Cervical spine alignment in immobilized hockey players: radiographic analysis with and without helmets and shoulder pads.

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Author information

Abstract

OBJECTIVE:
To establish the appropriate technique for cervical immobilization of the hockey player with an acute neck injury, we analyzed the alignment of the cervical spine in healthy volunteers with combinations of applied hockey equipment and assessed the amount of cervical spine motion possible in a secured hockey helmet. Our hypothesis was that there is a significant difference among various positions of the cervical spine with and without equipment and with active motion in a secured helmet.

DESIGN:
We analyzed lateral cervical spine radiographs of eight healthy male volunteers immobilized on a backboard with the following combinations of hockey equipment: shoulder pads and helmet, shoulder pads only, helmet only, no equipment, and neck flexion and extension with helmet and shoulder pads on and helmet secured to the backboard.

SETTING:
Large university hospital, tertiary care center.

RESULTS:
Cervical lordosis without equipment (control) was not significantly different than cervical lordosis with shoulder pads and helmet applied (p=0.31). Subjects with shoulder pads averaged 8.9 degrees more lordosis than did controls (p= 0.0002) and 6.6 degrees more lordosis than did subjects with shoulder pads and helmets (p=0.027). Subjects with shoulder pads and a helmet secured to the backboard were able to flex and extend the cervical spine 12.9 degrees compared with the control position (p =0.009).

CONCLUSIONS:
In an acute cervical spine injury involving an ice hockey player, we recommend immobilization in both the helmet and the shoulder pads, with removal of both pieces of equipment in a controlled hospital setting and only after initial radiographic examination. We also recommend securing the player's chin to prevent as much head and neck motion as possible during transport and transfers.