

SCA 120

INHALED PROSTACYCLIN (PGI₂) IS SAFE AND MORE AFFORDABLE THAN INHALED NITRIC OXIDE AS A SELECTIVE PULMONARY VASODILATOR IN CARDIOTHORACIC SURGICAL PATIENTSDe Wet C¹, Jacobsohn E¹, Zanaboni P¹, Tymkew H², Smith J², Hill L¹, Avidan M¹*Departments of Anesthesiology and Surgery, Washington University¹ and Barnes Jewish Hospital², St. Louis, MO*

Introduction: Inhaled prostacyclin has been reported to be a safe and effective pulmonary vasodilator and has been used in the treatment of pulmonary hypertension, hypoxemia, acute right ventricular failure and reperfusion injury after lung transplantation. While there has generally been more experience with the use of inhaled nitric oxide (NO), it has become prohibitively expensive and has several associated toxicities, some of which require ongoing monitoring. We report our experience with the use of inhaled prostacyclin.

Methods: We obtained a FDA investigational new drug (IND) license and University Human Studies Committee approval. After written informed patient consent, cardiothoracic surgical patients requiring a selective pulmonary vasodilator either intra- or postoperatively, were prospectively enrolled to receive inhaled prostacyclin. Patients were enrolled from February 2001 to October 2002. The drug was administered via continuous nebulization at 8cc/hr with a starting concentration of 20000 ng/ml. Prostacyclin was weaned according to a protocol by reducing the concentration. (20000ng/ml →10000ng/ml →5000ng/ml →2500ng/ml →off). Baseline hemodynamic data and oxygenation indices were obtained before and after commencing inhaled prostacyclin. All patients were prospectively followed and all complications recorded.

Results: A total of 82 patients with a mean age of 56±13.4 yrs, were enrolled. Patients were enrolled for 3 main reasons: 52 for pulmonary hypertension, 17 for right ventricular dysfunction, and 13 for refractory hypoxemia or post lung transplant reperfusion injury. The average length of time on inhaled prostacyclin administration was 46±60 hours. The average daily cost of therapy for inhaled prostacyclin was \$150 per day, compared to an estimated cost of \$3000 per day for nitric oxide. Therefore, the total estimated cost savings for this 18 month period is \$467,000.

The hemodynamic results over the first hour of administration are shown in the table below.

	Pre-PGI ₂	Post-PGI ₂	P value
Pulmonary hypertension (n=52)			
Mean PAP	36.2 7.4	30.6 6.1	<0.0001
PVR	356 208.5	239 98	0.11
MAP	75 11	72 22	0.66
SVR	1096 386	1114 400	0.93
RV failure (n=17)			
CVP	18 6	19 4	0.41
CI	2.4 0.5	2.5 0.4	0.73
PVR	165 21	179 56	0.74
Hypoxemia/reperfusion injury (n=13)			
PaO ₂ /FiO ₂ ratio	104 69	114 80	0.09

There were no side effects attributable to inhaled prostacyclin.

Conclusion: Inhaled prostacyclin appears to be a safe and effective selective pulmonary artery vasodilator in cardiothoracic surgical patients with pulmonary hypertension. No special equipment is required to administer the drug and no special toxicity monitoring is needed. The cost-savings compared to inhaled nitric oxide are substantial.