

ORIGINAL ARTICLE

Frequency of Causes of Space Occupying Lesions of Brain in Patients admitted in Neurosurgery over A Period of One Year

ABDUL RAZAQUE MARI¹, MUZAMIL DILBER², FAHMIDA ARAB MALLAH³, MUHAMMAD ALI JAMALI⁴, SHAMS RAZA BROHI⁵, MUHAMMAD ASLAM SHAIKH⁶

¹Associate Professor and Chairman, Neurosurgery, Peoples University of Medical and Health Sciences, for Women Shaheed Benazirabad

^{2,3,4}Assistant Professor, Neurosurgery, Peoples University of Medical and Health Sciences, for Women Shaheed Benazirabad

⁵Professor, Neurosurgery, Peoples University of Medical and Health Sciences, for Women Shaheed Benazirabad

⁶Associate Professor, Neurosurgery, SMBMU Larkana

Correspondence to: Dr. Abdul Razzaque Mari, Email: razakmari@yahoo.com

ABSTRACT

Objective: To determine the frequency of causes of space occupying lesions of brain in patients admitted in Neurosurgery ward PUMHS Nawabshah over a period of one year

Methodology: This descriptive case-series study took place at department of Neurosurgery of Peoples University of Medical and Health Sciences, for Women Shaheed Benazirabad. Study duration was one year from July 2019 to June 2020. All the patients with space-occupying lesion of brain either of gender were enrolled in this study. All study subjects were assessed for the causes of space-occupying lesion. Data was collected via study proforma and analysis of the data was done by using SPSS version 20.

Results: A total of 80 patients were selected, their mean age was 31.76 years and females were in majority 66%, with female to male ratio of 1.96:1. Glioma was found in 23% cases which was highest among all type of lesion followed by abscess 10%. Supratentorial was observed in 73% patients which was highest among all site of lesion followed by third ventricular & Infratentorial 10% each.

Conclusion: The increased prevalence of infectious lesions can be linked to our population's low socioeconomic level and inadequate hygienic conditions. The rate of metastasis was found to be lower than previously reported. This might be attributed to cases not being referred following a metastatic lesion has been diagnosed. For early detection of brain tumours, advanced diagnostic equipment such as CT scans and MRI are desirable.

Keywords: SOL, Central Nervous System, Metastases

INTRODUCTION

Abscesses or tumours present within the skull or cranium are classified as intracranial space occupying lesions. In other two vessels, three forms of damage can occur: embolism, thrombosis, and injury-related damage. Lesions that take up a lot of space obstruct circulation, either indirectly or directly. Circulatory failure is the primary cause of functional loss. It is crucial to note that a physiological function loss that may be recovered comes before the unrecoverable destruction and softening. As a result, it's essential to differentiate the depression from loss of function. Around 45 million Americans suffer from chronic headaches, with at least 50% of them experiencing severe and sometimes debilitating symptoms. Headache discomfort accounts for nearly 8 million doctor visits each year.^{1,2} Headache is among the most frequent neurological referral presentations, so there is much concern about how serious this symptom can be.³ A research was undertaken to determine the incidence of incidental findings on brain MRI. The results showed that 15.1% of cases needed no referral, 1.8% of cases needed routine referrals, 1.15% of cases were urgent referral, and 0.5% of cases were immediate referrals. Two established primary brain tumours (and a likely yet undetermined third) were discovered among individuals classified for urgent referral, indicating an incidence of minimum 0.2%.⁴ Another research conducted in Lahore found that 85.5 percent of school pupils (aged 12 to 20 years) suffer from headache. 43.1 percent presented with mild headache, 46.6 percent presented with moderate headache, and 8.8 percent presented with severe headache.⁵ Patients who suffer from headaches daily are classified as having secondary or

