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Morphometric Study of Fourth Ventricle

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The structure of human brain is complicated and not yet fully understood. The normal ventricular size during life was previously unknown. Advances in sophisticated and sensitive imaging techniques like the computerized tomography scan helps in dramatic expansion of our understanding of the normal structure of brain without the use of contrast media as well as it helps to understand the changes taking place in brain in normal individuals (Selukar Mangesh et al. 2014). CT scan provided a revolutionary means for morphologic study of the brain in vivo. Both imaging and autopsy studies suggest that cerebrospinal fluid spaces increases and cerebral volume reduction accompany normal human aging. Due to these changes which occur normally with aging the diagnosis of diseases in elderly patients is often complicated. So, two major changes that may occur in elderly individual without neurologic deficits is enlargement of ventricles and cortical atrophy. To understand these changes the knowledge of normal morphometry and size of normal fourth ventricle of brain is important. The CT scan images of the fourth ventricle measurements are:

- Measurement of the fourth ventricle and brain stem cerebellum, from upper margin of pons to lower limit of open part of medulla oblongata.
- Greatest height in cms, for fourth ventricle was measured as the greatest distance between the roof and the floor of the fourth ventricle for brainstem cerebellum from upper margin of pons to lower limit of open part of medulla oblongata.
- Greatest vertical distance (length) of fourth ventricle from upper margin of pons to lower limit of open part of medulla oblongata.
- Greatest Anterior posterior extent in cms for brainstem and anterior posterior extent was measured from anterior margin of pons to posterior margin of cerebellum.
- Greatest transverse diameter in cms maximum transverse distance along the horizontal axis.

For many years the diagnosis of cerebral atrophy was demonstrated by the enlargement of ventricles by autopsy and pneumoencephalography. In an autopsy study of 28 previously hospitalized patients without neurologic symptoms, Tomlinson et al. (1970) found that 17 patients had mild ventricular enlargement with prominent cortical atrophy in the frontal and parasagittal regions. The height of fourth ventricle was greater in males as compared to females. The mean greatest transverse diameter of males was 1.28 cms, and of females was 1.21 cms. The conclusion is, “The dimensions of fourth ventricle increases with age. This change was more in age above 60 years”.

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