

Clinical prediction of cervical spine fracture in traumatic neck injury patient.







Figure 1: Thailand

Introduction

- Cervical spine injury screening: NEXUS Criteria (National Emergency X-Radiography Utilization Study) / Canadian C-spine rule (screening traumatic neck injury to cervical spine CT scan).
- Emergency Department of Ramathibodi Hospital had used both of NEXUS criteria and Canadian C-spine rule.
- Cervical spine CT scan has expensive cost and unavailable in all hospital.

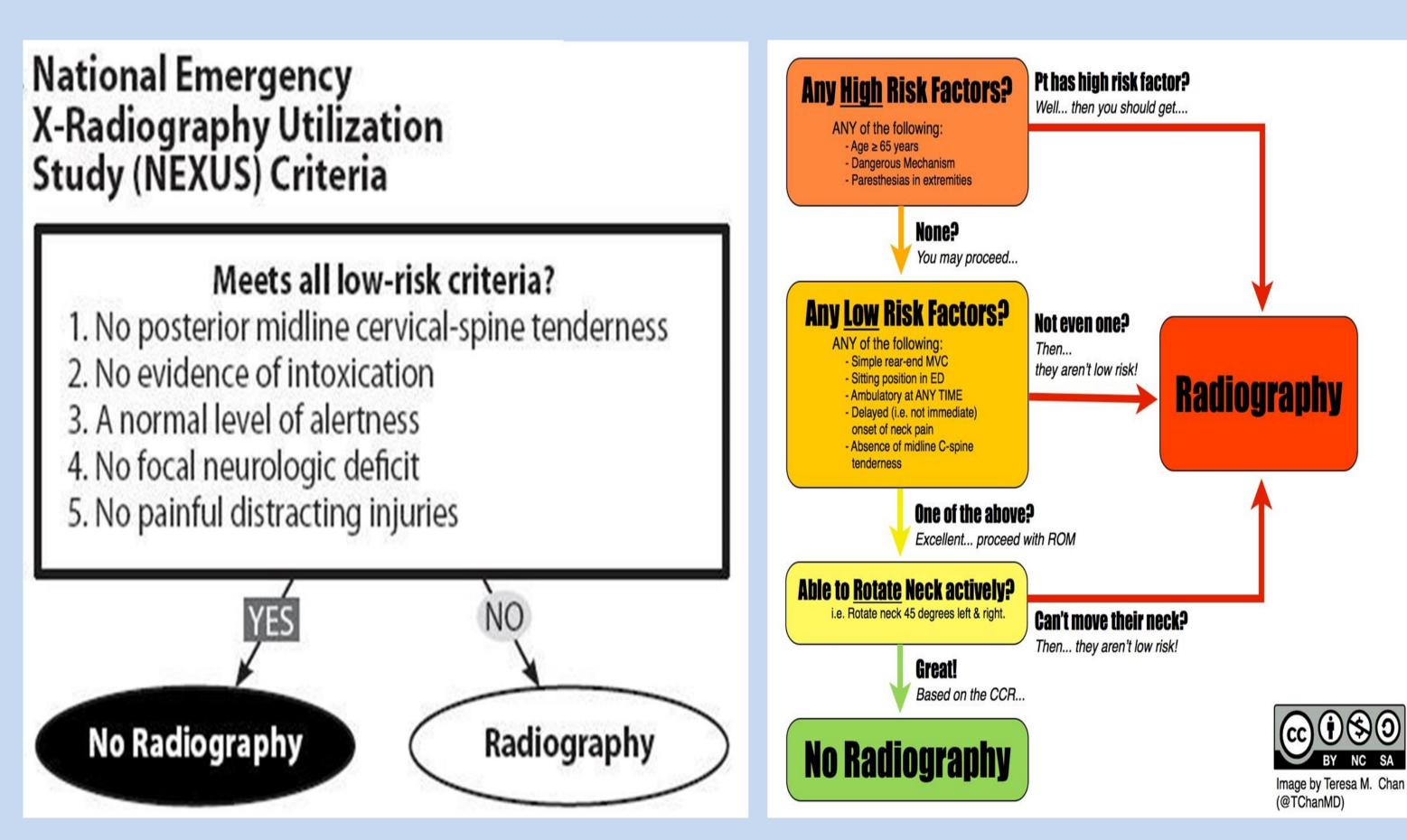


Figure 2: NEXUS Criteria (Left) and Canadian C-spine rule (Right)

Patients & Method:

This research is retrospective cross sectional study. Traumatic neck injury patient that come to Emergency Room (only one criteria in NEXUS or Canadian C-spine rule) had done cervical spine CT scan and official report by radiologist. We had collected the data between October 2014 to December 2017.

Factors	CT (+) (N = 26)		CT (-) (N = 444		P-value	AuROC
	N	%	N	%		(95% CI)
Gender – Male	13	4.6	267	95.3	0.312	0.45-0.65
Age (years)	59.8 ±	22.4	55.4 :	± 23.3	0.353	0.44-0.66
Triage Lv. 1	2	7.7	22	5	0.524	0.39-0.60
Triage Lv. 2	15	57.7	271	61.6		
Triage Lv.3	8	30.8	140	31.8		
Triage Lv. 4	1	3.9	7	1.6		
Neck pain	20	8.7	208	91.3	0.003	0.27-0.43
Tipsy	4	15.4	70	16.1	1.000	0.43-0.58
GCS Mild	20	80	1	4	0.149	0.38-0.55
GCS Moderate	1	4	40	9.1		
GCS Severe	4	16	28	6.3		
Neuro deficit	17	68	255	57.9	0.406	0.45-0.64
Distract injury	2	7.6	50	11.3	0.755	0.46-0.57
High risk mechanism	20	76.9	294	66.9	0.390	0.36-0.53
Weakness	19	73.1	350	80.7	0.320	0.37-0.51
Steroid use	0	0	4	0.9	1.000	0.50-0.50
Sport injury	0	0	0	0	1.000	0.49-0.50
EMS	9	34.6	207	49.2	0.162	0.33-0.52

Table 1: Univariable analysis of prognostic factors related to CT positive.

Factors	Odd ratio	95% CI	P-value
Gender – Male	1.54	0.60-3.90	0.361
Age (years)	1.0	0.98-1.02	0.527
Triage Lv. 1	0.70	0.01-25.29	0.851
Triage Lv. 2	0.67	0.04-10.27	0.775
Triage Lv.3	0.57	0.04-8.77	0.694
Neck pain	0.14	0.04-0.47	0.002
Tipsy	0.60	0.16-2.24	0.450
GCS Moderate	0.13	0.01-1.81	0.130
GCS Severe	0.13	0.02-0.86	0.035
Neuro deficit	1.45	0.47-4.40	0.514
Distract injury	2.63	0.55-12.59	0.225
High risk mechanism	0.51	0.17-1.51	0.226
Weakness	0.84	0.22-3.15	0.799

Table 2: Multivariable analysis of prognostic factors related to CT positive.

Conclusion:

Patients with neck trauma that had distracting injury or focal neurological deficit are high risk group to C-spine fracture. We should send this high risk group patients for further investigation (Cervical spine CT scan).

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