primary headaches, giant cell arteritis, malformation, vasculitis, and carotid dissection, pseudotumor cerebri, neoplasm, infection, subdural hematoma, and post-traumatic headache.^{6,7} Most of the headaches are physiologically benign and treatable in a family care practice environment.⁸ When the headache is a disorder itself, it is challenge to differentiate primary headache from the secondary headache, since primary headache requires no brain scans due to its nature, because there is no such disease condition that enables macroscopic changes in general. Who should patients undergo a scan if they have a headache? A scan, either magnetic resonance imaging (MRI) or computed tomography (CT-scan), is considered for patients who have headaches of secondary aetiology. Finally, how many possibly normal scans might society be willing to pay for in order to identify curable brain disease?⁹ How can you tell the difference between a primary and a secondary headache? Because no controlled trials to determine etiology of secondary headaches have been undertaken, this concern can only be explained clinically. We commonly believe in clinical settings that the red flags of headache must provoke an investigation for secondary headache. Identification of serious headache causes necessitates a systematic diagnostic technique to examination and history, as well as knowledge of a limited number of essential secondary headache diseases and referral criteria.¹⁰ Randomised controlled prospective trials involving brain scanning with CT-scan and MRI studied 9322 people with headache attending a primary care practise in the United States found 5869 patients with migraine.^{9,12} Patients' demands for thorough and high-tech evaluations, as well as the growing practise of definitive

medicine, appear to be speeding up the adoption of MRI in headache assessment.¹⁰ There is scarcity of the literature from our country about the spectrum of space occupying lesions of brain. Therefore, this study has been conducted to determine the space occupying lesions of brain, so policy could be devised to prevent these morbidities.

MATERIAL AND METHODS

This descriptive case-series study was conducted at department of Neurosurgery of Peoples University of Medical and Health Sciences, for Women Shaheed Benazirabad. Study duration was one year from July 2019 to June 2020. All the patients with space-occupying lesion of brain either of gender were included in the study. All the study subjects underwent computed tomography CT scan or MRI for the diagnosis. All the patients were assessed for causes of space-occupying lesion. Data was collected via study proforma and analysis of the data was done by using SPSS version 20.

RESULTS

A total of 80 patients were selected to analyze the type of brain lesions and its causes. The mean age of the patients was 31.76 years. Out of all 34% were males and 66% were females with female to male ratio of 1.96:1. Table.1

Table. 1. Descriptive statistics of age and gender of the patients =80

Variables	Statistics
Age (mean+SD)	31.76+17.80
Gender	Male
	27(34.0%)
	Female
	53(66.0%)

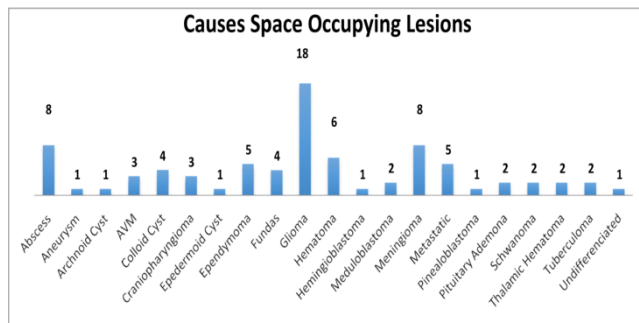


Fig: 1 Causes of space occupying lesions n=80

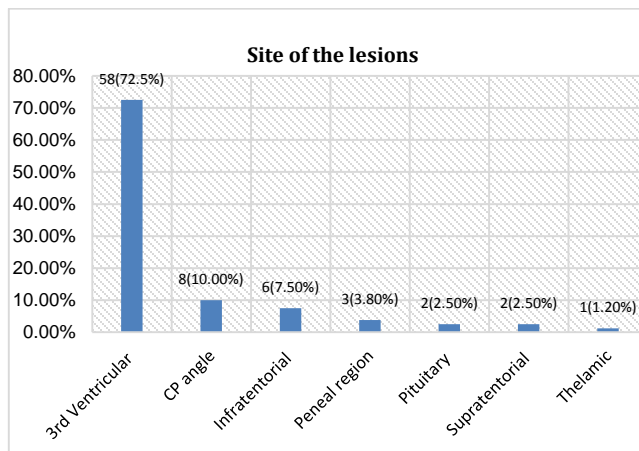


Fig 2: Site of the lesions n=80

Glioma was found among 23% of the patients which was highest among all type of lesion followed by abscess 10%. Supratentorial was found in 73% of the patients which was highest among all site of lesion followed by third ventricular & Infratentorial 10% each as shown in table 2.

