

## Using Cerebellar Reduction Percentage as a Predictor of Subdural Hematoma Incidence in Elderly

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**Introduction:** Subdural hematoma in elderly is known to result from tearing of fragile stretched bridging veins, due to brain shrinkage with aging. Cerebellum was chosen for estimation of brain atrophy, to avoid the bias caused by hematoma mass effect in the cerebrum (since it is separated from the cerebrum by tentorial cerebelli); and due to the uniform nature of atrophy of the whole brain in elderly. The aim was to find an easy, cost-effective method to screen elderly patients who are likely to develop chronic subdural hematoma after mild head trauma.

**Methods:** Forty-four cases [22-patients, with 22-paired controls (each having 15 males, and 7 females)] from late middle age (51 – 65 years), and elderly (66 – 89 years) were included in the Study, after matching them by age and gender. CT scans were manually delineated in CT scan device in transverse and sagittal sections, and cerebellar and posterior cranial fossa volumes (CV; PCFV) were calculated using ABC/2 formula. Then, cerebellar volume reduction percentage (CVRP) calculated by reverse percentage formula. After which Paired T test was used for analysis.

**Results:** CV was larger ( $114.44 \pm 15.86$ ) in control compared to SDH ( $101.99 \pm 14.58$ ), only in elderly group ( $P = 0.038$ ). PCFV was also larger in the control ( $135.23 \pm 14.73$ ) compared to SDH ( $118.80 \pm 15.94$ ), only in elderly ( $P = 0.011$ ). CVRP was larger in the control ( $19.00 \pm 10.74$ ) compared to SDH ( $12.96 \pm 6.81$ ), only in the late middle age group as the difference wasn't significant in elderly. Only the CVRP correlated with age of participants (particularly in the late middle age), with positive correlation in control, but negative correlation in SDH.

**Conclusion:** Both cerebellar and posterior cranial fossa volumes showed an increase from young to early middle age groups after which the volumes progressively declined afterwards, with males having larger cerebellar volumes and lower reduction percentage than females. Unlike cerebellar volume, the reduction percentage was positively correlated with age in both genders, suggesting the importance of using it rather than the cerebellar volume alone in estimating cerebellar atrophy in randomized analysis that is independent on gender, and the use of the two latter age groups (51-89 years) for cerebellar atrophy clinically related researches

### Biography

Dr. Saeed Ahmad Saeed Mohammed (known also as Saeed A. S. Mohammed) was born in Jeddah, Saudi Arabia on 03/09/1995, is a Sudanese male who studied Medicine (MBBS) in National University – Sudan (2013-2018), and then studied M.Sc. Human Clinical Anatomy in National University – Sudan (2019-2021), Dr. Saeed has deep interest in Anatomy and Neurosurgery and submitted this paper as part of the fulfillment of his master degree

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