

Chirurgie cardiaque (anesthésie, hémostase, transfusion)

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Impact of Milrinone administration time on clinical and echographic parameters after cardiopulmonary bypass

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Position du problème et objectif(s) de l'étude:

Milrinone is commonly used to treat low cardiac output syndrome after cardiopulmonary bypass especially in high-risk patients [1,2]. We aim to study the impact of the timing of its introduction on right and left sided heart failure after cardiopulmonary bypass (CPB) in adults.

Matériel et méthodes:

We conducted a monocentric ,retrospective, comparative study over 14 months, from January 2022 to February 2023 in a department of anaesthesia and cardiac surgery. We included Thirty patients aged 18 years old and over (ASAII –III), undergoing CPB surgery who presented with a right-sided cardiac dysfunction, regardless of etiology, who did not receive mechanical circulatory support. We compared two groups of patients who had received intravenous milrinone; Group A: before weaning from CPB, Group B: after CPB weaning. The primary outcomes were clinical and echographic parameters' variation compared to the base state between the two groups. Secondary outcomes included catecholamines withdrawal time, length of intensive care stay, hospitalization and Survival. Data analysis was performed using SPSS statistics (version 26) and P below 0.05 was considered significant.

Résultats & Discussion:

Demographic and surgical parameters were comparable. The mean Euroscore was comparable ($p=0,14$). Left ventricular ejection fraction (LVEF) was altered in 50% patient (6 vs9, $p=0.27$). perioperative parameters are represented in table 1. In group A, 3 patients had to receive nitrogen azote (NO) at the weaning from CPB ($p=0.22$). There was no difference in the lactate and the venous central oxygen saturation during CPB (respectively $p=0,62$; $p=0.06$). The course of clinical and echographic parameters at H0, H24 and after Milrinone weaning are shown in table 1.

A significant difference was noted in the Dobutamine withdrawal time which was shorter in group A ($p=0.014$). No difference was found in Noradrenaline withdrawal, nor intensive care stay and hospitalization nor survival.

Conclusion:

Early Milrinone administration before CBP weaning provides an improvement of left heart function after 24 hours , and a faster Dobutamine withdrawal in the postoperative period. But no difference was observed in right heart functions. Our study confirms that prophylactic infusion of phosphodiesterase III inhibitors before weaning from CPB was associated with significant improvements in haemodynamics and reduced demand for other inotropes added to an improved weaning success.

	Pre and per operative period			H0			H24			H48		
	Group A	Group B	p	Group A	Group B	P	Group A	Group B	P	Group A	Group B	P
Mean Lactates mmol/L	2.2±1.82	1.87±0.73	0.62	4,59±2,76	3,99±1,63	0,47	3,15±1,44	3,70±1,72	0,36	2,10±2,17	2,24±2	0,92
Mean ScVO2 (%)	84.22±7.77	90.12±2.35	0.06	67,20±8,77	62,14±15,37	0,56	68	58	0,16	70±2,82	63±20,40	0,68
Mean LVFF (%)	50.68±13.41	51.33±8.28	0.91	49,13±15,93	41,80±5,55	0,10	47,71±7,42	40,06±7,68	0,01	50,40±6,55	46,07±6,84	0,11
Elevated LVFF*(n)	–	–	–	5	1	0,16	4	6	0,43	3	3	1
Dilated right ventricular (n)	11	1	0.01	11	6	0,06	9	6	0,27	6	4	0,43
Presence of PAM** (n)	7	12	0.06	13	9	0,2	8	11	0,25	7	4	0,25
CPB duration (min)	118.53±29.4	95..26±24.17	0.02	–	–	–	–	–	–	–	–	–
Circulatory assistance duration(min)	29.4±11.98	20.8±7.49	0.02	–	–	–	–	–	–	–	–	–
Aortic clamping (min)	85.53±19.72	72.46±21.80	0.09	–	–	–	–	–	–	–	–	–
Noradrenaline dose in CBP weaning(γ/h)	41.19±112.68	267.04±377.06	0.05	–	–	–	–	–	–	–	–	–
Dobutamine dose in CBP weaning(γ/kg/min)	5.26±3.97	6.46±4.48	0.44	–	–	–	–	–	–	–	–	–

Table 1: Perioperative and post ECC clinical and echographic parameters at H0, H24, and after Milrinone weaning

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