

OUTCOMES AFTER RIB FRACTURE IN ELDERLY PATIENT DUE TO BLUNT TRAUMA AT DOCTOR RENAISSANCE HOSPITAL

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Background

Blunt trauma remains the most common traumatic reason for presentation at a hospital. Despite their frequency, there remains high morbidity and mortality. This is particularly true amongst the elderly. About 16.5 percent of the American population was 65 years old or over in 2019. This number is projected to reach 22 percent in 2050.

Some clinical guidelines requiring admission to an intensive care setting in trauma centers for elderly patients with two or more rib fractures have been adopted by some trauma centers. Usage of these guidelines may lead to significant decreases in hospital stats, ICU stats, and use of mechanical ventilation. However, the effectiveness of these guidelines has not been validated across different institutions.

Hence, in our study we sought to determine the mortality rate of elderly patients with ribs fracture compared to patients < 65 years of age at Doctor Renaissance Hospital (Level I trauma center). We also investigated the relationship between the side of injury, the need for mechanical ventilation, ICU length of stay, and overall length of hospital stay.

Methods

We performed a retrospective cohort study involving all blunt trauma patients between 18 – 100 years with rib fractures, excluding those with major vascular injuries or those needing emergent surgery due to other injuries. Patients admitted to Doctor renaissance Hospital (Level I trauma) between 2017 – 2020 were divided into two groups. The experimental group consisted of 58 patients aged 65 years or older. The control group was made of 75 patients aged < 65 years old admitted during the same time. (table 1)

Outcomes parameters included pulmonary complications (such as pneumonia or respiratory failure), number of ventilator days, intensive care unit length and hospital stay, disposition, and mortality.

Table 1: Sample size and patient demographic

	Right sided rib fracture	Left sided Rib fracture	Bilateral rib fracture	Unspecified rib fracture	n
Experimental group					
Male	9	10	1	3	23
Female	15	13	4	1	33
Median age	78	81	75	70.5	

Control group					
Male	29	28	3	0	60
Female	6	4	3	2	15
Median age	48	45	37.5	42	

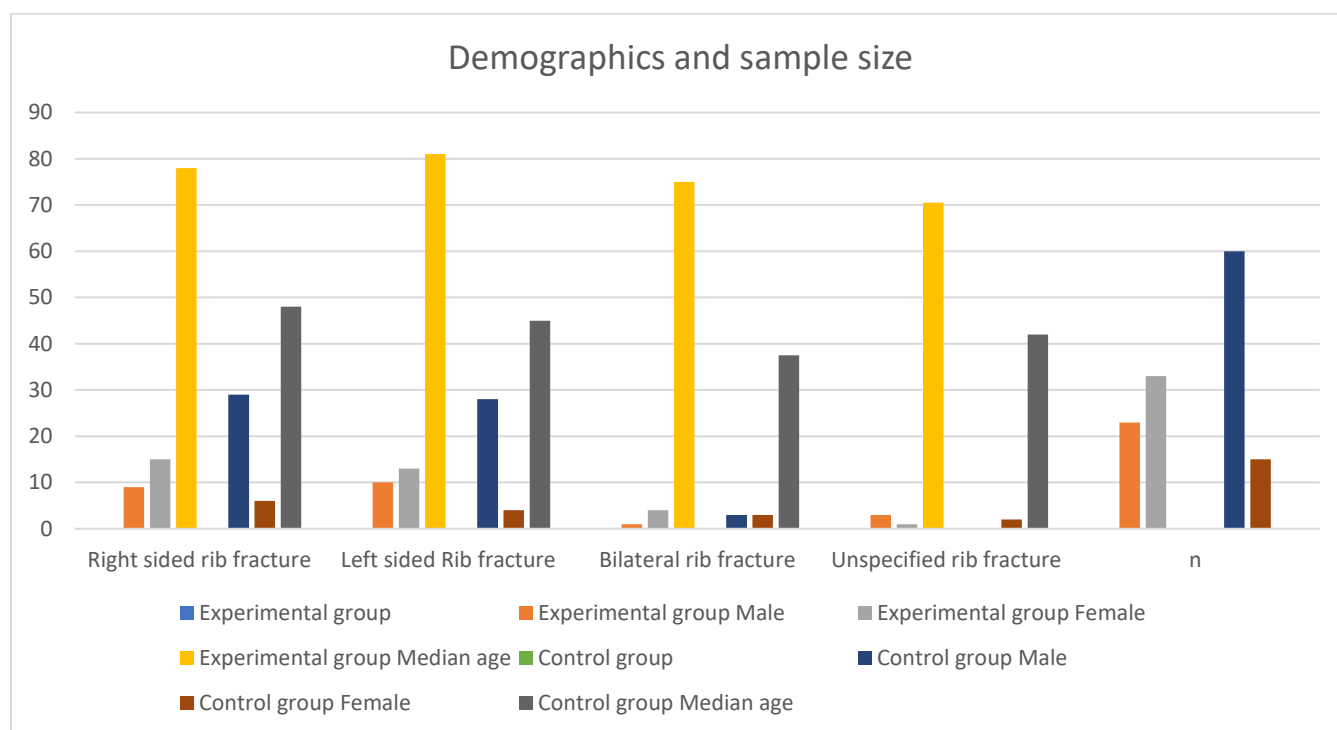


Figure 1: Number of patients versus associated rib fractures and age.

