

IDENTIFYING PREDICTORS FOR FOCUSED CT SCANNING IN THE ED

Dr Hridesh Chatha¹, Dr Ian Sammy², Dr Abdo Sattout¹, Dr John Hollingsworth¹

¹ Aintree University Hospital NHS Foundation Trust

² SCHARR (School of Health and Related Research) The University of Sheffield



Background

Deciding between imaging of a single body region or whole body CT (WBCT) is an important aspect of clinical decision making in trauma patients. This study aimed to identify predictors of injury to a single body region in major trauma patients.

Methods

A single centre retrospective cohort study was conducted. All blunt trauma patients who had CT were included; transferred patients were excluded. The primary outcome was the presence of injury isolated to a single body region (head/neck, chest and abdomen/pelvis). Multivariate logistic regression was used to identify predictors of injury in each region.

Results

GCS<15, mechanism of injury of blows/crush injury, age>55, signs of significant and superficial head injury were predictors of isolated head and neck injuries. Injury to the torso reduced the odds of isolated head/neck injury. Thoracic spine tenderness and significant chest examination findings were predictors of isolated chest trauma. Signs of head injury and pelvic injury reduced the odds of isolated chest injury. Lumbar spine tenderness and pelvic tenderness were predictors of isolated abdominal/pelvic trauma. GCS<15 and a positive chest examination reduced the odds of isolated abdomen/pelvic trauma.

Discussion

Patients with examination findings isolated to a single body region may only need isolated imaging to the affected area. Used in conjunction with a clinical decision rule for WBCT, these factors may help identify patients who need focused, rather than whole body CT.

Factor	Odds ratio	95% CI and P-value
Isolated head and neck trauma (Nagelkerke R ² = 0.25)		
Age≥55	1.57	1.08 – 2.27 (p=0.02)
Mechanism of injury p=0.08	High falls	Reference
	Blows/crush injuries	1.85 1.03 – 3.30 (P=0.04)
	RTC protected	0.82 0.45 – 1.50 (P=0.52)
	RTC unprotected	0.79 0.49 – 1.28 (P=0.34)
	Low fall	1.32 0.77 – 2.27 (P=0.32)
GCS<15	2.60	1.81 – 2.75 (P<0.01)
Superficial head	1.87	1.29 – 2.72 (P<0.01)
Significant head	2.58	1.32 – 5.05 (P<0.01)
Chest examination	0.36	0.22 – 0.61 (P<0.01)
Abdominal examination	0.61	0.34 – 1.07 (P=0.09)
Pelvic examination	0.56	0.31 – 1.02 (p=0.06)
Thoracic spine	0.24	0.09 – 0.69 (p<0.01)
Lumbar spine	0.40	0.14 – 1.16 (p=0.09)
Isolated chest/thoracic spine (Nagelkerke R ² = 0.19)		
Gender (male)	1.90	1.13 – 3.17 (p=0.02)
RR ≥20	1.57	1.00 – 2.46 (p=0.05)
Superficial head	0.69	0.45 – 1.06 (p=0.09)
Significant head	0.28	0.07 – 1.24 (p=0.10)
Significant chest	4.77	3.13 – 7.27 (p<0.01)
Pelvic examination	0.26	0.13 – 0.55 (p<0.01)
Thoracic spine tenderness	2.92	1.69 – 5.05 (p<0.01)
Isolated abdomen/pelvic trauma (Nagelkerke R ² = 0.22)		
GCS<15	0.12	0.04 – 0.33 (p<0.01)
Chest examination	0.36	0.16 – 0.84 (p=0.02)
Pelvic examination	5.08	2.70 – 9.56 (p<0.01)
Lumbar examination	3.36	1.57 – 7.18 (p<0.01)