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Original Article

Spectrum of Sellar and Parasellar Lesions

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Abstract

Background: The Sellar and parasellar region being small, but is an anatomically complex area which encloses many vital structures and can get involved by diverse pathological lesions such as neoplastic, inflammatory, infectious, developmental and vascular abnormalities. All of them clinically presenting as mass lesions occupying the sellar and/parasellar areas. Unfortunately, many of these tumors lack characteristic imaging features thereby making the histological diagnosis crucial in the management of the patient. This study was done with the aim of knowing the incidence, age group affected and the varied spectrum of conditions which can present as sellar and/ parasellar lesions and to review the cases with respect to latest WHO 2016 classification and to eliminate the differentials.

Methods: A 5 year retrospective study was conducted in the Department of Neuropathology, Institute of Neurosurgery/Neurology from January 2014 to December 2018 and CT confirmed cases of sellar and/ parasellar masses were compiled.

Results: A total of 158 cases were identified during the study duration which presented as sellar and/ parasellar mass lesions, with a slight female preponderance. The commonest being Pituitary adenoma 92 cases (58.23%) followed by Craniopharyngioma 28 cases (17.72%). The other lesions encountered are: Meningioma, Glial tumors, Pituitary carcinoma and secondary deposits. Of which extremely rare lesions like Pleomorphic xanthoastrocytoma and recurrent pituitary adenoma was also encountered. Non neoplastic lesions such as abscess, Rathke cleft cyst and Xanthogranuloma of sellar region.

Conclusion: A wide spectrum of neoplastic and non-neoplastic lesions can present as mass lesions occupying the sellar and parasellar regions knowledge of which is essential. Even rare lesions are possible in these anatomically complex areas. The commonest lesion encountered was Pituitary adenoma followed by non-adenomatous tumors like Craniopharyngioma and Meningioma. Hence one should have a differential of all these lesions while approaching sellar and/ parasellar mass.

Keywords: Sellar; Parasellar; Pituitary adenoma.

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Introduction

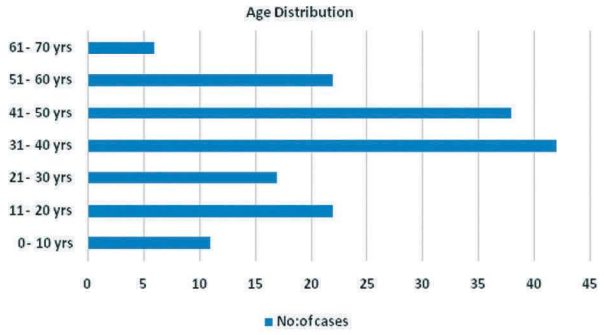
The anatomical complexity of the sellar region brings a wide variety of lesions into the clinicopathologic differential diagnosis.[1] Unfortunately many of them lack characteristic imaging features thereby making it difficult to distinguish these lesions by imaging alone.[2,3] Therefore a sound knowledge about the possibilities of spectrum of lesions encountered in the sellar and parasellar regions is necessary for surgical pathologist.

Materials and Methods

A 5 year retrospective study was conducted in the Department of Neuropathology, Institute of Neurosurgery/Neurology from January 2014 to December 2018 and CT confirmed cases of sellar and parasellar masses were compiled and their corresponding histopathological diagnosis and clinical details of the case were retrieved from medical records.

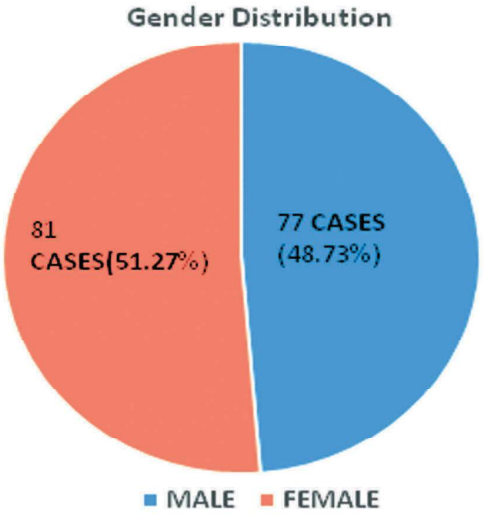
Results

In our study a total of 158 cases were identified presenting as sellar and parasellar mass lesions. The commonest age group was 31 to 40 years, 42 cases (26.58%), followed by 41 to 50 years, 38 cases (24.1%) [Graph 1]. There was a slight female preponderance in our study with male to female ratio of 1:1.05 (Graph 2).



Graph 1: Age distribution.