Stratification of space occupying lesion with respect to age was found to be significant and P (0.022)

Stratification of space occupying lesion with respect to gender was found to be significant and P (0.014)

Similarly for stratification of space occupying lesion with respect to site of lesion was found to be highly significant P (0.014).

DISCUSSION

This study was conducted in a Neurosurgery unit of PMCH Nawabshah to detect the frequency of causes of space occupying lesions of brain diagnosis by diffusion weighted MRI. The observation of improvement in diagnosis is also confirmed by Aly IR, et al.¹⁹ They conducted a study on diffusion weight imaging in 150 patients of stroke and found that diagnosis was improved in 28% patients in whom the previous MRI was negative. In a study on 153 stroke patients scanned at a median of 2 days (range of 6 hours), recent infarcts were found more commonly on DWI (70%) than on T2 weighted MRI (32%) following stroke in all forms of severity of stroke. Within the first few hours after a stroke, DWI is shown to be successful in the majority of patients²⁰. Another study conducted by Mullens Me, et al¹³, also confirms our observations. They conducted a study among 691 patients with stroke. They found that initial conventional MRI among stroke patients could find stroke finding among 58% patients while diffusion weighted MRI could detect stroke symptoms. Hence they found an improvement in diagnosis in 39% cases. Chan LL, et al²¹ studies the MRI and DWMRI findings in 22 consecutive patients with suspicion of stroke. They found that lesion visibility was highly accentuated on DWMRI with more than 75% lesions imaged at 4-48 hours after the initial symptoms. In our study, DWMI could detect brain lesion in 94.6% cases (hence revealed a sensitivity of 96.7%) which is quite high and making it a more reliable investigation for detection of stroke in early time (<6hours) Kidwel, et al²² also had a similar report. They determined that DWMRI was sensitivities in 100% cases of stroke. Chen et al²³, also detected that DWMRI obtained were most accurate investigation for detection of acute ischemic strokes. Thurnher MM,et al²⁴ determined that diffusion weighted imaging has a sensitivity of 99%, specificity of 97% positive predictive value of 73%, also predicts lesion volume and clinical severity and outcome.

In our study the mean age of the patients was 31.76 years. As compared with the study of Pickens D¹⁴, the mean age of the patients was 33.8±15.6 years, which is comparable with our study.

In our study there were n=27 (34%) male patients and female n=53 (66%) patients. As compared with the study of Lansberg MG, Norbash AM et al¹⁷, there were 68% male and 32% female patients, which is comparable with our study.

In our study Glioma was found to be n=18 (23%) of the patients which was highest among all type of lesion followed by abscess n=8 (10%). As compared with the

study of Berry I, Gigaud M, Manelfe C¹⁶, Glioma was 25% & abscess was 15%, which is comparable with our study.

In our study Supratentorial was found to be 58(73%) of the patients which was highest among all site of lesion followed by third ventricular & Infratentorial 8 (10%) each. As compared with the study of Rosso C, Drier A, Lacroix D¹⁸, supratentorial was 71%, ventricular & Infratentorial was 7% and 9% respectively which is comparable with our study.

In present study, stratification of causes of brain lesions with respect to age was significant with chi-square (542.645) and p value (0.022). As compared with the study of Bui JD, Buckley DL, et al¹⁵ with chi-square (530.66) and p value (0.028) which is comparable with our study. In present study, stratification of causes of brain lesions with respect to gender was significant with chi-square (36.465) and p value (0.014). As compared with the study of Berry I, Gigaud M, Manelfe C¹⁶ with chi-square (32.36) and p value (0.018) which is comparable with our study. In present study, stratification of causes of brain lesions with respect to site was significant with chi-square (542.645) and p value (0.022). As compared with the study of Rosso C, Drier A, Lacroix D¹⁸ with chi-square (530.66) and p value (0.028) which is comparable with our study.

CONCLUSION

The increased prevalence of infectious lesions can be linked to our population's low socioeconomic level and inadequate hygienic conditions. The rate of metastasis was found to be lower than previously reported. This might be attributed to cases not being referred following a metastatic lesion has been diagnosed. For early detection of brain tumours, advanced diagnostic equipment such as CT scans and MRI are desirable.

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