EFFECT OF LACROSSE EQUIPMENT ON CERVICAL SPINAL CORD SPACE DURING IMMOBILIZATION

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Context: Improper handling of the cervical spinal column on the field or during transport can worsen (or even cause) spinal cord dysfunction. Lacrosse helmet facemask removal to access the airway is difficult. Lacrosse helmet removal only to achieve airway access has been discouraged based on research examining cervical alignment only. There has been no research examining the effects of lacrosse helmet removal on cervical space available for the spinal cord. Objective: To determine the effect of lacrosse equipment on the cervical space available for the spinal cord (SAC) in the immobilized lacrosse athlete. Design: Repeated measures. Setting: Outpatient Imaging Center. Patients or Other Participants: Ten volunteer lacrosse athletes, (height, 180.3 cm+8.4 cm; weight, 89.5 kg+12.4 kg), with no history of cervical spine injury or disease and magnetic resonance imaging (MRI) contraindications. Interventions: The independent variables were equipment [no equipment (C); helmet and shoulder pads (FG), and shoulder pads only (SP)], and cervical spinal level (C2-C7). The lacrosse players were positioned supine on a spine board for all test conditions. A T1 weighted MRI scan was completed using a Hitachi Airis II .3 tesla scanner with cervical coil for each condition. In the no equipment condition the head was positioned such that the lateral corner of the eye and superior aspect of the ear define a line perpendicular to the horizon. In the FG and SP conditions, each subject was placed supine on the spine board with the head and neck in an “in-line” neutral position. The average of three trials was used as the criterion variable. Data were analyzed using a 3x6 ANOVA with repeated measures. Main Outcome Measures: The dependent variable was the SAC. The SAC was determined as the difference between the sagittal canal diameter and corresponding sagittal cord diameter. The spinal canal diameter was the narrowest distance from the vertebral body to the spino-laminar line and the spinal cord diameter was measured at the appropriate spinal level. The MRI scans were evaluated mid-sagittal at each spinal level by a radiologist [ICC (3,1)= 0.79]. Results: There was no significant equipment by level interaction effect (P =.519) or equipment main effect (P =.509, con = 5.2mm, FG = 4.9mm, SP = 5.03mm) on the SAC. Conclusions: Results indicate that removal of the lacrosse helmet only to access the airway does not significantly affect the cervical SAC. Clinically, removal of the lacrosse helmet only may provide a safe and effective method of accessing the airway in the spine injured athlete.