Histologically Pituitary adenoma (Fig. 1) was the commonest 92 cases (58.23%), followed by non-adenomatous tumor like Craniopharyngioma (Fig. 2) 28 cases (17.72%), Meningioma (Fig. 3) 17 cases (10.76%), Pilocytic astrocytoma 5 cases (3.16%), secondary deposits 3 cases (1.9%), Pleomorphic xanthoastrocytoma [Fig. 4] 2 cases (1.27%), Diffuse astrocytoma 2 cases (1.27%), Giant cell glioblastoma 2 cases (1.27%), optic nerve glioma 2 cases (1.27%) and one case each in Pituitary carcinoma, Ependymoma, Abscess, Rathke cleft cyst and Xanthogranuloma of sellar region [Table 1]. Among this 4 cases (2.53%) were recurrent tumors, 2 cases were recurrent Pituitary adenomas and one case each of Craniopharyngioma and Ependymoma.



Graph 2: Gender distribution.

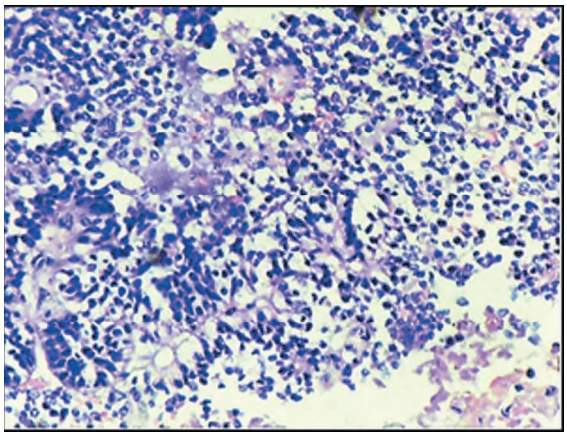


Fig. 1: Pituitary Adenoma (H & E * 100).

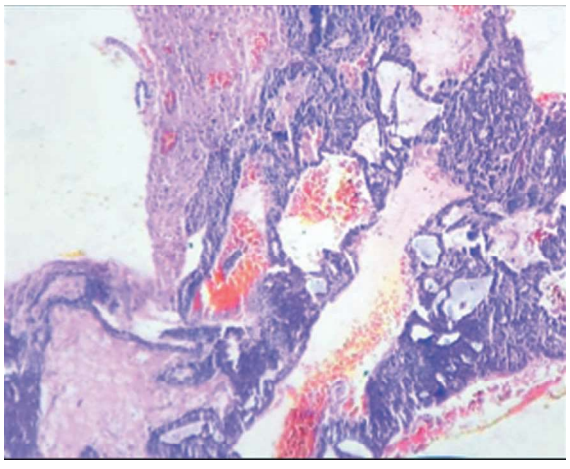


Fig. 2: Craniopharyngioma (H & E * 100).

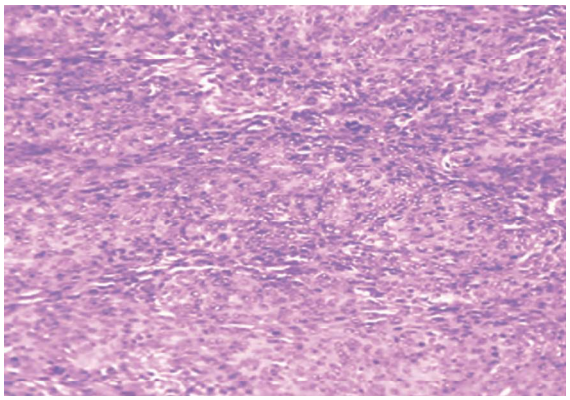


Fig. 3: Meningioma (H & E * 100).

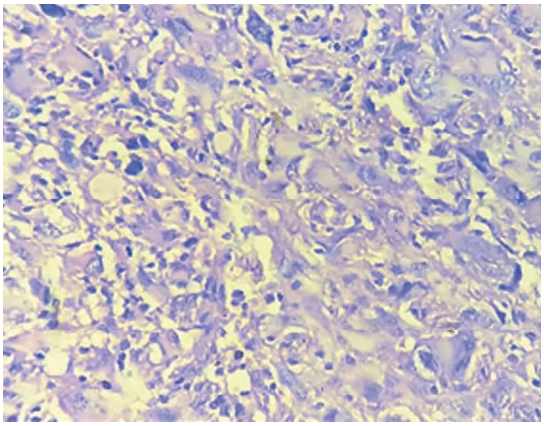


Fig. 4: Pleomorphic Xanthoastrocytoma (H & E * 100).

