



A retrospective review comparing delirium in elderly patients receiving ketamine infusion with younger patients

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INTRODUCTION

- Ketamine infusions have been used widely for the treatment of acute pain. It is generally well-tolerated¹.
- The incidence of Central Nervous System (CNS) adverse events is about 5% including delirium².
- Elderly patients may be more susceptible to develop these side effects.
- We sought to compare the prevalence of adverse neurological events in elderly patients receiving ketamine infusion to the prevalence in younger adults.
- Hypothesis: ketamine infusion is associated with increased rate of delirium in elderly patients (≥ 65 years of age) as compared to younger patients (< 65 years of age).

METHODS

This study was exempt from full IRB review by the IRB at the University of Virginia. Patient records from a single tertiary care institution were analyzed from 2018 to 2023.

- Inclusion criteria - Age ≥ 18 years, ketamine infusion ≥ 12 hours
- Data collected: patient demographics, medical comorbidities, ketamine dose and duration, and type of surgical procedure.
- Patients with delirium were identified based on ICU-CAM score in the Intensive Care Units or addition of delirium to the active problem list on the acute care floors.
- Logistic regression models were used to examine whether the likelihood of a positive delirium diagnosis differs between elderly and younger patients, controlling for sex, surgical/non-surgical service, comorbidities of interest, dose of ketamine per IBW, and infusion duration (hours).

RESULTS

- 3856 patients received ketamine infusion ≥ 12 hours
- Elderly patients (≥ 65 years; $n = 2,889$);
- Younger patients (< 65 years; $n = 967$)
- Elderly patients ($M = 14.6$, $SD = 67.5$) received $\sim 34\%$ less ketamine dose per IBW than younger patients ($M = 30.8$, $SD = 153.6$).
- Elderly patients were 54% (ICU-CAM only) to > 2 -fold (acute floor only) more likely to have a positive post-operative delirium diagnosis.

Figure 1. Frequencies and proportions of patients with positive delirium diagnosis.

