



Research Article

A Study of Histopathological Spectrum of Sellar, Suprasellar and Parasellar Lesions of CNS at Tertiary Care Centre

Authors

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Abstract

Background: *The sellar and parasellar region is an anatomically complex area that represents a critical junction for important contiguous structures. A number of pathological processes occur in the sellar/para/suprasellar region including: neoplastic, inflammatory, infectious, developmental and vascular abnormalities and the presentation of the various lesions can mimic the pituitary adenomas clinically, endocrinologically and in the radiological presentation.*

The overwhelming majority of sellar region masses are pituitary adenomas (85%), followed by craniopharyngiomas (3%), Rathke cleft cysts (2%), meningiomas (1%), and metastases (0.5%); all other lesions, such as hypophysitis, pituitary tumor, spindle cell oncocytoma, and granular cell tumor of neurohypophysis, are rare lesions. The purpose here is to study the histopathological spectrum of sellar, suprasellar and parasellar lesion in biopsy specimen received in Department of Pathology of SMS Medical College and Hospital, Jaipur.

Objective: *To find out proportion of various morphological types of sellar, suprasellar and parasellar lesions in intracranial lesions.*

Material and Methods: *A total of 671 samples of intracranial SOL biopsy specimens were received from IPD, out of which 100 samples of sellar / suprasellar biopsies were enrolled for present study. Histopathological analysis was done.*

Results: *Out of 100 cases Pituitary Adenoma was the commonest lesion followed by Craniopharyngioma. The number of male and female patients was approximately same, ratio was 1.27:1. Among females, most common age group was 41 to 50 years and in males it was 31 to 40 years.*

Conclusion: *Pituitary adenomas being the most frequent lesion encountered in the sellar/parasellar/suprasellar area in our institute, followed by non-adenomatous lesions including meningiomas and the potentially malignant parasellar lesion Craniopharyngiomas.*

Keywords: *Sellar-Suprasellar lesions, Parasellar lesion, Pituitary tumor.*

Introduction

The sellar and parasellar region is an anatomically complex area that represents a critical junction for

important contiguous structures¹. While the sellar region has specific anatomical landmarks, the parasellar region is not clearly delineated. It

includes, laterally, the dural walls of the cavernous sinus², and is in close relation with the basisphenoid and sphenoid sinus inferiorly and superiorly with the suprasellar subarachnoid spaces¹.

A variety of pathological processes occur in the sellar/para/ suprasellar region including: neoplastic, inflammatory, infectious, developmental and vascular abnormalities. The presentation of the various lesions can mimic the pituitary adenomas clinically, endocrinologically and in the radiological presentation³. The pituitary adenoma is the most common lesion of the sella turcica and can extend to the parasellar region^{4,5}.

The frequently encountered sellar region masses are pituitary adenomas, craniopharyngiomas, Rathke cleft cysts and meningiomas. Rare lesion are metastases; hypophysitis, pituicytoma, spindle cell oncocytoma, and granular cell tumor of neurohypophysis⁶.

Sellar and parasellar masses usually present with hormonal symptoms and compressive local mass effects nearby vital surrounding structures. The severity depends on the location, size and growth potential of the tumors^{9,10}.

The diagnosis of such lesions by histopathological studies helps firstly to reach the correct diagnosis prior to any intervention and to attempt identifying patients with high risk of recurrence. The purpose of this study is to determine the histopathological spectrum of sellar, suprasellar and parasellar lesion in biopsy specimen received in Department of Pathology of SMS Medical College and Hospital, Jaipur.

Material and Methods

Laboratory based Cross sectional descriptive type of observational study was conducted from April 2017 to March 2018. A total of 671 samples of intracranial SOL biopsy specimen received from IPD, out of which 100 samples of sellar / suprasellar biopsy were enrolled for present study. Autolysed specimens and intracranial specimens at other sites were excluded from the study.

The study protocol was approved by the Ethics Committee of SMS Hospital Jaipur. And the sections were studied. IHC was applied if required.

Results

Out of 100 cases 25% were from the age group 31- 40 years, followed by 41-50 years (23%) and few cases were seen in the age 61-70 years (6%). 56% were males and 44% were females, The ratio being was 1.27:1. Common age group in females was 41 to 50 years whereas the common age group in males was 31 to 40 years.

The most commonly observed tumour was Pituitary Adenoma (63%) followed by Craniopharyngioma(19%), Meningioma(5%) Astrocytoma (4%) Chordoma 3% Granulomatous hypophysitis (2%) Pituitary Apoplexy 2% and one case of Ganglion Cell Tumor and Rathke's Cleft Cyst was seen.

In our study Meningioma and Granulomatous hypophysitis were seen exclusively in females with 1 case of Rathke's Cleft Cyst. Pituitary Adenoma (55.56%), Craniopharyngioma (73.68%), Astrocytoma (75%) and Chordoma (66.67%) were common in males.