Table 1: Spectrum of Lesions Encountered in Sellar and Parasellar Region.

Lesions	No. of Cases	Percentage
1. Pituitary adenoma	92	58.23
2. Craniopharyngioma	28	17.72
3. Meningioma	17	10.76
4. Pilocytic Astrocytoma	5	3.16
5. Secondary Deposits	3	1.9
6. Pleomorphic Xanthoastrocytoma	2	1.27
7. Diffuse Astrocytoma	2	1.27
8. Giant Cell Glioblastoma	2	1.27
9. Optic Nerve Glioma	2	1.27
10. Ependymoma	1	0.63
11. Pituitary carcinoma	1	0.63
12. Abscess	1	0.63
13. Rathke Cleft Cyst	1	0.63
14. Xanthogranuloma of Sellar Region	1	0.63

Discussion

Sellar and parasellar region an anatomically complex region and it can have spectrum of mass lesions ranging from neoplastic tumors like pituitary adenoma to non-neoplastic lesions like Rathke cleft cyst. The incidence of sellar and parasellar tumors among the intracranial tumors in our study is about 5.27%, which is less when compared to the observation made in the literature.[4] In our study we found 31-40 years as the most affected age group which is consistent with the study conducted by Dogar T et al[5], Banna et al[6], Goyani BR et al[7] and Om Prakash et al[8], while Kakki RR et al[9] documented that CNS lesions are common in fifth decade. The male and female ratio in our study is 1:1.05 which is in concordance with Kaaki RR et al[9] and Sunila et al[10] which showed female preponderance, however Dogar T et al[5] and Goyani BR et al[7] showed male predominance.

The pituitary adenoma is the most common lesion of the sella turcica and can extent to parasellar region.[11,12] In our study also the commonest tumor encountered was Pitutary adenoma (58.23%) followed by Craniopharyngioma (17.72%) and Meningioma (10.76%), which is in concordance with the observation made by studies in literature [Table 2].

Table 2: Comparison with National and International Data:

Data	Our Study	Prakash O et al[8]	Al-Dahmani K et al[13]
Frequent Age Group	31-40 years	31-50 years	30-39 years
Gender Distribution	Female>Male	Male>Female	Female>Male
Male to Female Ratio	1:1.05	1.27:1	0.61:1
Pitutary Adenoma	58.23%	63%	83%
Cranio pharyngioma	17.72%	19%	4.5%
Meningioma	10.76%	5%	1.7%

Interesting Rarities Encountered

Pleomorphic Xanthoastrocytoma (PXA) rare form of astrocytic tumor which is commonly encountered in young adults and children.[14] PXA is most commonly supratentorial in the cortical regions of the cerebral hemispheres, and presents as cystic mass with a contrast enhancing mural component.[15,16] PXA originating in the suprasellar region is extremely rare and has only been described in seven patients in the literature.[17-22] In our study it was reported in 2 cases (1.27%). On imaging it presents as solid and cystic mass on MRI and produces visual disturbances due to local mass effect. By having PXA as a differential diagnosis preoperatively, surgical plan may change to a more

aggressive resection to provide a longer recurrence-free survival to the patient.[22]

Ependymoma are glial tumors that usually arises from the ependymal cells lining the ventricles and central canal within the spinal cord. The location of these tumors varies by age and it was often found to involve the spinal cord in adults and posterior fossa in children.[23] Pitutary Ependymomas are extremely rare and only 9 cases have been reported in literature. In our study we observed a case of ependymoma which was found in the sellar region in a 18 year old male. Interestingly, the patient had recurrence on follow-up.

Metastatic lesions comprise approximately 1% of the tumors in the sellar/parasellar (SPS) area for which patients undergo transsphenoidal surgery (TSS).[24,25] In our study, they comprise about 1.9% which is slightly higher than the above observation. Breast and Lung cancer are the two most common types of malignant tumors that metastasize to the Sellar and parasellar region, with respective rates of 40% and 33%.[26]

Pitutary carcinoma is defined by presence of CSF metastasis. Several studies showed incidence of Pitutary carcinoma is <0.5% of symptomatic pituitary tumor, probably about 0.2%.[27,28] In our study we observed a single case (0.63%) of pituitary carcinoma which had CSF metastasis.

Conclusion

Apart from the commnest lesion in the sellar and parasellar region the pituitary adenoma, followed by craniopharyngioma, a wide variety of other lesions encountered in sellar and parasellar regions which includes both neoplastic and non-neoplastic lesions. These lesions clinically present as mass lesions occupying the sellar and parasellar areas hence knowledge about these lesions is essential for proper diagnosis, treatment and follow up of these cases.

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