

Atlantoaxial Mobility in Normal Small Breeds of Dogs

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Purpose: The information about atlantoaxial mobility including the distance the dorsal arch of C1 and the spinous process of C2 has been rarely reported especially pertaining to small breeds of dogs. The aim of this study is to offer the values about the atlantoaxial mobility on the neutral and flexed cervical radiographs in normal small breed dogs.

Materials and Methods: Fifty-seven small breed dogs mainly including Maltese, Yorkshire terrier, and Shih-tsu weighing 1.5kg to 8.5kg (average 4.5kg) without neurological signs were studied. Sequential radiographs of each dog centered on the atlantoaxial joint were obtained in three different positions: lateral recumbency in neutral position and with the skull flexed, and dorsoventral position to verify the intact odontoid process. The radiographs were evaluated as follows; 1) the overlapped length of dorsal spinous processes of the atlas and axis(Do), 2) the shortest distance from cranial tip of axial spinous process to dorsal arch of atlas(Ds), 3) the angle between the longitudinal axis of atlas and of the axis($A\theta$).

Results: In a neutral position, Do was $3.4\text{mm}\pm 1.8$ (range 0~8mm), Ds was $1.8\text{mm}\pm 0.1$ (range 0.5~3mm), and $A\theta$ was $180.5^\circ\pm 6.4$ (range $167^\circ\sim 203^\circ$). In a flexed position, Do was $1.0\text{mm}\pm 1.9$ (range -4~6mm) Ds was $3.1\text{mm}\pm 1.4$ (range 1~5mm), and $A\theta$ was $175^\circ\pm 5.4$ (range $164^\circ\sim 180^\circ$).

Conclusions: This report suggested the small breed dogs have shorter overlapped length and distance of spinous processes, and narrower angle than the diagnostic standards reported previously. These radiographic standards may facilitate the diagnosis of atlantoaxial instability in the small breed dogs. Further studies with more population and more specific breeds need to be performed for general application.

Key words: atlantoaxial instability, small breed dog, radiograph

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