Spinal motion restriction

Question Type:
Intervention

Full Question:
Among adults and children with suspected traumatic cervical spinal injury (P), does spinal r
(I), compared with no spinal motion restriction (C), change neurological injury, complicatio
mortality, pain, patient comfort, movement of the spine, hospital length of stay (O)?

The information provided is currently in DRAFT format and is NOT a FINAL versio

Consensus on Science:
POSTED FOLLOWING ILCOR MEETING TASK FORCE DISCUSSION ON 4 FEBRUARY, 2015

Cervical spinal motion restriction was defined as the reduction or limitation of cervical spina
definition may not apply to certain countries or organizations. Spinal stabilization was defin
maintenance of the spine in a neutral position prior to applying spinal motion restriction de
evaluation was limited to mechanical cervical devices accessible to first aid providers, inclu
collars and sandbags with tape, and did not include spine boards.

(Semi)rigid collar (I) vs no collar (C)
For the critical outcome of "neurological injury" we have identified very low quality evidenc
risk of bias and imprecision) from 1 non-randomized study with 5138 motorcycle crash vict
difference in neurological injury (no significant difference according to the paper, however w
calculate the MD and CI, because the mean and SD of the intervention and control group a
(Lin, 2011, 1028).

For the critical outcome "complications (intracranial pressure)" we have identified low quali
non-randomized studies with 107 patients in total, showing increased intracranial pressure
4.69 95% CI [1.95; 7.43]; MD (mm H20) 20.48 95% CI [5.62; 35.33]) (Davies, 1996, 647
511; Mobbs, 2002, 389; Kolb, 1999, 135; Raphael, 1994, 437). We identified low quality e
additional non-randomized study with 42 healthy volunteers showing increased intracranial
(Internal jugular vein cross-sectional area) 0.19 95% CI [0.05; 0.33]) (Stone, 2010, 100).

For the critical outcome "complications (tidal volume)" we have identified very low quality e
(downgraded for risk of bias and imprecision) from 1 non-randomized study with 38 patien
decrease in tidal volume (significant decrease according to the paper, however we were un
the CI because the SD of the intervention and control group not reported) (Dodd, 1995, 96

For the important outcome "cervical spine movement" we have identified low quality evider
randomized study with 18 head-injured children showing no benefit in terms of limiting flex
95% CI [-7.75 to 3.35]) (Treloar, 1997, 5). For the same outcome we identified very low q
(downgraded for indirectness) from 13 additional non-randomized studies with 457 cadave
volunteers showing benefit in terms of limiting flexion, extension, lateral bending, axial rot
flexion/extension (flexion: MD -12.50 95% CI [-13.13; -11.87]; extension: MD -0.91 95%
lateral bending: MD -1.99 95% CI [-2.33; -1.65]; axial rotation: MD -4.73 95% CI [-5.16;
flexion/extension: MD -19.13 95% CI [-19.89; -18.36]) (Podolsky, 1983, 461; Tescher, 200
2005, 264; Horodyski, 2011, 513; Conrad, 2010, 432; Del Rossi, 2004, 619; Rosen, 1992,

2004, 251; Evans, 2013, S10; DiPaola, 2008, 273; Fischer, 1977, 109; Sandler, 1996, 162
374). Seven additional studies were not included in the final analysis, since data were lacki
standard deviation of intervention and control group not reported) (Gavin, 2003, 527; Aski
Cline, 1985, 649; Ben-Galim, 2010,447; Burl, 1991, 308; Hamilton, 1996, 553; Richter, 20

For the important outcome "patient comfort" we have identified very low quality evidence (
indirectness and imprecision) from 1 non-randomized study with 26 healthy volunteers, sh
or increase in patient comfort (MD -0.20 95% CI [-0.93; 0.53]) (Hamilton, 1996, 553).

We did not identify any evidence to address the important outcomes of "overall mortality",
the less important outcome of "hospital length of stay".

Soft collar (I) vs no collar (C)
For the important outcome "cervical spine movement" we have identified very low quality e
(downgraded for indirectness) from 3 non-randomized studies with 36 cadavers or healthy
showing benefit in terms of limiting flexion and axial rotation (flexion: MD -3.04 95% CI [-
rotation: MD -9.07 95% CI [-14.17; -3.96]). The same studies showed no benefit in terms
extension, flexion/extension and lateral bending (extension: MD -1.63 95% CI [-4.75; 1.49
flexion/extension: MD -8 95% CI [-21.88; 5.88]; lateral bending: MD -0.14 95% CI [-2.79
1983, 461; Sandler, 1996, 1624; Bednar, 2004, 251).

We did not identify any evidence to address the critical outcomes of "neurological injury" a
the important outcomes of "overall mortality", "pain", and "patient comfort", and the less im
of "hospital length of stay".

Sand bags and tape (I) vs no motion restriction (C)
For the important outcome "cervical spine movement" we have identified very low quality e
(downgraded for indirectness) from 1 non-randomized studies with 25 healthy volunteers
terms of limiting flexion, extension, axial rotation and lateral bending (flexion: MD -35.60 9
-32.51]; extension: MD -6 95% CI [-9.53; -2.47]; axial rotation: MD -73.30 95% CI [-75.9
lateral bending: MD -19.40 95% CI [-21.62; -17.18]) (Podolsky, 1983, 461).

We did not identify any evidence to address the critical outcomes of "neurological injury" a
the important outcomes of "overall mortality", "pain", and "patient comfort", and the less im
of "hospital length of stay".

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Treatment Recommendation:

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We suggest against the use of cervical collars by first aid providers (weak recommendation
of evidence).

Values and preferences statement:
• Consistent with the First Aid principle of preventing further harm, the potential benefits o
cervical collar do not outweigh harms such as increased intracranial pressure and the conse
unnecessary neck movement.
• We recognize that first aid providers might not be able to discriminate between high or lo
• We recognize the potential value of manual stabilization in certain circumstances, but this
evaluated in this review.

CoSTR Attachments:

SPINAL IMMOBILIZATION_CoSTR_08122014.pdf

20150116_ILCOR_Spinal motion restriction_PW.pptx

Summary of Findings table_spinal motion restriction_04122014.pdf

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