

Tracheotomy In Which Dexmedetomidine Alone Was Safely Used In A High-Risk Elderly Patient

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Abstract

TO THE EDITOR

We experienced a case in which dexmedetomidine (DEX) was useful in sedation for tracheotomy in a high-risk elderly patient. Use of DEX for sedation during an invasive procedure was approved and monitored by the Research Ethics Committee of Asahikawa Medical College, and informed consent was obtained from the patient's family. The patient was a 90-year-old male with a weight of 44 kg and height of 151 cm. He had undergone emergency craniotomy for sudden-onset intracranial hematoma one week before. He had been intubated due to continuing consciousness disorder and was scheduled for tracheotomy. He had left hemiplegia and only showed response to painful stimuli and he never opened his eyes or made sounds. Neurosurgeons asked us to perform perioperative management to avoid movement of the patient's body and also requested spontaneous breathing to be preserved for the following reason: Since a large vein located in his neck where the tracheal cannula would enter the trachea may prevent replacement of the tracheal tube with the tracheal cannula, preserving spontaneous breathing was thought to be preferable in order to gain time until desaturation. We selected DEX for sedation for the tracheotomy since DEX has little effect on the respiratory system.

DEX was administered at the dose of 0.7 $\mu\text{g/kg/h}$ for 43 min after the initial dose of 1.0 $\mu\text{g/kg}$ over a 10-min period. Systolic blood pressure and heart rate fluctuated within 110 to 165 mmHg and 88 to 122 bpm, respectively, and administration of cardiovascular drugs was therefore not needed throughout the surgery. Respiratory conditions were stable under spontaneous breathing. Percutaneous saturation oxygen was maintained above 98%, respiratory rate fluctuated within 15-25 times per min, and blood gas analyses showed no remarkable problem (Table 1).

Figure 1

Table 1. Blood gas analysis data

	Before administration of DEX	5 min after ending initial dose of DEX	40 min after starting administration of DEX
Condition	Intubated, $\text{F}_{\text{I}\text{O}_2}$		
	1.0	1.0	0.4
Dose of DEX ($\mu\text{g/kg/h}$)	0	0.7	0.7
pH	7.508	7.520	7.512
P_{CO_2} (mmHg)	37.6	36.1	33.3
P_{O_2} (mmHg)	390	435.9	96.8
HCO_3^- (mmol/L)	29.2	28.4	27.4
Base excess (mmol/L)	6.2	4.5	3.3

$\text{F}_{\text{I}\text{O}_2}$: inspiratory oxygen fraction; P_{CO_2} : carbon dioxide partial pressure; P_{O_2} : oxygen partial pressure; HCO_3^- : bicarbonate ion.

Surgery was smoothly performed with 1% of lidocaine, movement of the patient was not seen, and the tracheal tube was replaced with a tracheal cannula with no trouble under spontaneous breathing.

The usefulness of DEX for an invasive procedure and a rare effect of DEX on the respiratory system have been reported¹⁻³. We found that DEX has almost no effect on the respiratory system even in an elderly patient with consciousness disorder. Although we didn't need to administer cardiovascular drugs, strict attention should always be paid during/after the administration of DEX because of its effect on hemodynamics. One of the reasons why cardiovascular drugs were not needed is thought to be endogenous catecholamine, which is released by noxious stimuli during an invasive procedure because it is not completely blocked by a normal dose of DEX such as that

used in the present case³. We would have needed to select other management methods with cardiovascular drugs such as administration of narcotics, selection of other anesthetic drugs, or a high dose of DEX if the case had needed complete block against noxious stimuli.

The fact that DEX was safely administered in the present case may indicate the usefulness of DEX for management of elderly patients with compromised airways, though further

comparative studies are needed.

References

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