

Demographic Characteristics of Patients with Intracranial Lesions Reporting To a Tertiary Care Hospital at Rajasthan

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ABSTRACT

Background: The recent advances in brain tumor imaging offer unique anatomical as well as pathophysiological information that provides new insights on brain tumors, directed at facilitating therapeutic decisions and providing information regarding the prognosis. The aim of the present study was to determine the demographic characteristics of subjects with intracranial reporting to the tertiary care centre.

Methods: The present prospective study was conducted in the department of Radiodiagnosis, in different Radio diagnostic centers & medical institute. All the patients were given a predesigned proforma to fill. Complete medical history was obtained. Patient's demographics were also obtained.

Results: Majority of subjects were between 20-39 years of age. There were 43% subjects in these age groups. There were 18% (n=12) subjects less than 20 years of age. Majority of subjects were males. There were 60% (n=39) males and 40% (n=26) females in the study.

Conclusion: From the above study we can conclude that the most common age group of intracranial space occupying lesions was 20 to 35 years, with male-to-female ratio of 3:2.

Keywords: Brain, Intracranial, Imaging, Tumor.

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INTRODUCTION

Over the past few decades, as novel therapies for patients with brain tumors are being developed, we are witnessing a shift in imaging from merely providing anatomical information toward providing information about tumor physiology. The recent advances in brain tumor imaging offer unique anatomical as well as pathophysiological information that provides new insights on brain tumors, directed at facilitating therapeutic decisions and providing information regarding the prognosis. This information is presently utilized in clinical practice for the initial diagnosis and non-invasive, preoperative grading of tumors, biopsy planning, surgery, and radiation portal planning as well as prognostication. In research environments, these tools are utilized by investigators of studies on brain tumors in a variety of study designs with various aims. The newer advances include MR diffusion and diffusion tensor imaging with tractography, perfusion imaging, functional imaging and MR spectroscopy.¹ MR spectroscopy may allow characterization of metabolic changes associated with tumor growth, degree of malignancy, grading of tumors, response to treatment, and the sequelae of treatment. Brain tumors commonly have distinct imaging features by which low-grade growths can be

differentiated from highly malignant types.^{2,4} The aim of the present study was to determine the demographic characteristics of subjects with intracranial reporting to the tertiary care centre.

MATERIALS AND METHODS

The present prospective study was conducted in the department of Radiodiagnosis, in different Radio diagnostic centers & medical institute. Imaging was done with 1.5 Tesla Magnetic Resonance Imaging equipment from GE-HDXT and 3.0 Tesla Magnetic Resonance Imaging equipment from PHILIPS. The study was conducted from April 2010 to April 2012. The study included all the subjects with intracranial space occupying lesion on MRI. Trauma patients, patients with aneurysms, cerebrovascular accidents and vascular malformations were excluded from the study. All the patients were subsequently followed up for confirmation of diagnosis by biopsy or surgery. Patients with suspected infectious aetiology were followed up by biopsy and imaging (response to treatment). All the patients were given a predesigned proforma to fill. Complete medical history was obtained. Patient's demographics were also obtained.

RESULTS

In the present study a total of 65 patients were included. On MR Spectroscopy, diagnostic spectrum was obtained in 60 patients (92%). In the remaining, spectrum obtained was poor due to interference from haemorrhage within the lesion (in 2 cases) or due to peripheral location close to bone (in the remaining 3).

Table 1, Graph 1 shows the age wise distribution of the subjects. Majority of subjects were between 20-39 years of age. There were 43% subjects in these age groups. There were 18% (n=12) subjects less than 20 years of age. There were 17% (n=11) subjects who were more than 60 years of age. There were 14 subjects (22%) between 40-59 years of age.

Table 2 shows the gender distribution of the subjects. Majority of subjects were males. There were 60% (n=39) males and 40% (n=26) females in the study.

