

## DIFFERENCES BETWEEN ALAR LIGAMENT OF MALE AND FEMALE: MRI PERSPECTIVES

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### ABSTRACT

**Background:** Road traffic accidents have caused serious public health concerns; which include whiplash-associated disorders involving cervical spine. MRI is often required to supplant diagnosis of this condition. Nevertheless, alar ligament of the cervical spine may show variability in MR appearance; most profoundly signal hyperintensity easily mistaken as injury.

**Purpose:** The main purpose of the study is to compare the normal anatomy of alar ligament on MRI between male and female in terms of its course, shape, orientation and signal homogeneity, despite determining the association between the heights of respondents with alar ligament dimensions.

**Methodology:** 50 healthy volunteers were studied on 3.0T MR scanner Siemens Magnetom Spectra using 2-mm proton density, T2 and fat-suppression sequences. Alar ligament is depicted in 3 planes and the visualization and variability of the ligament courses, shapes and signal intensity characteristics were determined. The alar ligament dimensions were also measured.

**Results:** Male respondents were 70% more likely to exhibit alar ligament signal inhomogeneity which is statistically significant ( $p = 0.02$ ). No significant difference in alar ligament shape, size and orientation was seen between both genders. However positive correlation between height and the craniocaudal diameter of the alar ligament as well as the anteroposterior diameter, regardless of gender; which were statistically significant ( $r = 0.25$ ,  $n = 100$ ,  $p = 0.01$  and  $r = 0.201$ ,  $n = 100$ ,  $p = 0.045$  respectively).

**Conclusion:** Presence of gender variability of alar ligament MR signal intensity as depicted in our data shows that caution needs to be exercised when evaluating alar ligament, especially during circumstances of injury.

**Keywords:** alar ligament signal intensity, 3.0 T MRI

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