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Fast Pass: How to start higher doses of oral Treprostinilby using IV Epoprostenol

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Fast Pass: How to start higher doses of oral Treprostinil by using IV Epoprostenol

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Background

- IV Epoprostenol is a high-risk medication with no current guidelines for rapid initiation, titration, and transition from IV to oral therapy. In the pulmonary arterial hypertension patient population, successful treatment depends on individualized patient therapy.
- This patient presented with: worsening shortness of breath, fatigue and severe pulmonary hypertension naïve to prostacyclin therapy, World Health Organization (WHO) group 1 functional class IV, who was a poor candidate for IV therapy.
- The preplanned IV to p.o. protocol was initiated in the ICU setting; the hemodynamics were monitored via Swan-Ganz catheter. IV epoprostenol was infused via a central line to a maximum tolerated dose which allowed for a higher oral dose to be tolerated; this would not have been possible with the traditional dosing schedule.

Purpose

To target higher oral treprostinil doses rapidly by using IV epoprostenol preloading.

Methodology

- IV epoprostenol was initiated at 2 ng/kg/min with the goal to increase to 4 ng/kg/min during the night. PRN medications to treat side effects were ordered prior to drug administration.

Medication	Oral treprostinil	Total	IV epoprostenol
Day 1	Dose: 0.25 mg/p.o./H.S.	0.375 mg	4 ng/kg/min
Day 2	Dose: 0.5 mg/p.o./08:00 0.25 mg/p.o./14:00 0.25 mg/p.o./H.S.	1 mg	4 ng/kg/min
Day 3	Dose: 1.25 mg/p.o./08:00 1.0 mg/p.o./14:00 1.5 mg/p.o./H.S.	3.75 mg	3 ng/kg/min
Day 4	Dose: 2.0 mg/p.o./08:00 2.0 mg/p.o./14:00 2.5 mg/p.o./H.S.	6.5 mg	2 ng/kg/min
Day 5	Dose: 3.0 mg/p.o./08:00 3.0 mg/p.o./14:00 3.0 mg/p.o./H.S.	9 mg	0 ng/kg/min D/C
Day 6	Dose: 3.0 mg/p.o./08:00 3.0 mg/p.o./14:00 3.0 mg/p.o./H.S. Patient discharged home with specialty pharmacy to continue further oral titreation.	9 mg	0 ng/kg/min

Findings

Baseline hemodynamics showed markedly elevated pulmonary pressures, elevated pulmonary vascular resistance, right ventricular pressure 120/25, pulmonary pressure 120/40, with a mean of 65, pulmonary wedge pressure 18, cardiac output 3.35, pulmonary vascular resistance 1066 dynes/sec/cm5, and systemic artery pressure 100/52 mmhg. Hemodynamically the patient improved over the first night as evidenced by markedly decreased PA pressures and increased cardiac output. Swan-Ganz was removed on day 2, CVP pressure remained elevated at 21 mmhg. Vitals at discharge were 120/70, heart rate 80 bpm, O_2 98% on 3 liters. The patient was able to tolerate a rapid initiation, titration, and transition from IV epoprostenol to a higher dose oral treprostinil therapy within a shorter time span than the traditional titration schedule for oral prostacyclin therapy. Three months following the IV to oral transition, a right heart catheterization was completed which showed a 50% reduction in the pulmonary vascular resistance, to 535 dynes/sec/cm5. The patient experienced mild nausea, vomiting, and flushing during the admission, but remained hemodynamically stable.

Implications

For the patients whose condition would best be managed by oral treprostinil rather than IV epoprostenol therapy, pre-loading the patient using IV epoprostenol and then rapidly titrating with oral treprostinil can be done safely and effectively in the hospital setting to achieve higher dosing with better side effect management.

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