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Atrial Natriuretic Peptide Plasma Levels and Pharmacodynamics during Catheter Technique for Close-Chest Ablation of the His Bundle: Comparison between Propofol and Midazolame

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OBJECTIVES

The purpose of this study was to assess the changes of ANP serum levels and the pharmacodynamics variability during sedation with propofol or midazolame following cardioversion by an intracardiac catheter positioned in the region of the His bundle, in patients with atrial fibrillation.

METHODS

This report describes eighteen patients (mean 56±7 years), category II according to the American Society of Anaesthesiologists (ASA), with chronic atrial fibrillation resistant to pharmacologic treatment (informed consent was obtained from all patients). In order to exclude the presence of left atrial thrombi, a complete echocardiographic study including transesophageal echocardiography (TEE), was performed. All patients were classified into groups A and B. Group A (9 patients) received iv propofol (1.8±0.2 mg/kg). Group B (9 patients) received iv midazolame (0.1±0.8 mg/kg). All patients were ventilated using a venturi mask O_2 8 lt/min since induction time of anaesthesia and 20 min after the procedure, blood pressure, heart rate, respiratory rate and artery oxygen saturation (SpO_2) from pulse oxymeter. Blood samples were taken from the right atrium, before the administration of anaesthesia (T_0), after discharge of the electrical stimulus (T_1) and 24 hrs after (T_2) in order to calculate ANP serum levels. At the end of the procedure we completed a checking diagram which included the duration of anaesthesia, the quality of anaesthesia and side effects.

RESULTS

The results are shown in the tables 1, 2, 3 and 4.

CONCLUSION

It is concluded that anaesthesia with propofol or midazolame has insignificant effects on the cardiovascular parameters and non significant changes of the plasma in atrial natriuretic peptide levels. Finally, propofol is a suitable agent in the anaesthetic management of closed-chest ablation of the His bundle in patients with atrial fibrillation because it has rapid induction of anaesthesia and rapid awakening and good quality of recovery.

Table 1.
Hemodynamic parameters
I: before induction of anaesthesia, II: 5 min after induction of anaesthesia,
III: 10 min after induction of anaesthesia, IV:20 min after induction of anaesthesia

	Group A (propofol)				Group B (midazolame)			
	I	II	III	IV	I	II	III	IV
Systolic arterial pressure (mmHg)	136.2 ± 19.2	116.5 ± 16.2	127.8 ± 15.9	127.8 ± 15.9	131.6 ± 15.3	125.8 ± 16.2	119.2± ± 10.3	119.8 ± 9.8
Diastolic arterial pressure (mmHg)	81.5 ± 10.2	81.2 ± 10.0	82.8 ± 9.8	82.8 ± 9.8	80.1 ± 11.2	79.8 ± 10.9	76.8± ± 10.0	77.0 ± 9.8
Heart rate (beats/min)	122.5 ± 8.2	87.0 ± 3.5	79.0 ± 2.1	79.4 ± 3.0	111.0 ± 5.3	80.5 ± 5.0	77.3 ± 3.2	75.4 ± 4.5

Table 2
Respiratory rate and oxygen saturation of hemoglobin

	Group A (propofol)				Group B (midazolame)			
	I	II	III	IV	I	II	III	IV
f/min	14±1	12±1	12±1	13±1	15±1	10±1	10±1	10±1
SpO_2	97.8±1	95.6±1.2	96.2±1.7	98.1±0.8	97.0±1.5	96.0±1.3	93.8±2.0	94.0±2.2

Table 3.
Plasma levels of atrial natriuretic peptide.

Time	Group A (propofol) (pg/ml)	Group B (midazolame) (pg/ml)
T_0: Before induction of anaesthesia	244±92.3	300.3±100.3
T_1: After electrical shock	228±80.7	278.6±98.7
T_2: 24 h after electrical schock	229±79.8	276.2±97.3

Table 4
Element during anaesthesia and alertness of the patients

	No of patients		Time of last administration of	
	Group A	Group B	Propofol (A)	Midazolame (B)
Apnea	0	0		
Repeat dose	2	0		
Nausea-Vomiting	0	4		
Uncomfortable experience	0	5		
Eye motion (opening)			7±2 min	30±10 min
Place-time reference			10±2 min	60±10 min