

## Computed tomographic evaluation of atlantoaxial joint mobility in normal small breed dogs

**Juhyung Kim, Minhyuk Kim, Haengbok Cheon, Hangmyo Cho, Chul Baik, Seokju Yun,  
Dongwoo Chang\***

*Section of Medical imaging, Medical Center,  
Chungbuk National University*

### Introduction

Atlantoaxial instability is a relatively common condition causing neck pain and neurologic dysfunction in small breed dogs. Atlantoaxial instability can permit abnormally excessive flexion of the joint causing compression of the spinal cord as a result of dorsal displacement of the dens into vertebral canal. Although atlantoaxial instability can be assessed using neutral and flexed position radiograph, radiograph has limitations to evaluate the compression of the spinal cord.

### Purpose

The purpose of this study was to establish the normal range of atlantoaxial joint mobility using computed tomographic index in clinically normal small breed dogs.

### Material and Methods

12 small breed dogs with no evidence of neurologic signs and neck pain were included in this study. Computed tomographic scan of atlantoaxial joint was performed in neutral position and flexed position under the general anesthesia. Then, atlantodental interval ratio (ADIR) was calculated by dividing a distance between dorsal surface of dens and dorsal arch of atlas by the inner diameter of atlas canal in neutral and flexed position, respectively.

### Results

In neutral and flexed position, overall mean  $\pm$  standard deviation of ADIR were  $0.56 \pm 0.05$  (range of 0.50 to 0.64) and  $0.54 \pm 0.05$  (range of 0.46 to 0.64), respectively. Also, there was no significant difference of ADIR between neutral and flexed position. ( $P > 0.05$ )

### Conclusion

In this study, computed tomographic index was established to assess atlantoaxial joint mobility in clinically normal small breed dogs. ADIR using neutral and flexed position computed tomography could be used to evaluate integrity of atlantoaxial joint in small breed dogs.

Keywords: atlantoaxial subluxation, index, CT, small breed dog

\*Corresponding author: dwchang@chungbuk.ac.kr