Craniopharyngioma were observed in 75% cases and Astrocytoma was observed in 25% cases in ≤ 10 years of age group. Similarly in 11 to 20 years of age group out of 13 cases, Craniopharyngioma were observed in 53.85% cases and Astrocytoma was observed in 15.38% cases and Pituitary Adenoma 30.77% cases. In 21 to 30 years of age group out of 16 cases, and Pituitary Adenoma were observed in 75% cases, Craniopharyngioma were observed in 12.5% cases and Meningioma were observed in 12.5% cases. In 31 to 40 years of age group out of 25 cases, and Pituitary Adenoma were observed in 80% cases, Pituitary Apoplexy and Meningioma were observed in 8% cases and Rathke's Cleft Cyst were observed in only a cases. In 41 to 50 years of age group out of 23 cases, and Pituitary Adenoma were observed in 69.75% cases. In 51 to 60 years of age group out of 9 cases, and Pituitary

Adenoma were observed in 66.67% cases, one case of each Chordoma, Ganglion Cell Tumor and Craniopharyngioma were observed. In 51 to 60 years of age group out of 6 cases, and Pituitary Adenoma were observed in 83.37% cases, one case of Craniopharyngioma was observed.

Table 1 Distribution of the cases

Disease	Number	Percentage %
Pituitary Adenoma	63	63
Craniopharyngioma	19	19
Meningioma	5	5
Astrocytoma	4	4
Chordoma	3	3
Granulomatous hypophysitis	2	2
Pituitary Apoplexy	2	2
Ganglion Cell Tumor	1	1
Rathke's Cleft Cyst	1	1
Total	100	100

Discussio

The sellar/ parasellar and suprasellar region is complex and contains many important structures that can give origin to diversity of pathological lesions.

In our study we found that most of the cases were in the age range 31 to 50 years (48%) and few were in age range 61-70 years (6%). Our results are consistent with the study conducted by Dogar T et al¹¹, Banna et al¹² and Goyani BR et al¹³ who also encountered maximum number of patients in this age group. Kaki RR et al¹⁴ documented that CNS lesions were common in fifth decade.

Our study had male to female ratio 1.27:1. The findings are in accordance with Dogar T et al¹¹, Goyani BR et al¹³, Jindal N et al¹⁵, and Tesfay M et al¹⁶ who also observed male predominance in their study. However Kaki RR et al¹⁴ and Sunila et al¹⁷ showed female predominance in their study.

In our study we found that neoplastic lesions were more common than non-neoplastic lesions. Our results are similar to other studies conducted by Rathod V et al¹⁸ and Butt ME et al¹⁹ who also observed the same.

The most common mass lesions detected were in our study pituitary adenomas comprising (63%) of the total cases, followed by Craniopharyngioma (19%). Our results are in accordance with

Benjamin et al²⁰ and Johnsen et al²¹, Vikas Batra et al²² and G.I.Ogbole et al²³ who also found pituitary adenoma as the most common lesion in their study. However Nibhoria S et al²⁴ and Jat KC et al²⁵ observed that among the neoplastic lesions, Glial tumors were the commonest neoplastic lesion followed by meningeal tumors. In our study we also found that 63 cases were diagnosed as pituitary adenoma affecting 35 males and 28 female. Pituitary adenoma was found to be more common in males as compared to females. The results in our study are concordant with Joseph L Donovan et al²⁶, G.I.Ogbole et al²³ who also reported pituitary adenoma was found to be more common in males.

19 cases were diagnosed as Craniopharyngioma in our study. It was found to be more common in males as compared to females. Our results are in consistent with Pouyan Famini et al. In our study 5 cases were diagnosed as Meningioma, all these patients were females. Carlos et al²⁷ reported that Meningioma are 3 times more common in females and are largely tumors of adulthood, with greater than 70% occurring after age 55years. The results in our study are concordant with the Reddy et al²⁸ and Gadgilet al²⁹.

In our study we found a single case of Rathke's Cleft cyst. Rathke's cleft cysts are benign, cystic remnants of the craniopharyngeal duct that are typically located in the sellar and suprasellar region³⁰. We found 2 cases of Granulomatous hypophysitis affecting females. Our results are in accordance with Elena Valassi et al³¹ who detected Granulomatous hypophysitis in 4 out of 5 patients.

Two types of lesion were observed in age group less than 10 year. They were Craniopharyngioma and Pilocytic Astrocytoma. The Pituitary adenoma was seen in wide range of age group from 11 years to 70 years. Craniopharyngioma occurred in all age groups, however, the most common age group affected was 0 to 20 years. Meningioma occurred commonly in age group 21 to 40 years. Three cases of Chordoma were seen in our study; the affected group was 41to 60 years which infers

that Chordoma is seen relatively older population. Our results are in concordance with Jahangiri A et al³² who also reported Chordoma occurs at 50 and 60 yr of age.

Conclusion

Our histopathological experience is comparable with the literature experience and confirmed the notion of pituitary adenomas being the most frequent lesion encountered in the sellar/parasellar/suprasellar area in our institute, followed by non-adenomatous lesions including meningiomas and the potentially malignant parasellar lesion Craniopharyngiomas.

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