Research Paper

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Spectrum of CNS Tumors in Pediatric age group in a tertiary care centre

Pathology

KEYWORDS : CNS tumors, Pediatric age, Tertiary care centre

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ABSTRACT

Objectives: CNS Tumors are one of the most common solid tumors diagnosed among children worldwide. The purpose of study was to elaborate the pattern and frequency of CNS tumours in tertiary care centre and also to study the pathology of CNS tumours in relation to age, sex and location.

Methods- A two year (Oct2012-Oct2014) retrospective review of CNS Tumours in paediatric age group (<12 years) was conducted in Department of Pathology, BJ Medical College , Ahmadabad. Histopathological features were evaluated with clinical and radiological correlation.

Results- Thirty two patients were included in the study. Overall, males were more frequently affected than females . Medulloblastoma were the single most frequent tumour (37.5%), followed by astrocytoma(25%) and ependymoma(12.5%). Infratentorial location predominate in the paediatric group.

Conclusion- The incidence of various paediatric CNS tumours was nearly similar to that as reported in the literature.

INTRODUCTION

Primary Neoplasm of the Central Nervous system (CNS) are the most common solid tumours of childhood , making up 20% of all paediatric oncologic conditions[1] and are surpassed only by leukaemia and lymphoma in frequency.[2]

They include many histological subtypes, which vary in their site of origin and degree of malignancy.

HOW THEY VARY FROM ADULT ??

Unlike tumours of adults, childhood brain tumours have tendency to occur along the central neural axis and posterior fossa.

In Adults: 70% of tumors are supratentorial

- meningioma
- pituitary adenoma
- High grade astrocytoma
- Anaplastic astrocytoma (grade III)
- Glioblastoma multiforme (grade IV astrocytoma)

Pediatric: 70% tumors are in posterior fossa

- pilocytic astrocytoma (cerebellar astrocytoma)
- medulloblastoma

CNS metastasis from extra-cerebral tumors are uncommon in childhood.[1]

MATERIAL AND METHOD

A two year(from Oct 2012-Oct 2014) retrospective review of CNS tumours in paediatric age group (<12 years) was conducted in Department of Pathology, BJ Medical College , Ahmadabad. Histopathological features were evaluated with clinical and radiological correlation.

32 cases were found to have primary CNS tumors.

RESULTS

Among 32 CASES , all of them were intracranial.

Medulloblastoma were the single most frequent tumour (37.5%), followed by astrocytoma(25%) and ependymoma(12.5%) and rest were choroid plexus papilloma, craniopharyngioma.

20 were Infratentorial (62%)and 12 were supratentorial(38%)

19 were males and 13 were females

INCIDENCE OF INTRACRANIAL TUMORS

TYPE OF TUMOUR	NO. OF CASES	PERCENTAGE
1.ASTROCYTOMA	8	25%
2.MEDULLOBLASTOMA	12	37.5%
3.EPENDYMOMA	4	12.5%
4.PNET	2	6.25%
5.MENINGIOMA	1	3.12%
6.CRANIOPHAYNGIOMA	1	3.12%
7.CHOROID PLEXUS PAPILLOMA	1	3.12%
8.OLIGODENDROGLIOMA	1	3.12%
9.NEUROFIBROMA	0	0%
10.HEMANGIOBLASTOMA	1	3.12%
11.SCHWANOMMA	1	3.12%
TOTAL	32	

DISTRIBUTION ACCORDING TO LOCATION AND SEX

TYPE OF TUMOUR	ST	IT	M	F
1.ASTROCYTOMA	4	4	4	4
2.MEDULLOBLASTOMA	0	12	9	3
3.EPENDYMOMA	2	2	2	2
4.PNET	2	0	2	0
5.MENINGIOMA	0	1	1	0
6.CRANIOPHAYNGIOMA	1	0	0	1
7.CHOROID PLEXUS PAPILLOMA	1	0	0	1
8.OLIGODENDROGLIOMA	1	0	1	0
9.NEUROFIBROMA	0	0	0	0
10.HEMANGIOBLASTOMA	0	1	0	1
11.SCHWANOMMA	1	0	0	1
TOTAL	12	20	19	13

DISCUSSION

INCIDENCE OF INTRACRANIAL AND INTRASPINAL TUMORS STUDIED BY VARIOUS AUTHORS

LOCATION	FARWELL DOHRMANN[4]	JHANG R SHEN WQ[5]	PRESENT STUDY
INTRACRANIAL	95.69%	93.4%	100%
INTRASPINAL	4.30%	6.6%	0%

From the studies by above authors , it is evident that intracranial tumours predominate in the paediatric age group.

FREQUENCY OF PEDIATRIC C.N.S. TUMOURS ACCORDING TO HISTOLOGIC TYPE STUDIED BY VARIOUS AUTHORS

SR. NO	TYPE OF TUMOR	FARWELL ET AL[4]	HEISKANEN ET AL[6]	KADRI ET AL[3]	PRESENT STUDY
1	ASTROCYTOMA	37%	40.08%	25.8%	25%
2	MEDULLOBLASTOMA	25%	28%	27.5%	37.5%
3	EPENDYMOMA	9%	7.10%	10%	12.5%

From the studies by above authors , it is evident that our study matches with the study conducted in middle east by Kadri Et al

DISTRIBUTION BASED ON LOCATION

AUTHOR	SUPRATENTORIAL	INFRATENTORIAL
FARWELL ET AL 4	38%	62%
HASSAN KADRI 7	47%	53%
PRESENT STUDY	37.5%	62.5%

From the studies by above authors , it is evident that infratentorial location predominate in paediatric age group.

SUMMARY AND CONCLUSION

In the present study, 32 cases of paediatric CNS tumours were studied for their histopathology and incidence in relation to age group, sex and site.

All the cases were found intracranial.

In decreasing order of frequency , the intracranial tumors are Medulloblastoma, Astrocytoma, Ependymoma, PNET, Meningioma, Craniopharyngioma, Choroid Plexus Papilloma

Overall paediatric tumors predominate in the infratentorial regions.

In our patient population, the incidence is quite similar to study conducted in Middle East region but somehow different than those reported by authors from the Western and Far Eastern countries.

Whether these results are unique or reflect a regional difference in the disease distribution, remains to be determined.

Overall there is a male preponderance in the paediatric CNS tumors.

In the Astrocytomas, low grade Gliomas predominate in the paediatric age group.

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