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Original Research Article

Epidemiological & Histopathological Study of Cerebrospinal Lesions

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ABSTRACT

An anterospective study was carried out at M P Shah medical College Jamnagar to know histomorphology and epidemiology of various central nervous system lesions. Specimens were processed in pathology department and are classified morphologically according to the WHO Classification of central nervous system tumors 2007. Total 20 cases were analyzed over a period of three months. The study revealed more prevalence in 4th decade of life (30-39yrs) with predominance of female patients M: F ratio 0.81:1 also astrocytic tumors were most common amongst the CNS lesions.

Keywords: Neurosurgery, CNS lesions, Astrocytoma, meningioma, oligodendroglioma, glioma, histopathology, H&E stain, PAS stain, Reticulin stain.

INTRODUCTION

Neurosurgery as an independent field developed at the turn of 19th century. In Great Britain Sir Victor Horsely became the first surgeon to specialize largely in Neurological surgery.

Sir Harvey Cushing was a remarkable individual, who just deserves his title as the father of modern neurosurgery. [1]

To even the least introspective, the brain is an organ of enormous structural and physiologic complexity and unparalleled subtlety are manifested in the pathology of brain and this can make neuropathology seem very intimidating and obscure to the uninitiated.

However much of the apparent obscurity is the only reflex ion of the difference between the brain and other organs, and once these are appreciated many of the difficulties disappear.

Nervous system diseases fall into two general groups, one of them is a process such as infection, trauma and neoplasm which occurs in the nervous system and the other organs.

In the present study little effort is made to understand and diagnose some SOLs found out during the period of March-06 to April-06, with kind co-operation of neurosurgeon and support of the emerging techniques.

Limitations of the short duration and less no of cases studied should be regretted.

The present study consists of 20 cases of Central Nervous System lesions. The patients were admitted in Guru Govind Singh Hospital affiliated with Shri M P Shah Medical College, Jamnagar from March 2006 to May 2006.

MATERIALS AND METHODS

The patients were operated and admitted in neurosurgery department, tissue was collected in 10% formalin to achieve proper fixation then processed by tissue processing method using graded alcohol,

xylene and wax. Tissue sections of 4-5 um thicknesses were taken and stained by Hematoxylin and Eosin. Special stains like Reticulin and PAS were done.

OBSERVATION AND RESULTS

Table1: Age and Gender Incidence.

Age And Gender Incidence				
Age (Years)	Gender		Total	Percent
	Male	Female		
00-09	01	03	04	20
10-19	01	01	02	10
20-29	02	00	02	10
30-39	01	04	05	25
40-49	02	01	03	15
50-59	01	01	02	10
60-69	01	01	02	10
Total	09 (45%)	11(55%)	20	100.00

Table 1 shows 09 (45%) male and 11 (55%) female. In gender incidence male/female ratio was 0.81:1, overall female predominance observed with maximum incidence in fourth decade.

Table 2: Clinical Symptoms In Various Lesions

Clinical Symptoms In Various Lesions		
Symptoms	Cases	Percent
Headache	09	45
Vomiting	06	30
Weakness Of Limbs	06	30
Convulsion	05	25
Hemiparesis / Plegia	06	30
Altered Behavior	05	25
Visual Disturbance	03	15
Difficulty In Walking	04	20
Backache	03	15
Tingling And Numbness	04	20
Slurred Speech	03	15
Bladder/Bowel Disturbances	03	15

Table 2 shows Headache 09 cases (45%) was the commonest symptom followed by vomiting 06 cases (30%), weakness of limbs 06 cases (30%)

Table 3: Distribution of lesions according to site

Distribution of lesions according to site		
Site	Cases	Percent
Frontal	05	25
Temporal	02	10
Parietal	01	05
Fonto Parietal	02	10
Parieto temporal	02	10
Ventricles	01	05
Spinal	03	15
Meningeal	04	20

Table 3 shows Cranial Space Occupying Lesions (SOL) comprised of 12 cases (55%) cerebral, and one case (5%) ventricular lesions. Spinal lesions numbered 3cases (15%), while meningeal lesions were 4 (20%), so amongst total 20 CNS lesions 17 (85%) were cranial and 3 (15%) spinal.