Results

In the experimental group, 58 patients were identified. These patients were divided into four groups: those with right-sided rib fractures, left-sided rib fractures, and unspecified and bilateral rib fractures. The overall mortality was 1.72 % compared to 4 % in the control group ($p < 0.05$). Patients with right-sided rib fractures had a median hospital length of stay of 4 days vs. 6 days in the control group ($p < 0.05$) (figure 2). We found no difference in the number of days spent in ICU between the control and experimental group with right-sided rib fractures. Patients with left-sided rib fractures had a similar median hospital length of stay compared to the control group. We noted no difference between the number of days spent in the ICU or ventilator days between these patients (figure 2).

Furthermore, patients with bilateral rib fractures had a median hospital stay of 8 days compared to 13 days in the control group ($p < 0.05$) (figure 2). Also, patients in the control group with bilateral rib fractures had a median ICU stay of 3 days and median ventilator use of 2 days compared to 0 days ($p <$

0.05) in the experimental group (table 2). Lastly, patients 65 and older with unspecified multiple rib fractures had a median length of stay of 3.5 days compared to 1.5 days in the control group ($p < 0.05$). The median length of stay in ICU and ventilator use was 1 day longer in the control group than the experimental group.

Table 2: Outcomes in terms of length of hospital stay, ICU stay and ventilation days.

	Experimental group				Control group			
	Right sided rib fracture	Left sided Rib fracture	Bilateral rib fracture	Unspecified rib fracture	Right sided rib fracture	Left sided Rib fracture	Bilateral rib fracture	Unspecified rib fracture
Median Values								
Length of hospital stay	4	4	8	3.5	6	4	13	1.5
Length of ICU stay	0	0	0	0	0	0	3	1
Ventilator days	0	0	0	0	0	0	2	1

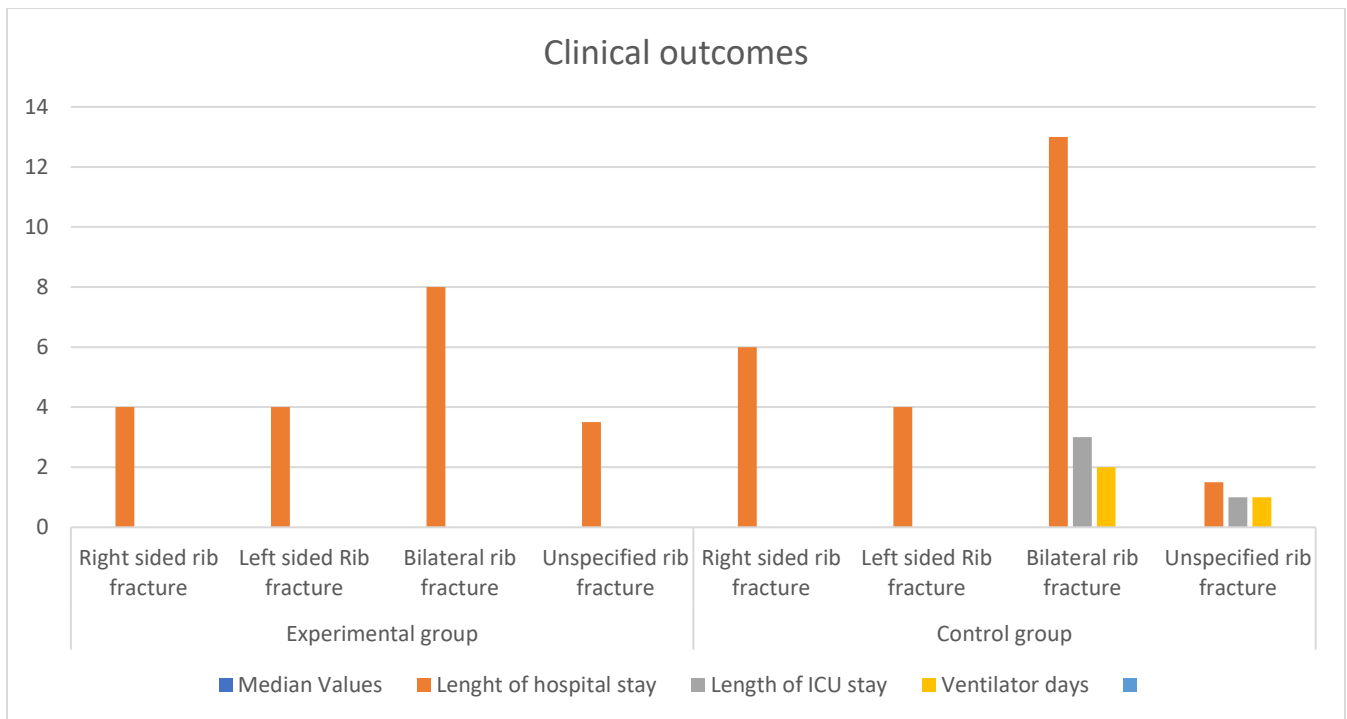


Figure 2: Localization of multiple rib fractures versus the length of hospital stay, ICU stay and ventilation days.

Conclusion

Elderly patients with more than 2 rib fractures admitted at Doctor hospital renaissance between 2017-2020 had better outcomes than patients younger than 65 admitted during the same period. Therefore, efforts to decrease rib morbidity should focus on other factors such as injury mechanisms instead of solely based on the patient's age. Furthermore, contrary to the guidelines for managing elderly patients

with ≥ 2 rib fractures, our data suggest that elderly patients with ≥ 2 rib fractures do not necessarily have to be admitted to the intensive care unit.

References:

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