

Original Article

Morphometric Study Of Frontal Horn Of Lateral Ventricles Of Right Side Of The Brain With Regard To Gender By Computed Tomography In Western Up Population

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Abstract

Background and Aim: The human brain undergoes many gross and histopathological changes with regression of the brain tissue leading to the enlargement of the ventricles as age advances. Knowledge of morphometric and size of normal ventricular system of brain is of paramount importance to understand these changes.

Methods: The present study was carried on 200 patients [100 males and 100 females] in the age group of 10-80 years. GE OPTIMA CT 660 was used for obtaining the scans and was statistically analyzed.

Results: With regard to side and gender, the length of frontal horn of right side was 29.8 mm, 28.9 mm in males and females respectively

Key words: Frontal horns, lateral ventricles, computed tomography.

INTRODUCTION

The lateral ventricles are the largest in the series of four interconnecting fluid-filled cavities within the brain. These cavities and their interconnecting channels, constitute the cerebral ventricular system. The other two cavities of this system are the third and fourth ventricles, while the cerebral aqueduct of Sylvius is one of the interconnecting channels, and it ensures the communication between the third and fourth ventricles. The function of the ventricles is to house the cerebrospinal fluid (CSF) and

provide the passage for its circulation, produce and contain cerebrospinal fluid (CSF), and the entire surface of the ventricular system is a well organized interconnecting system spanning every region of the brain. The channels connecting the lateral ventricles to the third (the midline ventricle) are called the interventricular foramen (or foramen of Monro).

MATERIAL AND METHODS

Data for the present study was collected from the CT scans done at the O.P GUPTA IMAGING CENTRE, MEERUT & MIMHANS NEUROSCIENCES HOSPITAL, MEERUT. The CT scans were randomly selected, which were reported by radiologists as normal. Two hundred (200) CT scans in the age group of 10-80 years were taken. The study group includes 100 males and 100 females. CT scans with history of head injuries, cerebral infarctions, local mass lesions and previous intracranial surgeries were excluded from the study. The details of the case such as name, age, sex, address, inpatient or outpatient number and indications for CT were collected. The CT scan machine used for this study at the O.P GUPTA IMAGING CENTRE, MEERUT was GE OPTIMA 660 Version 2.0, having a fan beam scanner with a scan time of 1 to 10 seconds.

OBSERVATION

200 normal CT scans in the age group of 10-80 years were taken for the study in which 100 were CT scans of males and 100 were CT scans of females.

TABLE – I: LENGTH OF FRONTAL HORNS OF LATERAL VENTRICLE IN BETWEEN AGE GROUPS AND RIGHT FRONTAL HORNS

Age (Yrs)	No.	Right Frontal Horn				P value
		Mean	SD	Min	Max	
10-19	32	28.8	2.5	23	32	>0.05
20-29	47	29.0	2.6	23	34	
30-39	30	29.1	2.1	25	31	
40-49	30	29.2	2.7	24	33	
50-59	35	29.9	2.7	25	35	
60-69	17	30.6	1.5	28	34	
70-79	09	30.3	2.5	27	33	
TOTAL	200	29.34	2.5	23	35	

Figure - I: LENGTH OF FRONTAL HORNS OF LATERAL VENTRICLE IN BETWEEN AGE GROUPS AND RIGHT FRONTAL HORNS

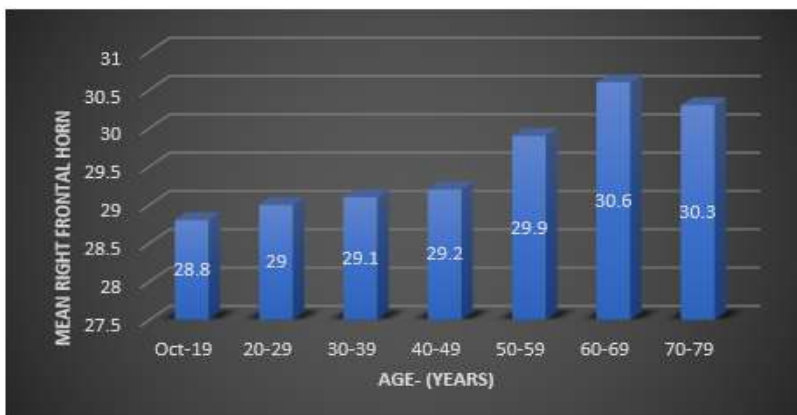


TABLE II: GENDERWISE CHANGES IN THE LENGTH OF FRONTAL HORN ON RIGHT SIDE

MALE					FEMALE				TOTAL	
	No.	Mean [mm]	SD	p-value	No.	Mean [mm]	SD	p-value	No.	Mean [mm]
RIGHT	100	29.8	2.6	<0.0001	100	28.9	2.3	<0.002	200	29.3