Table 4: Morphology of lesions

Morphology of lesions		
Type	Cases	Percent
Astrocytoma	04	20
Oligodendroglioma	02	10
Meningioma	04	20
Craniopharyngioma	01	05
Choroid plexus papillary carcinoma	01	05
Langerhans cell histiocytosis	01	05
Peripheral t cell lymphoma	01	05
Dermoid cyst	01	05
Lipomeningocele	01	05
Brain abscess	04	20

Table 4 shows Astrocytoma 04 cases(20%) with meningioma 04 cases (20%) and brain abcess 04 cases (20%) were the commonest lesions

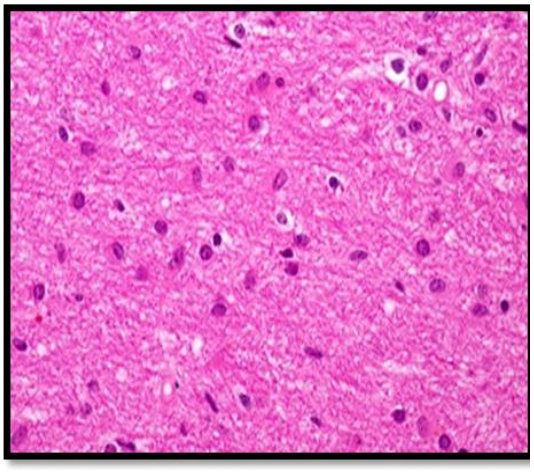

Figure 1: Fibrillary astrocytoma.

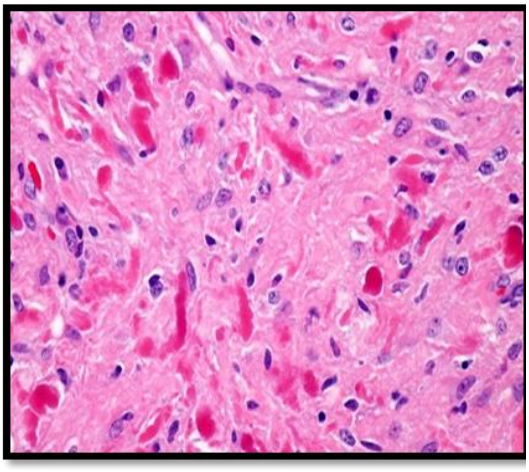

Figure 2: Pilocytic astrocytoma.

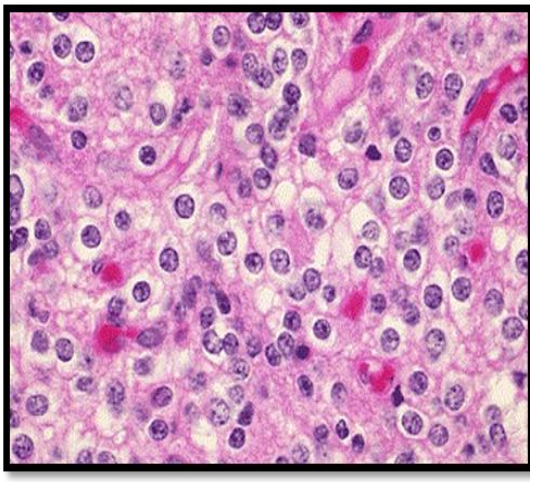

Figure 3: Oligodendroglioma.

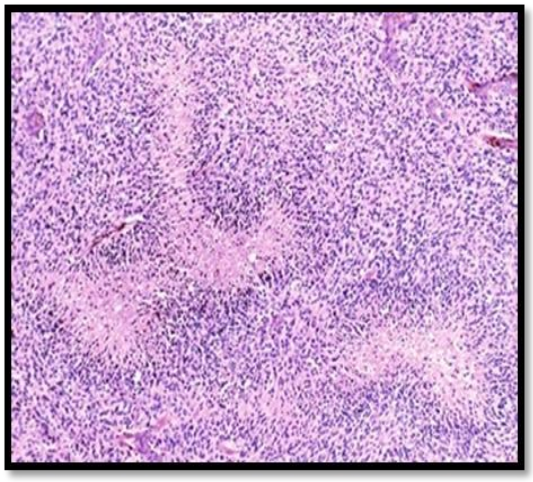

Figure 4: Necrosis in Glioblastoma.

