RETROSPECTIVE STUDY OF PAROTID NEOPLASMS IN A TERTIARY HOSPITAL

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ABSTRACT

BACKGROUND

Neoplasms of the salivary gland are rare tumours with an annual incidence of 1:100000. It comprises 3% of Head and Neck Neoplasms.^[1] In salivary gland tumours, the mean age is 45 years with peak incidence in 6th and 7th decade of life.^[2,3] The most frequent site for salivary neoplasm is parotid gland.^[4-6] Around 80% of parotid tumours are benign, the commonest being pleomorphic adenoma followed by Warthin's tumour. Most common salivary malignancy is mucoepidermoid carcinoma involving the parotid gland.^[5,7] Adenoid cystic carcinoma is the second most common malignancy.

MATERIALS AND METHODS

In this series, various aspects of the parotid tumours admitted in MediCiti Institute of Medical Sciences from January 2012 - January 2017 in the Department of General Surgery and ENT were analysed. A detailed study of 42 cases of parotid tumour admitted during this period is carried out. Our study comprises of benign and malignant tumours of the parotid gland and the results are compared with the data available in the literature. Study design is retrospective descriptive study.

RESULTS

Majority of salivary gland tumours arise from parotid gland. The mean age was 51.05 years. The present study exhibits an incidence of 64.3% benign tumours and 35.7% malignant tumours with pleomorphic adenoma accounting for 85.18% of benign tumours and about 54.76% of all parotid neoplasms.

CONCLUSION

Neoplasms of parotid gland are most commonly encountered salivary neoplasms. Most of them are benign. About 80% of primary salivary gland epithelial tumours are seen in parotid gland, mostly in superficial lobe. The peak age incidence was in the 50 - 60 years' age group. Benign tumours, particularly pleomorphic adenoma is commonest presentation and the commonest malignant tumour is mucoepidermoid carcinoma.

KEYWORDS

Parotid Gland, Neoplasm, Pleomorphic Adenoma, Mucoepidermoid Carcinoma, Adenoid Cystic Carcinoma.

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BACKGROUND

Salivary gland neoplasms constitute 3% of Head and Neck neoplasms with mean age around 45 years. Benign salivary gland tumours are more frequently encountered in females whereas malignant tumours are more frequently encountered in males. The most frequent site of salivary neoplasm is parotid gland. Most of the parotid tumours are benign (80%) and the most common benign tumour is pleomorphic adenoma followed by Warthin's tumour. The most common malignant tumour is mucoepidermoid carcinoma followed by adenoid cystic carcinoma. Salivary gland neoplasms have diverse histopathology and variable biological course. Parotid gland has an intimate anatomical relationship with the facial nerve, presence of intraparotid lymph nodes and a deep lobe. The consequence of sacrificing the facial nerve may at times constitute a deterrent to the performance of adequate surgery for tumour arising from the

Parotid gland. Moreover, parotid gland cancers have a variable biological course and do not follow the general familial survival pattern of squamous cell carcinomas of the head and neck. The Parotid gland benign tumours are less benign and the malignant tumours are less malignant as compared to benign and malignant tumours of the head and neck tumours. Because of this variation, the success of treatment and ultimate prognosis can be expressed, not in 5 years or 10 years but rather in 20 years. Perhaps no tissue in the body is capable of producing such a diverse histopathological expression than the parotid gland tissue due to the presence of myoepithelial cells in the parotid. Because of this, the tumour surgery is coupled with other forms of therapy such as radiotherapy and chemotherapy for better results.

Objective

To study the incidence of various parotid neoplasms attending a tertiary hospital, i.e. MediCiti Institute of Medical Sciences, Medchal, Telangana.

MATERIALS AND METHODS

In this study, various aspects of the parotid tumours are analysed in the cases admitted in MediCiti Institute of Medical Sciences from January 2012 - January 2017 in the Department of Surgery and ENT. All these cases are compared with the data available in the literature and a

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detailed study of 42 cases of parotid tumour is carried out. Study design is retrospective descriptive study.

RESULTS

The total number of patients attended both the OPDs during the above period of 5 years is 1,98,250. Out of which, 42 cases were of parotid neoplasms. The incidence of parotid neoplasms among both OPDs is 0.0211%. The present study of 42 cases exhibit an incidence of 64.3% benign tumours and 35.7% malignant tumours with pleomorphic adenoma accounting for 85.18% of benign tumours and about 54.76% of all parotid neoplasms. Pleomorphic adenoma constituted the commonest pathology affecting the parotid gland, the commonest malignant tumour was mucoepidermoid carcinoma. The distribution of various tumours in comparison with Spiro's series^[8] and Eneroth series^[9] is given below which is almost consistent.

