

Potential use of PEG-HbCO in severe anemia

Background:

Patients who cannot receive blood transfusions in the presence of severe anemia can sustain significant morbidity and mortality. Religious beliefs and hemolytic reactions are the most common reasons for not transfusing a patient. Pegylated bovine carboxyhemoglobin (PEG-HbCO) has been used in 5 such patients including a patient who developed a severe hemolytic reaction following stem cell transplantation.

Methods:

Five patients with hemoglobin (Hb) levels under 3.5 g/dL were treated with repeated doses of PEG-HbCO. Diagnoses included AML, hemolytic reaction, acute chest syndrome and sickle cell crisis. Patients ranged in age from 19 to 61. A unit of PEG-HbCO consists of 500 mL (40 mg/mL). Total doses ranged from 1 unit/day for 2 to 4 days up to 8 units given over 9 days. No adverse events associated with PEG-HbCO were reported.

Results

Each investigator reported clinical improvements in their patient following administration of PEG-HbCO, despite continuing low Hb levels. Patient reported well-being was also consistently improved. The number and size of allowed blood draws were restricted; therefore analysis of clinical chemistries was limited. One patient had a significant increase in cerebral oximetry and another showed improvements in cerebral blood flow measured by TCD. Patients with reported extreme fatigue or neurological deficit each demonstrated increases in responsiveness or self-reported comfort within close temporal association with PEG-HbCO treatment. A patient who had undergone a stem cell transplant developed immune hemolytic anemia, with resulting extreme fatigue and tachycardia. He received 4 once-daily units of PEG-HbCO, during which time his heart rate normalized and was reported to be alert and oriented.

Conclusion:

The improved clinical status in these patients suggests that PEG-HbCO has potential utility in patients with severe anemia who are unable to receive blood transfusions.

Topic area: Leukemia, Myelodysplasia, and Transplantation

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