

| Series                              | Parotid | Submandibular | Sublingual/Minor salivary gland |
|-------------------------------------|---------|---------------|--------------------------------|
| Nitin M et al. [9]                  | 13%     | 2.77%         | 8.33%                          |
| Present study                       | 10%     | 0             | 0                              |

In present study malignant tumours are reported only in parotid gland.

Table 12: Comparison of Clinical features

| Sign/symptom | Rekesh Kumar et al. [19] | Present study |
|--------------|--------------------------|---------------|
| Swelling     | 100%                     | 95%           |
| Pain         | 20.4%                    | 5%            |
| Facial palsy | 20.45%                   | 0             |
| Cervical lymph node | 13.63% | 0             |
| Recurrent tumour | 0             | 0             |
| Deep lobe involvement | 1.13% | 0             |

As per data shown swelling is the commonest symptom. Pain, facial palsy, lymph node involvement, fixity and deep lobe involvement suggests malignancy. Rekesh Kumar et al. reported that the incidence of pain, facial nerve, cervical lymph node in malignant tumours as 20.4%, 20.45% and 13.63% respectively.

Conclusion

- The salivary gland neoplasms more common in females M: F 0.5:1. So out of which 7 patients were male and 13 patients were female. M:F ratio for benign tumours 1:2. And malignancy 1:1.

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