	No. of Cases	% of Present Series	% in Spiro's Series	Eneroth Series
Pleomorphic adenoma	23	54.76	45.4	45.7
Monomorphic adenoma	2	4.76	0.2	-
Warthin's tumour	1	2.38	1	3.3
Nonspecific benign	1	2.38	1	-
Mucoepidermoid carcinoma	6	14.28	15.7	20.9
Malignant mixed tumour	3	7.14	5.7	-
Adenoid cystic carcinoma	3	7.14	10	8.5
Undifferentiated carcinoma	2	4.76	1.3	-
Lymphoma	1	2.38	-	-

Table 1. Showing various Parotid Neoplasms encountered in comparison with Spiro and Eneroth Series

Age

While the youngest patient was 12 years, the oldest patient in this series was 68 years old. The peak age incidence was in the 50 - 60 years' age group. The mean age was 51.05 years. The mean age of incidence in males was 55.4 years and in females was 46.7 years. The mean age is higher for malignant tumours, 57.4 years compared to benign tumours 44.7 years.

Gender	Present	Fenn AS	Benign Tumours	Malignant Tumours
Male	23	31	13	8
Female	19	26	14	7
Total	42	57	27	15
Ratio	1.21:1	1.2:1	1:1.07	1.14:1

Table 2. Sex Distribution of Parotid Tumours in comparison with Fenn AS Series

Sex

There were 23 male patients and 19 female patients in this series. The male: female ratio for benign tumours was almost equal. There was a slight female preponderance (1: 1.07). For malignant tumours, there was a slight male preponderance (Male: Female- 1:1.14: 1). This is in agreement with the study

conducted by Fenn AS,^[10] where the male: female ratio is 1.2:1.

Clinical Features

In the present series, most of the cases have presented with painless swelling in the parotid region. In the present series 40 cases have originated from the superficial lobe of the parotid and 2 cases from the deep lobe. Painful swellings are found to be carcinoma of the parotid gland. Rapid growth, facial paralysis, pain as primary symptoms are associated with malignancy. Among the malignant tumours, 20% of cases presented with facial palsy and fixity to the underlying structures and lymph node metastasis is seen in 13.4% of cases in comparison with Spiro RH series^[8] which shows lymph node metastasis in 23% of cases and facial nerve involvement in 22% of cases.

Surgery

All cases were treated primarily by surgery. Surgical procedures offered in this series are Superficial Parotidectomy (40.47%), Total Conservative Parotidectomy (28.57%), Total Parotidectomy (2.38%) and Radical Parotidectomy (9.52%). One patient with NHL underwent total conservative parotidectomy. In our series, all cases of malignant parotid tumours after radical surgery received adjuvant radiotherapy.

Clinical Features of Malignancy	Present %	Spiro RH %
Facial nerve palsy	20	22
Lymph node metastasis	13.4	23
Fixity to underlying structures	20	-

Table 3. Percentage of Parotid Neoplasms showing features of Malignancy in comparison with Spiro Series

These results are comparable with Liverstein H.^[11]

1	Superficial parotidectomy	17	40.47%
2	Total conservative parotidectomy	12	28.57%
3	Total parotidectomy	1	2.38%
4	Radical parotidectomy	4	9.52%
5	Radical parotidectomy with nerve grafting	1	2.38%
6	Excision	5	11.9%
7	Enucleation (from deep lobe)	2	4.76%

Table 4. Various Surgical procedures done for Parotid Neoplasms

Post-operative complications like Temporary facial palsy seen in 17 cases, Permanent facial palsy seen in 2 cases, Salivary fistula seen in 2 cases, Wound infection seen in 2 cases and Frey's syndrome was not recorded in any case. These results were consistent with Owen ERTC et al.^[12]

Surgery	Present Study	Liverstein H
Superficial parotidectomy	40.47%	24.89%
Total parotidectomy	28.57%	53.86%
Radical parotidectomy	9.52%	3.27%
Others	-	-

Table 5. Various Surgical Procedures undertaken in comparison with Liverstein H Series

Post-Operative Complications	Present Study	Owen ERTC et al
Temporary facial weakness	40.47%	38%
Permanent facial palsy and exposure keratitis	5%	9%
Salivary fistula	5%	2%
Wound infection	5%	-
Frey's syndrome	Nil	11%
Table 6. Various Post-Operative Complications encountered in comparison with Owen Series		

Temporary facial paralysis was seen in 40.47% of patients in our study. All occurred in patients with superficial parotidectomy. None in superficial parotidectomy, normal function returned in 4 - 6 months. It may be due to nerve ischaemia, fatigue from excessive stimulation or stretching. However, permanent facial paralysis was seen in 5% as compared to 9% of Owen's study. Salivary fistula developed in 5% of patients as compared to 2% of Owen's study. None of the patients had complaints of Frey's syndrome, which was seen in 11% of patients in Owen ERTC et al study.^[12] Cervical branch of facial nerve was paralysed in 2 out of 4 submandibular surgery. None of these parotid tumours showed recurrence over a period of 1 year and malignant tumour of submandibular had local recurrence at 1 year (5%).

