RBT-1, a Pharmacologic Preconditioning Agent, Reduces the Incidence of Anemia, Blood Transfusion, and Use of Supplemental Iron in Patients Undergoing Cardiac Surgery

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Introduction

- Patients undergoing cardiac surgery are at risk of anemia from blood loss, inflammation, and red blood cell lysis, necessitating blood product utilization and increasing the risk of post-operative complications
- RBT-1 (a combination of stannic protoporfin [SnPP] and iron sucrose [FeS]) is a novel preconditioning drug administered prior to surgery that upregulates anti-inflammatory, antioxidant, and iron-scavenging pathways
- Activation of these pathways, along with the iron content of RBT-1, may improve iron levels, iron utilization, and reduce erythropoietin resistance
- A recent Phase 2 trial showed that the drug increased cytoprotective protein levels and improved clinical outcomes
- Analyses of anemia incidence, transfusion, and iron usage from the study are presented

Methods

- A randomized, double-blind, placebo-controlled trial
- Population: 121 patients scheduled to undergo non-emergent coronary artery bypass graft (CABG) and/or cardiac valve surgery on cardiopulmonary bypass (CPB)
- Treatment: Patients received one intravenous (IV) dose of RBT-1 or placebo (normal saline) 24 to 48 hours before surgery
- Incidence of post-operative anemia, need for blood transfusion, and iron supplementation were recorded as reported by the investigators
- Hemoglobin (Hgb) levels were obtained at Baseline and followed through hospital discharge post-cardiac surgery

Discussion & Conclusions

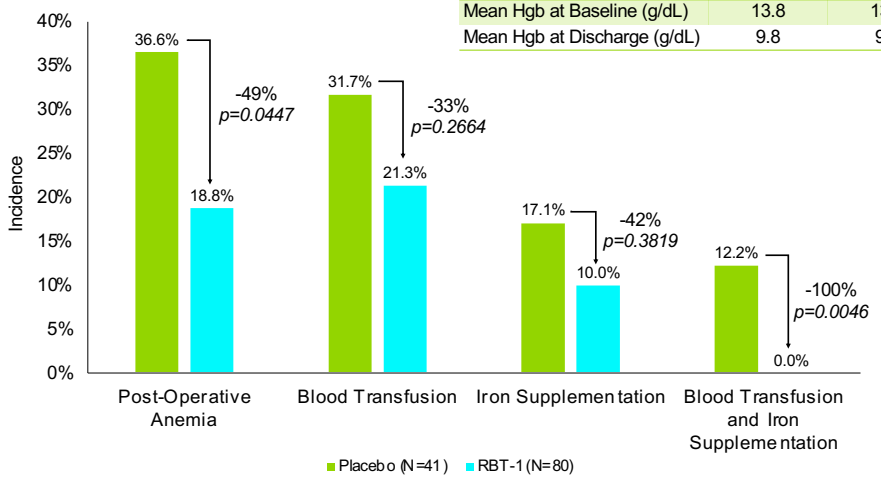
- Patients in placebo and RBT-1 groups had similar baseline characteristics
- A significant risk reduction in post-operative anemia was observed in response to RBT-1
- When comparing all patients who required both blood transfusion and iron supplementation, a significant reduction was observed with RBT-1
- Hemoglobin levels at discharge in patients who received RBT-1 were comparable to those who received placebo, despite lesser rates of blood transfusion and iron supplementation
- Treatment with the novel preconditioning drug RBT-1 prior to cardiac surgery may reduce the risk of post-operative anemia and need for blood transfusion and iron supplementation

Results

Baseline Characteristics	Placebo (N=41)	RBT-1 (N=80)
Mean age (yrs)	65.4	65.6
Male sex (%)	73.2	75.0
White race (%)	92.7	86.3
BMI (kg/m^2)	29.7	31.5
Mean duration of surgery (hrs)	4.94	4.99
Mean time on CPB (hrs)	1.95	1.97

Comorbid Conditions	Placebo (N=41)	RBT-1 (N=80)
Age ≥65 years (%)	56.1	60.0
Congestive heart failure (%)	14.6	15.0
LVEF ≤35% (%)	4.9	11.3
Diabetes mellitus requiring insulin (%)	7.3	17.5
eGFR ≥20 to <60 mL/min/1.73m^2 (%)	14.6	32.5
Pre-operative Hgb <10 g/dL (%)	2.4	1.3

	Placebo (N=41)	RBT-1 (N=80)
Mean Hgb at Baseline (g/dL)	13.8	13.8
Mean Hgb at Discharge (g/dL)	9.8	9.8



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