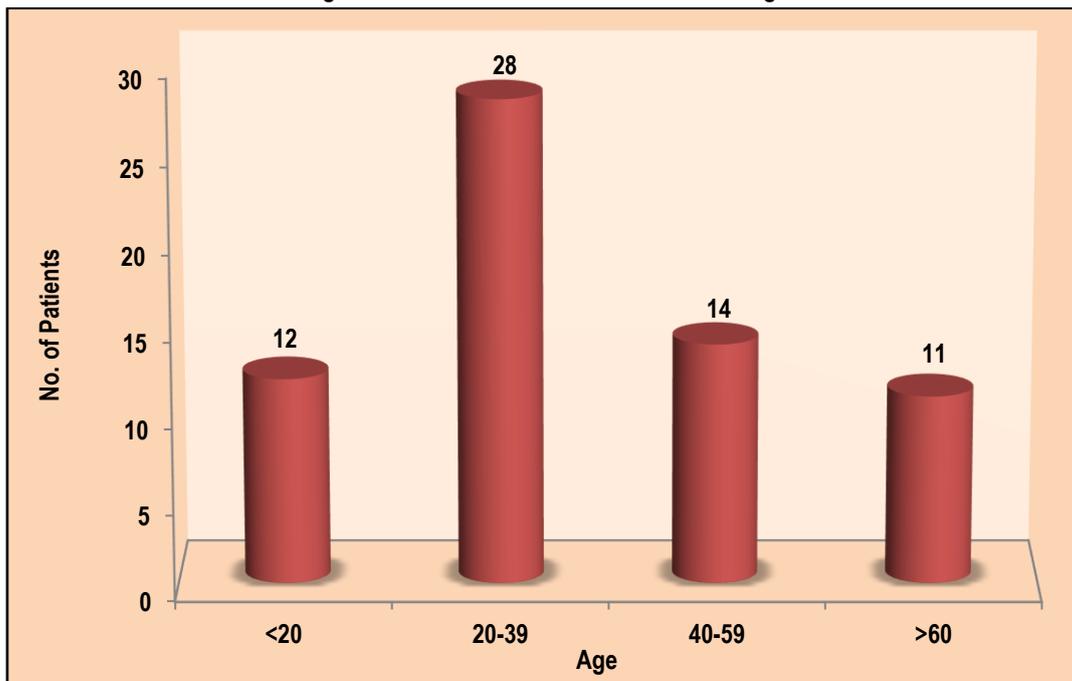
Table 1: Distribution of cases on the basis of age

Age group (Yrs)	No of patients	Percentage Distribution
< 20	12	18%
20 – 39	28	43%
40 – 59	14	22%
≥ 60	11	17%
Total	65	100%

Table 2: Distribution of cases according to sex

Sex	No. of Cases
Males	39 (60%)
Females	26 (40%)
Total	65

Fig. 1 Distribution of cases on the basis of age



DISCUSSION

Magnetic Resonance Spectroscopy is a new and emerging imaging modality which offers a level of tissue characterization that can match histological and biochemical diagnosis. Since its introduction, various studies have been done and are being carried out to determine its applications in the field of diagnostic radiology. The present study was carried out in the Department of Radiodiagnosis, Santokba Durlabhji Memorial Hospital, Jaipur, Rajasthan. We found that MR Spectroscopy has potential application in the diagnosis and characterization of various intracranial space occupying lesions. Besides differentiation of benign from malignant lesions, it also enables the grading of malignancies. It not only compliments the information available by conventional imaging, but can also predict the prognosis and help in management of these lesions. In the present study, most of the patients presenting with intracranial space occupying lesions were of the 20 to 39 years age group. This was also the most common age group of tumors. There were 18% (n=12) subjects less than 20 years of age. There were 17% (n=11) subjects who were more than 60 years of age. There were 14 subjects (22%) between

40-59 years of age. The majority of patients were males, forming 60% of the study population. In studies conducted by Harada et al⁵, Klug et al⁶ and S Grand et al⁷ similar results were obtained. Intracranial space occupying lesions are the most frequently encountered problem during childhood and infancy. In a study conducted by Pandya et al, they found that brain tumours were infrequent below the age of 3 years. In another study conducted by Matson et al, they had maximum incidence during 5 to 8 years of age.⁸ In a study conducted by Yashodhara P et al⁹ majority of cases were seen between 6-8 years of age as the study included only those cases that were below 12 years of age. In their study, females were more frequently affected compared to males. Intracranial space occupying lesions if not diagnosed and treated at appropriate time can lead to significant morbidity and mortality. With the advent of various diagnostic modalities, like CT and MRI diagnosing a case has become much easier than before. In the recent days PET and SPECT have been widely used for the diagnosis of such lesions. Intracranial space occupying lesions are basically those lesions, that can be vascular, neoplastic or inflammatory that increase the intracranial space and pressure.

The term intracranial tumors should be reserved only for neoplasms, both benign and malignant.¹⁰ Bressler in the year 1839 was the first person to classify tumors according to consistency and gross appearance.¹¹ From the years 1863- 1865, Virchow classified tumors according to their cellular composition.¹¹ Dr. G.N.Hounsfield, a british physicist was awarded with the nobel prize for the invention of Computed tomography scanning (CT). It was the greatest invention of the time and aided a lot in neurological diagnosis. The experiments for magnetic resonance were conducted in the year 1940 but they were not applied medically, it was in 1972 that Damadian introduced it medically.¹²

CONCLUSION

From the above study we can conclude that the most common age group of intracranial space occupying lesions was 20 to 35 years, with male-to-female ratio of 3:2. Brain tumours are commonly seen conditions in all the age groups. Diagnosis of these tumours at an earlier stage can help improve the prognosis of the disease.

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