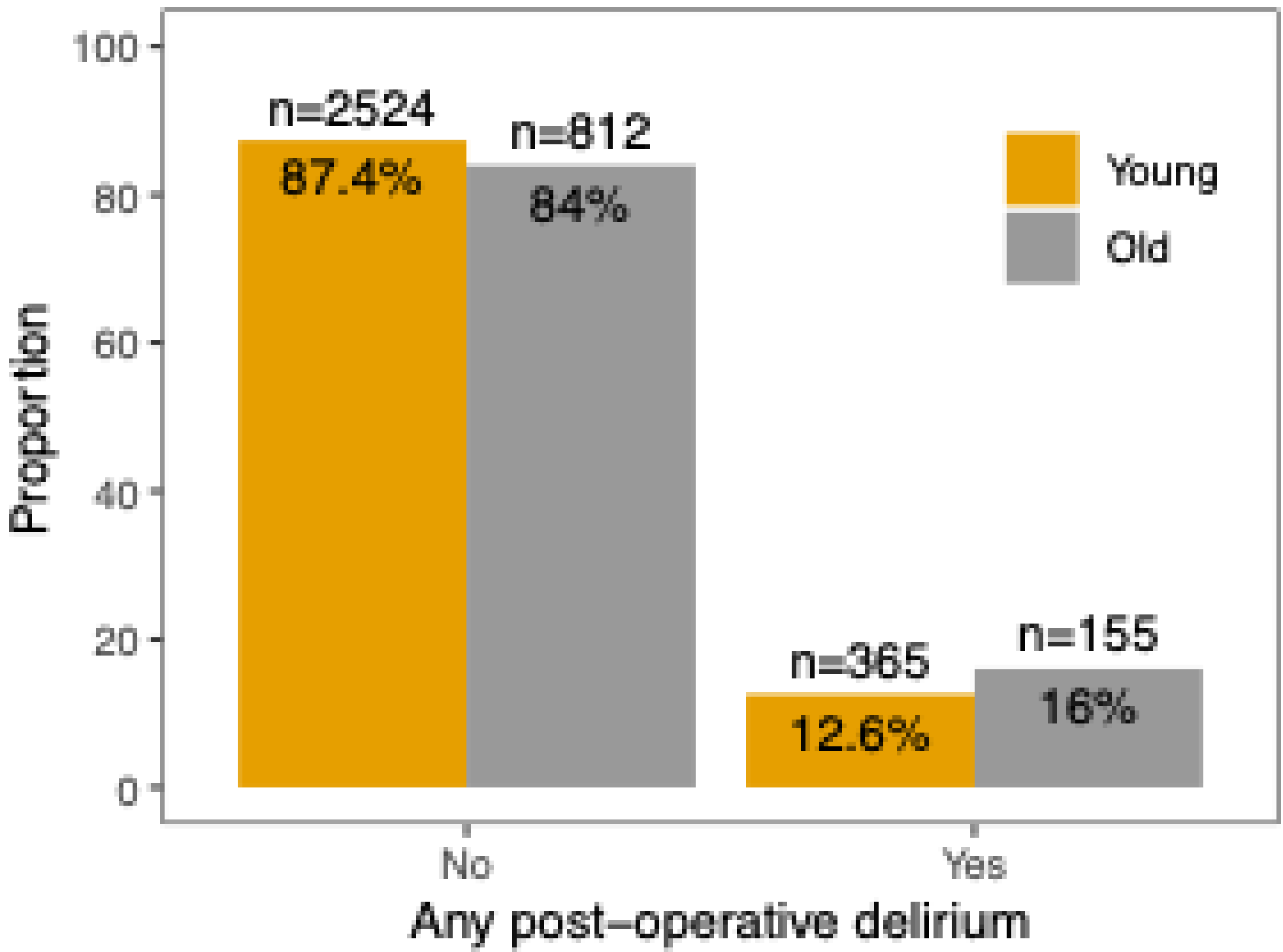
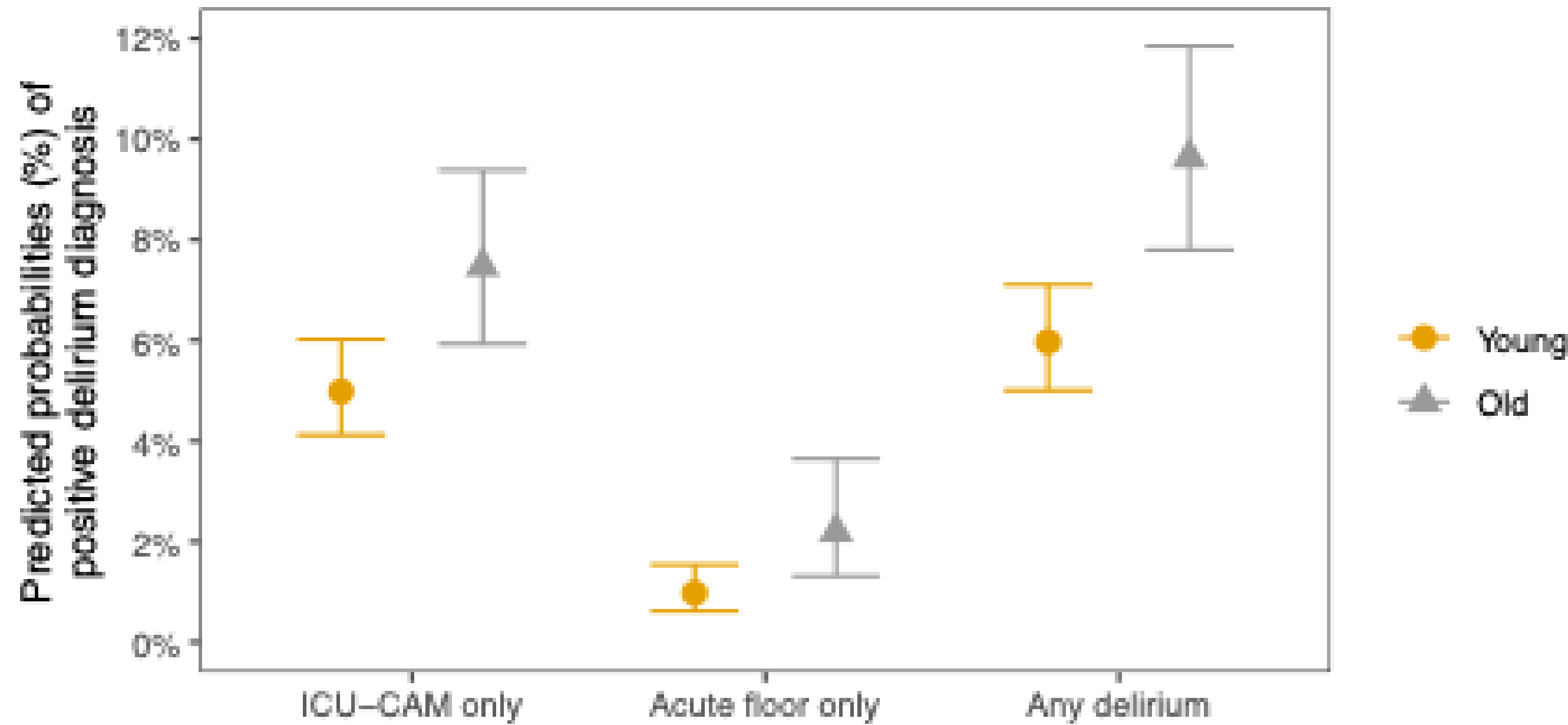


Figure 2. Estimated probabilities from adjusted logistic regression models of positive delirium diagnosis by age group.



DISCUSSION

- Among all patients, our study showed that 13.5% of patients who received ketamine infusion reported any delirium
- Elderly patient are $\sim 68\%$ more likely to have any delirium compared to younger patients
- The total dose and duration of infusion was significantly lower in elderly group
- Our institutional practice is to limit the dose of ketamine at 0.3mg/kg/hr (Ideal body weight) for acute pain and post surgical patients.

CONCLUSION

- Ketamine should be used cautiously in elderly patient population

REFERENCES

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Table 1. Logistic regression models estimating the effect of age group on post-operative delirium, adjusting for covariates.			
	ICU-CAM only	Acute floor only	Any delirium
	OR [95% CI]	OR [95% CI]	OR [95% CI]
Age group: Elderly	1.54 [1.21 – 1.95]***	2.28 [1.28 – 3.98]**	1.68 [1.34 – 2.10]***
Sex: Male	1.97 [1.59 – 2.44]***	0.97 [0.57 – 1.65]	1.81 [1.48 – 2.23]***
Surgical: Non-surgical	3.16 [2.44 – 4.08]***	0.91 [0.39 – 1.87]	2.75 [2.13 – 3.53]***
Active infection	3.44 [2.27 – 5.16]***	1.11 [0.26 – 3.20]	3.28 [2.17 – 4.89]***
Alcohol abuse	3.10 [2.08 – 4.57]***	1.74 [0.50 – 4.56]	3.11 [2.11 – 4.55]***
OR = odds ratio. 95% CI = 95% confidence intervals. ** p < .01. *** p < .001. Notes: Any delirium refers to delirium identified in ICU-CAM and/or acute floor.			