Prognosis of Parotid Tumours

Prognosis is very good provided the policy of early treatment and wide excision of tumour is carried out. Mortality in case of benign tumours is almost nil and life expectancy is about normal. Survey of literature shows that these tumours rarely prove detrimental to the life unless they have turned malignant with extensive local infiltration and metastasis. Mortality in the present series, followed for six months to two years is nil.

DISCUSSION

Parotid gland is the commonest site for salivary gland tumours.^[2,8] About 64% - 80% of primary salivary gland epithelial tumours are seen in parotid gland, mostly in superficial lobe.^[13] Our study comprises of 42 cases of benign and malignant tumours of the parotid gland. The peak age incidence was in the 50 - 60 years' age group. The mean age was 51.05 years. The mean age is higher for malignant tumours of 57.4 years compared to benign tumours of 44.7 years. Auclair P reported peak age incidence of salivary gland tumours is 6th and 7th decade of life with mean age of 46 years.^[3] Satko et al^[14] reported mean age incidence of 53 years. The mean age is higher for malignant tumours around 55 years compared to benign tumours around 45 years.^[2,8,15] The male: female ratio for benign tumours was almost equal. There was a slight female preponderance (1: 1.07). For malignant tumours, there was a slight male preponderance (Male: Female- 1:14:1). This is in agreement with the study conducted by Fenn AS,^[10] where the male: female ratio is 1.2:1. In our study, the incidence of benign tumours was 64.3% and malignant tumours was 35.7% with Pleomorphic adenoma accounting for 85.18% of benign tumours and about 54.76% of all parotid neoplasms. Commonest complaint of patients with parotid tumours is painless swelling in the parotid region. Around 53% of parotid tumours which are malignant, manifested with signs of

malignancy such as facial palsy, fixity to underlying structures and lymph node metastasis, remaining 47% did not show the symptoms of malignancy which was consistent with the study conducted by Snow GB.^[15] Pleomorphic adenoma and Warthin's tumours are commonest of benign tumours of parotid gland. This is consistent with the studies conducted by Spiro^[8] and Eneroth.^[9]

Malignant tumours consist of 35.7% of parotid tumours among which Mucoepidermoid carcinoma is the commonest followed by Adenoid Cystic carcinoma. This is consistent with the study conducted by Ellis GL et al, Spiro RH and Ito FA et al.^[1,8,14]

Treatment of choice for parotid gland tumours is parotidectomy preserving the facial nerve.^[15] Excision of the entire superficial lobe of parotid will give adequate surgical margins and avoids rupture of capsule and reduces the recurrence rate.^[16] In our series, Superficial Parotidectomy was done for all cases of benign parotid tumours. The treatment of choice for malignant parotid tumours is Partial or Total parotidectomy with preservation of facial nerve if possible. In our series, 12 cases of malignant tumours' facial nerve was preserved, in 5 cases radical parotidectomy was done by sacrificing the facial nerve and in one case facial nerve grafting could be done. Adjuvant radiotherapy will help in improving the local control and survival.^[7,17] In our series, all cases of malignant parotid tumours after radical surgery received adjuvant radiotherapy.

CONCLUSION

Parotid gland is the commonest site for salivary gland tumours.^[2,8] About 64% - 80% of primary salivary gland epithelial tumours are seen in parotid gland, mostly in superficial lobe.^[13] The peak age incidence was in the 50 - 60 years' age group. The mean age was 51.05 years. The mean age is higher for malignant tumours of 57.4 years compared to benign tumours of 44.7 years. The male: female ratio for benign tumours was almost equal. There was a slight female preponderance (1: 1.07). For malignant tumours, there was a slight male preponderance (Male: Female- 1:14: 1). In our study, the incidence of benign tumours was 64.3% and malignant tumours was 35.7% with Pleomorphic adenoma accounting for 85.18% of benign tumours and about 54.76% of all parotid neoplasms. Commonest complaint of patients with parotid tumours is painless swelling in the parotid region. Pleomorphic adenoma and Warthin's tumours are commonest benign tumours of parotid gland. Malignant tumours consist of 35.7% of parotid tumours, among which Mucoepidermoid carcinoma is the commonest followed by Adenoid Cystic Carcinoma. Treatment of choice for parotid gland tumours is parotidectomy preserving the facial nerve.^[15] Excision of the entire superficial lobe of parotid will give adequate surgical margins and avoids rupture of capsule and reduces the recurrence rate.^[16]

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