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IMMEDIATE HEMODYNAMIC EFFECT OF MILRINONE IN PATIENTS WITH PULMONARY HYPERTENSION DUE TO VALVULAR HEART DISEASE

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Background: Milrinone is a bipyridine phosphodiesterase b1 inhibitor that exerts both positive inotropic and direct vasodilatory effect. The efficacy and safety of intravenous milrinone in heart failure has been evaluated in a number of clinical studies. It has been reported that milrinone improved the performance of right ventricle (RV) by decreasing RV afterload and inotropic effect. However, many studies for the effect of milrinone on RV function were performed in patients with left ventricular (LV) failure primarily. Therefore, we investigated whether a bolus dose of intravenous milrinone improves the hemodynamics immediately in patients with pulmonary hypertension due to valvular heart disease without concomitant LV failure.

Methods: With IRB approval, 33 patients with pulmonary hypertension (mean pulmonary artery pressure, mPAP \geq 30 mmHg after anesthesia) undergoing valve replacement were included. Patients were randomly divided into two groups, normal saline group (N) and milrinone group (M). After the induction of anesthesia, 20 ml normal saline in group N or 20 ml diluted milrinone (50 μ g/kg) in group M was infused over 10 minutes. Hemodynamic data were measured before the infusion of drug, 5, 10, and 20 minutes after drug infusion. Every study was conducted before skin incision to

avoid the effect of surgical stimulation. Student's t-test and repeated measures of analysis of variance were used for statistical analysis, as appropriate. A P value less than 0.05 was considered as statistically significant.

Results: There was no significant difference in systemic mean arterial pressure and central venous pressure between both groups before and after the infusion of milrinone. In group M, systemic vascular resistance decreased at 5 minutes after infusion and cardiac index increased at 10 minutes after infusion. However, milrinone didn't decrease PAP and pulmonary vascular resistance (PVR) significantly. There was no significant difference in PAP and PVR between both groups.

Conclusions: A bolus dose of intravenous milrinone temporarily increased cardiac index and decreased systemic vascular resistance but not consistently, and had no significant effects on PAP and PVR in patients with pulmonary hypertension due to valvular heart disease without concomitant LV dysfunction. The immediate effect of milrinone on RV function seemed to be associated with the degree of LV dysfunction and relied on the improvement of LV function and cardiac index.

References

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