Figure II: GENDERWISE CHANGES IN THE LENGTH OF FRONTAL HORN ON RIGHT SIDE

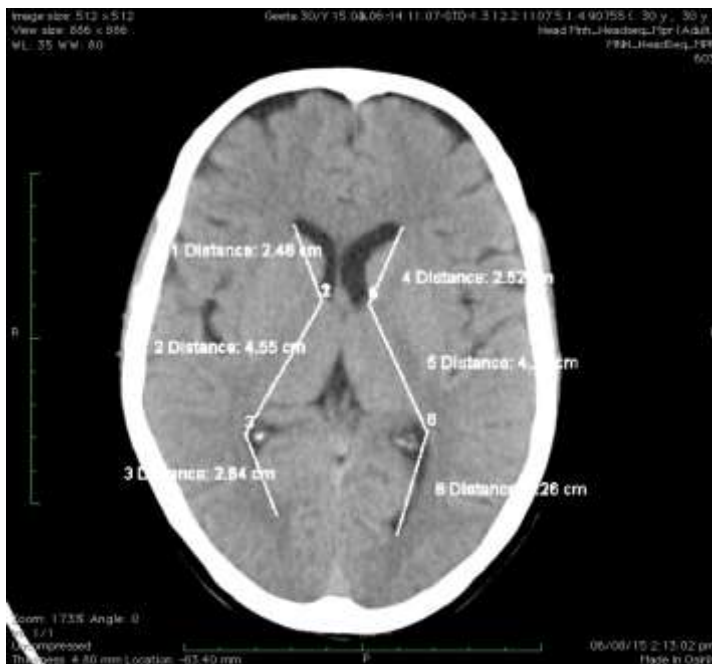
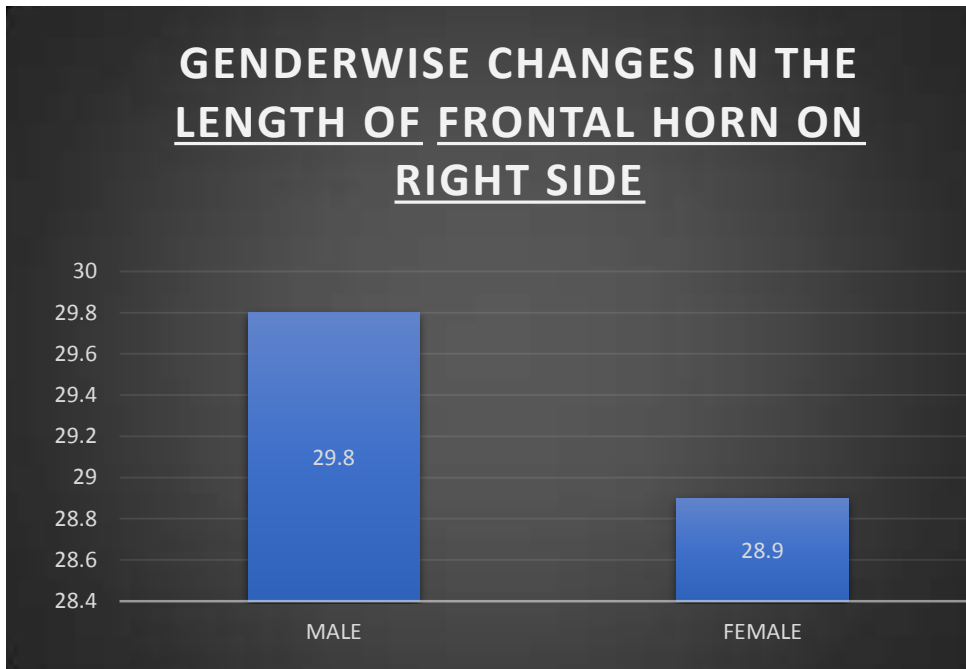


Fig-III: CT Scan of a 30 year old Female showing frontal horn of lateral ventricle.



Fig-IV: CT Scan of a 48 year old female showing frontal horn of lateral ventricle.

DISCUSSION

In the present study, computerized Tomographic Scans (CT Scans) of 200 patients (Males-100 and Females-100) were examined for the various morphometric measurements of the lateral ventricles of the brain and it was observed that the length of the frontal horns on the right side was 29.8 ± 2.5 mm and 28.9 ± 2.3 mm in the males and females respectively.

In D'Souza study^[1], computerized Tomographic Scans (CT Scans) of 1000 patients were examined for the various morphometric measurements of the ventricles of the brain and it was observed that the anteroposterior extent of the frontal horns on the right side was 27.4 ± 3.6 mm and 25.5 ± 3.3 mm in males and females and 27.8 ± 3.7 mm and on the left side was 25.8 ± 3.5 mm in males and females.

Both left and right ventricles were large in males compared to females. This is because males skull were heavier and bigger, the capacity of the skull is more compared to female skull and also because the brain size is more in males compared to females [3].

Older studies by Gawler et al. [4] revealed that the greatest distance between the roof and the floor of the fourth ventricle was less than 10.8 mm [5];

A study by Matsuzua, Goldestien et al. shown that the left lateral ventricle was larger than the right one and both were larger in the female [2].

CONCLUSION

In CT study, it was observed that length of frontal horn on the right side was 29.8 mm, 28.9 mm in males and females respectively.

The present study has defined the morphometric measurements of frontal horns of lateral ventricles of the brain by CT, which has clinical correlations in diagnosis, treatment and surgical intervention.

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