

Measuring Tonsillar Position



Beyond the machines themselves, measuring tonsillar position is part science and part art. This means that different people, even experts, can look at the same scans and come up with different values for the tonsillar position.

The CCRC demonstrated this in a 2018 study. For the study, 33 sets of MRIs were given to 7 experts (neurosurgeons, neurologists, radiologists) who were asked to measure the tonsillar position of each case using the standard McRae line methodology. The MRI set included 10 controls with no herniation, 11 surgical Chiari cases, and 12 non-surgical Chiari cases. The experts used their own choice of software and had to select their own image view from each set. While statistically the overall correlation of those measuring was considered clinically good, there were some striking findings in the details. For example, the average range of measurements for the entire set was over 7mm, and the range of measured positions for 30 out of the 33 cases (90%) was 5mm or more, the very definition of the Chiari. In addition, 8 of the 33 cases had false negative measurements, meaning at least one person measured the tonsillar position at less than 3mm while others put it at over 5mm. Similarly, there were even more false positives where an image was classified by one person as having tonsillar position at more than 5mm but others measured it at less than the critical 5mm mark.

Source: Conquer Chiari: A Patient's Guide to the Chiari Malformation – Second Edition, pages 84 - 85