

Ultrasonographic assessment of sugammadex-enhanced early recovery of diaphragmatic function in children: A randomized double-blind controlled trial

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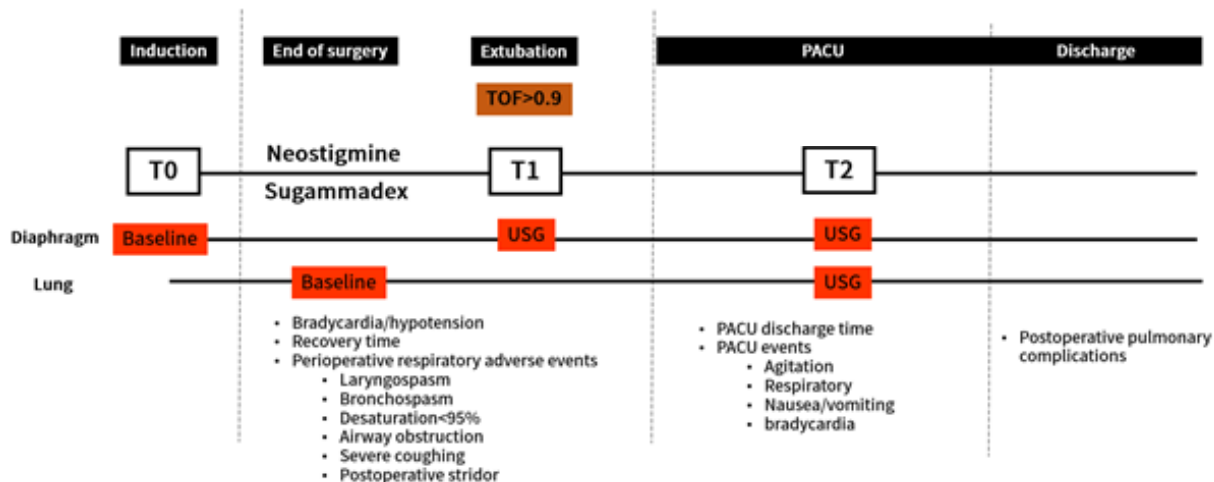
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Background

- Sugammadex accelerates neuromuscular recovery in adults, but its impact on diaphragmatic function and atelectasis in children is unclear.
- Aim: *the effects of sugammadex and neostigmine on restoration of diaphragmatic function and postoperative atelectasis in pediatric patients.*

Methods

- Prospective, randomized, double-blind study
- 73 children aged 2 to 7 years
 - ✓ sugammadex (2 mg/kg, n = 36) vs. neostigmine (0.02 mg/kg, n = 37)
- Diaphragm ultrasound : Diaphragmatic excursion, Thickening fraction at T0, T1, T2
- Lung ultrasound : atelectasis score at T1, T2



Results

- At T1, the DE_{T1}/DE_{T0} was significantly higher in the sugammadex group as was the TF_{T1}/TF_{T0} .
- No significant intergroup differences were found in the DE_{T2}/DE_{T0} and TF_{T2}/TF_{T0} .
- The atelectasis score and incidence of significant atelectasis were comparable.*

	Neostigmine (n = 37)	Sugammadex (n = 36)	Mean/median difference or Relative risk [95% CI]	P value
DE (mm)				
T0	14.28 ± 4.17	14.61 ± 3.85	0.33 [-1.51 to 2.17]	0.726
T1	12.49 ± 2.59	14.52 ± 3.96	2.04 [0.50 to 3.57]	0.012
T2	13.70 ± 3.01	15.26 ± 4.15	1.63 [-0.03 to 3.29]	0.059
DE ratio				
T1/T0	0.91 ± 0.19*	1.02 ± 0.24	0.11 [0.01 to 0.21]	0.034
T2/T0	0.98 ± 0.16	1.06 ± 0.18	0.07 [-0.01 to 0.15]	0.064
TF (%)				
T0	38.71 ± 17.19	39.66 ± 14.10	0.95 [-6.25 to 8.15]	0.797
T1	33.39 ± 13.66	41.57 ± 14.75	8.18 [1.65 to 14.71]	0.017
T2	37.96 ± 16.17	41.40 ± 16.03	3.44 [-3.95 to 10.82]	0.365
TF ratio				
T1/T0	0.93 ± 0.39	1.15 ± 0.49	0.22 [0.01 to 0.42]	0.041
T2/T0	1.07 ± 0.44	1.15 ± 0.58	0.09 [-0.15 to 0.32]	0.467
Consolidation score				
T1	6 [5, 8]	5 [4, 8]	-1 [-2 to 1]	0.514
T2	3 [2, 5]	2 [2, 4]	-1 [-2 to 0]	0.107
T2 - T1	-3 [-4, -2]	-3 [-4.25, -2]	0 [-1 to 1]	0.708
Significant atelectasis				
T1	12 (32.43%)	13 (36.11%)	1.18 [1.14 to 1.21]	0.933
T2	5 (13.51%)	6 (16.67%)	1.28 [1.23 to 1.33]	0.961

Conclusions

Compared to neostigmine, sugammadex accelerates diaphragmatic recovery immediately after extubation; however, this early recovery does not significantly reduce the incidence of postoperative atelectasis.