



MEASUREMENTS OF CERVICAL VERTEBRAL CANAL IN DRIED BONES

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ABSTRACT

Introduction - The size and shape of cervical spinal canal is very important in cases of spinal cord or nerve root compression. The normal values in the available literature are mostly from studies in western population. The documented normal values in Indians are very few. This work is designed to measure the midsagittal diameter of cervical spinal canal and to calculate canal/body ratio in the population in and around Jabalpur. Material and method - 100 sets of dried cervical vertebrae of cadavers of adult age group, stored in the department of Anatomy, NSCB Medical College, Jabalpur were taken for the study. Midsagittal diameter of cervical vertebral canal (A), anteroposterior diameter of vertebral body (B) and Torg's ratio (A/B) were calculated. Results - The mean value of midsagittal diameter (in mm) at third, fourth, fifth and sixth cervical vertebral canal was observed to be 14.38, 14.40, 14.36 and 14.55 respectively. The mean value of Torg's ratio at third, fourth, fifth and sixth cervical vertebral level was observed to be 1.04, 1.02, 1.01 and 1.01.

KEYWORDS : Torg's ratio, Vertebral body, Dried bones.**Introduction :**

There are seven cervical vertebrae. The first cervical vertebra is termed Atlas as it supports the globe of skull, the second is called Axis because it forms the pivot around which the Atlas turns and carries the skull. Remaining third to sixth are called typical cervical vertebrae. The vertebral foramen is large and triangular in shape. The size and shape of cervical spinal canal is very important in cases of spinal cord or nerve root compression. The relationship between transient tetraplegia and the presence of spinal canal stenosis was initially established by Penning in 1978[1] for the relationship occurs in myelopathies due to spondylosis. Various authors have reported the normal values of cervical vertebral canal in dried bones. The normal values in the available literature are mostly from studies in western population. The documented normal values in Indians are very few. This work is designed to measure the midsagittal diameter of cervical spinal canal and to calculate canal/body ratio in the population in and around Jabalpur.

Materials and methods :

The study was conducted in Department of Anatomy, NSCB medical College, Jabalpur. 100 sets of dried cervical vertebrae of cadavers of adult age group, stored in the department of Anatomy were taken for the study. Vertebra showing gross pathology or any abnormality was not included in this study. Exact age and sex of these subjects is not known. Measurements were taken with the help of Metallic vernier calipers (with least count of 0.1 mm), curved outside spreading calipers for vertebral canal and curved inside spreading calipers for vertebral body. Midsagittal diameter of cervical vertebral canal (A), anteroposterior diameter of vertebral body (B) and Torg's ratio (A/B) were calculated.

Result :

The mean value of midsagittal diameter (in mm) at third, fourth, fifth and sixth cervical vertebral canal was observed to be 14.38, 14.40, 14.36 and 14.55 respectively.

The mean value of anteroposterior diameter (in mm) at third, fourth, fifth and sixth cervical vertebral body was observed to be 13.83, 14.15, 14.35 and 14.55 respectively.

The mean value of Torg's ratio at third, fourth, fifth and sixth cervical vertebral level was observed to be 1.04, 1.02, 1.01 and 1.01.

Discussion :

The mean value (in mm) of midsagittal diameter of cervical vertebral canal was measured by different authors are shown in table no. 1.

Table – 1 : mean value (in mm) of midsagittal diameter -

S.No.		C3	C4	C5	C6
1.	Athar M. [2] (in Pakistani males)	15.1	14.8	15.0	15.1
2.	Athar M. [2] (in Pakistani females)	14.8	14.3	14.6	14.4
3.	Francis (in American white males)	16.5	15.4	15.4	15.4

4.	Francis (in American white females)	15.5	14.8	14.4	14.1
5.	Francis (in American negro males)	15.1	14.5	14.6	14.4
6.	Francis (in American negro females)	15.1	14.5	14.6	14.4
7.	Koyanagi (in Japanese males)	13.8	13.3	13.5	13.9
8.	Koyanagi (in Japanese females)	13.6	12.9	13.2	13.5
9.	Koyanagi (in Japanese males and females combined)	13.4	12.8	13.2	13.4
10.	In Korean males	13.3	12.8	13	13.2
11.	In Korean females	13.3	12.9	13	12.9
12.	Present study	14.38	14.4	14.36	14.55

The midsagittal diameter of cervical vertebral canal has been noted to be smallest (on an average 13.1 mm) in Korean males and females and largest (on an average 15.6 mm) in American white males. In present study the mean value on an average is 14.42 mm.

Values of Torg's ratio measured by different authors and in present study are shown in the table no. 2.

Table – 2 : Values of Torg's Ratio -

S. No.		C3	C4	C5	C6
1.	Athar M. (in Pakistani males)	0.94	0.94	0.94	0.95
2.	Athar M. (in Pakistani females)	1.06	1.09	1.09	1.08
3.	Gupta M.[3] (in Indian females of Delhi)	0.99	0.97	0.96	0.96
4.	Present study	1.04	1.02	1.01	1.01

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