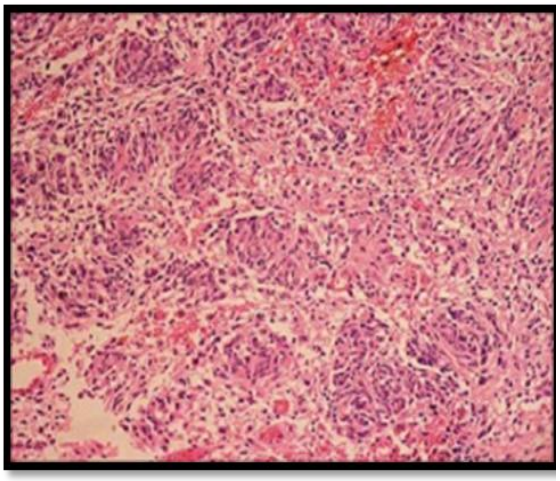

Figure 5: Meningioma.

DISCUSSION

Table 5: Peak incidence of age group

Authors	Peak age incidence
Ferrari G et al [2]	Sixth decade
Sutherland GR et al [3]	Seventh decade
Wen-qing et al [4]	Fourth decade
National programme of cancer registries data [5]	Ninth decade
Nibhoria et al [6]	Fourth decade
Present study	Fourth decade

Ferrari G et al [2] studied that peak age incidence of CNS lesions was in sixth decade; Sutherland GR et al [3] studied that peak age

Incidence of CNS lesions was in seventh decade, Wen-qing et al [4] studied that peak age incidence of CNS lesions was in forth decade,

National programme of cancer registries data [5] studied that peak age incidence of CNS lesions was in ninth decade,

Nibhoria et al [6] studied that peak age incidence of CNS lesions was in fourth decade; present study was correlated with Wen-qing et al [4] and Nibhoria et al. [6]

Table 6: Gender distribution

Author	Male	Female	M:F
Andrew NB et al [7]	14	16	0.87:1
Materljan E et al [8]	102	73	1.4:1
Nibhoria et al [6]	65	35	1.8:1
Present study	09	11	0.81:1

Andrew NB [7] et al studied that male patients were 14 and female patients were 16 with M: F ratio 0.87:1

Materljan E [8] et al studied that male patients were 102 and female patients were 73 with M: F ratio 1.4:1

Nibhoria et al [6] studied that male patients were 14 and female patients were 16 with M: F ratio 0.81:1

Present study results are consistent with Andrew NB et al [7] and Nibhoria et al [6]

Table 7: Symptom presentation

Author	Symptom		
Andrew NB et al [7]	Hemiplegia/paresis (62%)	Convulsion (31%)	Headache (27%)
Naziruddin Mollah et al [9]	Headache (76%)	Mental changes (64%)	Vomiting (52%)
Shokouh Taghipour Zahir et al [10]	Headache (60.8%)	Convulsion (15.7%)	-
Present study	Headache (45%)	Vomiting (30%)	Weakness of limbs (30%)

Andrew NB et al [7] studied that hemiplegia/hemiparesis was the common symptom followed by convulsions and headache.

Naziruddin Mollah et al [9] studied that headache was the common symptom followed by Mental changes and Vomiting.
Shokouh Taghipour Zahir et al [10] studied that headache was the common symptom followed by Convulsion

Present study showed hemiplegia/hemiparesis was the common symptom followed by Headache and Convulsion

Andrew NB et al [7] studied that frontal lobe was the common location followed by temporal lobe,

Crowley MJ et al [11] studied that frontal lobe was the common location followed by Parietal and Temporal lobe

Shokouh Taghipour Zahir et al [10] that frontal lobe was the common location followed by Parietal lobe

Present study showed that frontal lobe was the common location followed by temporal lobe and parietal lobe.

Table 8: Location of SOL

Author	Location of SOL		
Andrew NB et al [7]	Frontal	Temporal	-
Crowley MJ et al [11]	Frontal	Parietal	Temporal
Shokouh Taghipour Zahir et al [10]	Frontal	Parietal	-
Present study	Frontal	Temporal	Parietal

Table 9: Morphological type

Author	Morphological type.		
Sutherland GR et al [3]	Astrocytoma (43%)	Meningioma (22%)	Pituitary Adenoma (17%)
Staneczek W et al [12]	Glioma (38.7%)	Medulloblastoma (14%)	Ependymoma (10.2%)
Rosenberg S et al [13]	Astrocytoma (14%)	Medulloblastoma (11%)	Craniopharyngioma (11%)
Present Study	Glioma (35.29%)	Meningioma (23.52%)	

Sutherland GR et al [3] studied that most common tumor type were astrocytoma followed by meningioma and pituitary adenoma.

