

INTRODUCTION

- Propofol infusion for the sedation of children in MRI can cause hemodynamic and respiratory complications in a dose dependent fashion.
- The addition of dexmedetomidine (1 mcg/kg or more) may decrease propofol requirements but has also been associated with prolonged PACU recovery times.

HYPOTHESIS

We hypothesized that low-dose dexmedetomidine bolus (0.5 mcg/kg) can decrease total propofol requirement **without** prolonging PACU recovery times for children undergoing MRI with sedation.

METHODS

- Retrospective chart review of patients 1 month to 20 years old who were sedated for MRI between November 1st and December 31, 2016.
- Standard of care (not protocol) for CHLA MRI sedation is induction with propofol (2-3mcg/kg), maintenance propofol infusion (250-300 mcg/kg/min) and boluses titrated to a sedation score of 5 or 6 on the Ramsay scale (**group P, n=173**).
- At the anesthesiologist's discretion patients may have received a dexmedetomidine bolus of 0.5 mcg/kg at induction (**group D+P, n=129**).
- Median duration of recovery time (min) of each group was compared by the Wilcoxon rank sum test.
- Total administered propofol dose was compared by the Wilcoxon rank sum test.
- As a retrospective study, the use of dexmedetomidine was not randomized

Table 1. Comparison of administered propofol and recovery time in both groups.

	Propofol N = 173	Dex + Propofol N = 129	Median Diff (95% CI)	Difference <i>P-value</i>
Propofol bolus (mg/kg)	3.13 (2.4 – 4.1)	3.05 (2.3 – 3.9)	-0.08 (-0.4, 0.3)	0.661
propofol infusion rate				
start: median (min-max)	250 (75-300)	150 (50-300)	-100 (-116.9, -83.1)	<0.0001
end: median (min-max)	200 (140-300)	125 (10-300)	-75 (-97.9, -52.1)	<0.0001
Anesthesia time (minutes)	90 (66 – 114)	90 (67 – 126)	0 (-11.0, 11.0)	0.998
Total Propofol infused (mcg/kg/min)	176.3 (144.9 – 205.3)	114.1 (97.8 – 138.3)	-62.3 (-71.6, -52.9)	<0.0001
Total Propofol given (mcg/kg/min)	214.7 (182.3 – 252.9)	147.6 (127.5 – 180.9)	-67.1 (-80.4, -53.8)	<0.0001
Recovery time (minutes)	28 (17- 39)	27 (18 – 41)	-1 (-6.0, 4.0)	0.694

Group **P**: propofol only. Group **D+P**: dexmedetomidine bolus followed by propofol infusion.

Values are expressed as median (IQR) except Propofol infusion rate at start and end.

+ Statistical comparison is based on Wilcoxon ranksum test.

RESULTS

- Total propofol dose (mcg/kg/min) was significantly higher in group **P** than **D+P**.
- There was no difference in recovery time (minutes).
- There was no significant difference in MRI image quality.

DISCUSSION

- Decreasing the propofol infusion rate as a sole agent may reduce the cardio-respiratory effects, but risks movement during MRI.
- High dose dexmedetomidine as a single agent may risk hypertension, hypotension, bradycardia, unwarranted emergence, and prolonged recovery times
- When used in combination, we found a decrease in total propofol dose that is comparable to other studies.
- For MRIs longer than 2 hours, a second low dose dexmedetomidine bolus might be warranted.

CONCLUSION

- Low-dose dexmedetomidine bolus (0.5 mcg/kg) can decrease the propofol requirement without prolonging recovery time.
- These findings are novel when compared to studies using higher doses of dexmedetomidine (1 mcg/kg or more) which resulted in prolonged recovery time.

REFERENCES

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