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Older people are not all the same: lessons from a major trauma database

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Introduction

While there is extensive research on the differences between older and younger patients with serious injuries, little is known about variations within the older age group. However, increased frailty over the age of 85 suggests that these 'oldest old' patients are likely to be significantly different to younger seniors.

Methods

The aim of this study was to determine whether the demographic and clinical characteristics, as well as the injury patterns of older patients (aged ≥ 65) varied with age. A cross-sectional study of data from the Trauma Audit and Research Network (TARN) of patients admitted between June 2013 and May 2015 was undertaken, comparing patients aged 65 to 74; 75 – 84 and ≥ 85 years old. Demographic, pre-morbid and injury characteristics were compared using Chi-squared analysis, while multiple logistic regression was used to calculate risk adjusted mortality, utilising the PS14 TARN predictive model.

Results

51,491 patients on the TARN database were eligible for inclusion. Of these, 18,664 (36.3%) were ≥ 85 years; 19,157 (37.2%) 75 – 84 years and 13,670 (26.5%) 65 – 74 years. Patients ≥ 85 years were significantly more likely to be female (68.8% vs 46.6% aged 65 – 74 years, $p < 0.001$) and suffer low level falls (89.0% vs 63.0% aged 65 – 74 years, $p < 0.001$). These patients were also more likely to have multiple comorbidities, with a median Charlson comorbidity score of 4 (IQR 0 – 5) compared to a median CCI of 0 (IQR 0 – 4) in patients aged 65 – 74 years (Table 1). Despite having the lowest median injury severity scores, patients aged ≥ 85 years had significantly higher crude mortality rates (12.9% vs 5.9% in patients aged 65 – 74 years). Risk adjusted mortality was also highest in patients ≥ 85 years, with an adjusted odds ratio of 4.55 (95% CI 3.87 - 5.35) compared to patients aged 65 – 74 years.

Conclusion

There are significant variations in the demographic, comorbid and injury characteristics between different age groups of older trauma patients, which are associated with marked differences in crude and risk adjusted mortality. The most senior (over 85) were the most likely to sustain major trauma and the least likely to survive.

Characteristic of Older Trauma Patients						
		Age Groups			Total	p value
		65 - 74 years	75 - 84 years	>=85 years		
Total		13670 (100%)	19157 (100%)	18664 (100%)	51491 (100%)	
Gender	Male	7303 (53.4%)	8067 (42.1%)	5826 (31.2%)	30295 (58.8)	< 0.001
	Female	6367 (46.6%)	11090 (57.9%)	12838 (68.8%)	21196 (41.2)	
Mechanism of Injury	Fall < 2 metres	8612 (63%)	15141 (79%)	16610 (89%)	40363 (78.4)	< 0.001
	Fall >=2 meters	2413 (17.7%)	1988 (10.4%)	1160 (6.2%)	5561 (10.8)	
	Road Traffic Collision/Incident	2063 (15.1%)	1633 (8.5%)	671 (3.6%)	4367 (8.5)	
	Other	582 (4.3%)	395 (2.1%)	223 (1.2%)	1200 (2.3)	
Injury Severity Score	ISS 1 - 8	2955 (21.6%)	4662 (24.3%)	4773 (25.6%)	12390 (24.1)	< 0.001
	ISS 9 - 15	5573 (40.8%)	7954 (41.5%)	8379 (44.9%)	21906 (42.5)	
	ISS 16 - 24	2515 (18.4%)	3154 (16.5%)	2839 (15.2%)	8508 (16.5)	
	ISS >=25	2627 (19.2%)	3387 (17.7%)	2673 (14.3%)	8687 (16.9)	
	Median ISS (IQR)	9 (9 - 18)	9 (9 - 17)	9 (8 - 16)	9 (9 - 18)	
Number of Injuries	1 Injury	3795 (27.8%)	6332 (33.1%)	6971 (37.3%)	17098 (33.2)	< 0.001
	2 Injuries	3485 (25.5%)	5465 (28.5%)	5832 (31.2%)	14782 (28.7)	
	>= 3 Injuries	6390 (46.7%)	7360 (38.4%)	5861 (31.4%)	19611 (38.1)	
Charlson Comorbidity Index	CCI = 0	6997 (51.2%)	7524 (39.3%)	5921 (31.7%)	20442 (39.7%)	< 0.001
	CCI 1 - 5	3914 (28.6%)	6651 (34.7%)	7096 (38%)	17661 (34.3%)	
	CCI 6 - 10	1253 (9.2%)	2823 (14.7%)	3276 (17.6%)	7352 (14.3%)	
	CCI >10	514 (3.8%)	1038 (5.4%)	1250 (6.7%)	2802 (5.4%)	
	CCI Not Recorded	992 (7.3%)	1121 (5.9%)	1121 (6%)	3234 (6.3%)	
	Median CCI (IQR)	0 (0 - 4)	2 (0 - 4)	4 (0 - 5)	0 (0 - 4)	

Table 1: Characteristics of Older Trauma Patients