

Supplemental Digital Content 2

Table 1. Arterial Blood Gases at the Beginning (9:00 PM) and End (6:00 AM) of the Three Study Nights

		1 st night	2 nd night [*]	3 rd night	<i>p</i> value
PaO ₂ /F _i O ₂	9:00	223	231	220	0.213
	PM	(183-313)	(216-314)	(207-297)	
	6:00	220	233	216	
	AM	(207-297)	(183-346)	(208-336)	
pH	9:00	7.41	7.41	7.40	0.910
	PM	(7.38-7.42)	(7.38-7.43)	(7.38-7.42)	
	6:00	7.40	7.40	7.39	
	AM	(7.38-7.42)	(7.38-7.42)	(7.38-7.42)	
PaO ₂ (mmHg)	9:00	78	81	77	0.110
	PM	(69-92)	(76-99)	(67-98)	
	6:00	77	82	83	
	AM	(67-98)	(74-100)	(70-113)	
PaCO ₂ (mmHg)	9:00	42	45	45	0.327
	PM	(37-50)	(37-51)	(37-53)	
	6:00	45	45	44	
	AM	(37-53)	(38-52)	(39-53)	

Values are median (25th-75th interquartile range). ^{*} Dexmedetomidine was infused.

PaCO₂ = partial pressures of arterial carbon dioxide; PaO₂ = partial pressures of arterial oxygen.

Table 2. Average V_T and RR during the Three Study Nights

	1 st night	2 nd night	3 rd night	<i>p</i> value
V_T (l)	0.50 (0.34-0.51)	0.48 (0.32-0.50)	0.43 (0.31-0.50)	0.868
RR (breaths/min)	26 (20-31)	22 (20-27)	25 (24-28)	0.298

Values are median (25th-75th interquartile range). V_T data pertained only to mechanically ventilated patients.

RR = respiratory rate; V_T = tidal volume.

Table 3. Effects of Maximum Dose of Dexmedetomidine on Arterial Blood Pressure and Heart Rate during the Second Night

	Before dexmedetomidine (9:00 PM)	At maximum dose of dexmedetomidine	<i>p</i> value
SAP	135 (116-142)	130 (114-140)	0.972
DAP	60 (57-60)	60 (53-70)	0.386
MAP	83 (75-87)	84 (77-91)	0.624
HR	83 (75-89)	70 (63-81)*	0.005

Values are median (25th-75th interquartile range). * Significantly different from the corresponding value before dexmedetomidine.

DAP = diastolic arterial pressure; HR = heart rate (beats/min); MAP = mean arterial pressure;

SAP= systolic arterial pressure (mm Hg).

Table 4. Sleep Architecture during the Three Study Nights

	1 st Night (n = 10)	2 nd Night (n = 13)	3 rd Night (n = 9)
SFI	7.1 (6.1-13.4)	2.2 (1.6-4.5)	7.2 (3.6-12.0)
N1	56.2 (24.7-79.3)	16.1 (6.2-21.3)	45.2 (29.5-58.7)
N2	39.2 (20.7-66.4)	78.7 (69.2-92.5)	47.5 (41.3-70.5)
N3	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)
REM	0.0 (0.0-0.4)	0.0 (0.0-0.4)	0.0 (0.0-0.0)

Values are median (25th-75th interquartile range). N1 (stage 1), N2 (stage 2), N3 (slow wave sleep) and REM (rapid eye movement sleep) were expressed as % of total sleep time.

Statistical analysis was not performed on these data (since different number of patients achieved sleep during the three study nights).

n = number of patients who achieved sleep during the night; SFI = sleep fragmentation index (events/hour of sleep).

Table 5. Sleep Architecture during the two 24-h Periods in Patients Whom Polysomnography was Performed for 57 Hours

	1 st Night (n = 9)	1 st Day (n = 10)	2 nd Night (n = 10)	2 nd Day (n = 9)
SE	15.8 (6.4-51.6)	14.3 (6.5-25.5)	77.9 (64.6-80.2)	17.3 (5.8-28.0)*
SFI	8.7 (6-15.9)	7.7 (5.0-11.1)	2.1 (1.5-4.4)	9.7 (4.4-18.2)
N1	50.9 (23.7-83.8)	47.7 (21.9-54.3)	17.2 (7.2-21.3)	18.5 (7.0-46.0)
N2	39.5 (16.2-72.3)	39.6 (15.0-51.8)	77.5 (70.5-87.1)	58.4 (21.7-78.0)
N3	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.0 (0.0-0.0)	0.0 (0.0-2.6)
REM	0.0 (0.0-0.5)	3.9 (0.0-19.5)	0.0 (0.0-1.8)	13.4 (0.0-26.5)

Values are median (25th-75th interquartile range). N1 (stage 1), N2 (stage 2), N3 (slow wave sleep) and REM (rapid eye movement sleep) were expressed as % of total sleep time.

Statistical analysis was performed only on SE (n = 10. In patients who did not achieve sleep SE was zero). Statistical analysis was not performed on the other data of the table since different number of patients achieved sleep during the various study periods.

* Significantly different than the corresponding value during the 2nd night ($p = 0.007$).

n = number of patients who achieved sleep during the night; SE = sleep efficiency (% of total recording time, SE data pertains to 10 patients); SFI = sleep fragmentation index (events/hour of sleep).