Staneczek W et al [12] studied that most common tumor type were Glioma followed by Medulloblastoma and Ependymoma.

Rosemberg S et al [13] studied that most common tumor types were astrocytoma followed Medulloblastoma and Craniopharyngioma.

Present study showed that that most common tumor types were Glioma followed Meningioma.

CONCLUSION

Present study 20 cases of central nervous system lesions were studied in the Department of Pathology, Shri M.P. shah Medical College Jamnagar from the time period of March ’06 to May ’06.

Tissue specimens were obtained by craniotomy procedure done by neurosurgeon. Histopathological examination including histochemistry was done in pathology department.

The age of patients varied from 07 month old to 65 yrs of age.

Maximum incidence was recorded in fourth decade (30-39 years).

Male: Female ratio was 0.81:1,

Headache was the commonest symptom followed by vomiting, weakness of limbs.

Cranial lesions comprised of 12 cerebral, one ventricular, meningeal lesions 4 and Spinal lesions 3.

Commonest morphological lesion was astrocytoma followed by meningioma and brain abscess.

Over all comparative study showed that glial tumors were commonest among CNS lesions.

REFERENCES

1. History of neurosurgery, short article published on university of California San Diego’s Division of neurosurgery www.neurosurgery.ucsd.edu/history.html
2. Ferrari G et al, Lovaste MG, Moresco M, Rossi G. Primary intracranial tumors. Survey of incidence in the

province of Trento in the years 1977-1981. Ital J Neurol Sci. Jun; 6(2):191-6.
3. Sutherland GR et al, Florell R, Louw D, Choi NW, Sima AA. Epidemiology of primary intracranial neoplasms in Manitoba, Canada. Can J Neurol Sci. 1987 Nov; 14(4): 586-92.
4. Wen-qing et al,Shi-ju Z, Qing-sheng T, Jian-qing H, Yu-xia L, Qing- Zhong X, Zi-jun L, Wen-Cui Z, Statistical analysis of central nervous system tumors in china. J Neurosurg. 1982 Apr; 56(4): 555-64.
5. National programme of cancer registries, data collection and surveillance, 2002 cancer (all ages).
6. Nibhoria et al Histopathological Spectrum of Central Nervous System Tumors: A Single Centre Study of 100 Cases, international Journal of Scientific Study | September 2015 | Vol 3 | Issue 6.
7. Andrew NB et al, Ramesh R, Odjidja T. A preliminary survey of central nervous system tumors in Tema Ghana. tema international neurocentre Ghana. West African J Medicine. 2003 June: 22(2):167-72.
8. Materljan E et al, Materljan B, Sepcic J, Tuskan- Mohar L, Zamolo G, Emaran Baldini I. Epidemiology of primary tumors of central nervous system tumors in Labin area, Croatia, 1974-2001. Croat Med J 2004 Apr 45 (2); 206-12.
9. Naziruddin Mollah et al ,Clinical and Pathological Characteristics of Brain Tumor, [BSMMU J 2010; 3(2): 68-71]
10. Shokouh Taghipour Zahir et al, Clinicopathological Findings and Five Year Survival Rates for Patients with Central Nervous System Tumors in Yazd, Iran, Asian Pac J Cancer Prev,15 (23), 10319-10323.
11. Crowley MJ et al, O'Brien DF. epidemiology of tumors of the central nervous system in Ireland. Ir Med j. 1993 May; 86(3) 87-8.
12. Staneczek W et al, Janissch W, Epidemiology of primary tumors of the nercous system in children and adolescents. A population based study. Pathologe. 1994 Aug; 15(4); 207-15.
13. Rosemberg S et al, Fujiwara D. epidemiology off pediatric tumors of the nervous system according to the WHO 2000 classification: a report of 1,195 cases from a single institution. Childs Nerv Syst. 2005 Nov; 21(11): 940-4. Epub 2005 Jul 26.

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