Abstract

Background

Decrease in histidine-rich glycoprotein (HRG) was reported as a cause of dysregulation of the coagulation-fibrinolysis and immune systems, leading to multi-organ failure, and it may be a biomarker for sepsis, ventilator-associated pneumonia, preeclampsia, and coronavirus disease 2019. However, the usefulness of HRG in perioperative management remains unclear. This study aimed to assess the usefulness of HRG as a biomarker for predicting postoperative complications.

Methods

This was a single-center, prospective, observational study of 150 adult patients who were admitted to the intensive care unit after surgery. Postoperative complications were defined as those having a grade II or higher in the Clavien–Dindo classification, occurring within 7 days after surgery. The primary outcome was HRG levels in the patients with and without postoperative complications. The secondary outcome was the ability of HRG, white blood cell, C-reactive protein, procalcitonin, and presepsin to predict postoperative complications. Data are presented as number and median (interquartile range).

Results

The incidence of postoperative complications was 40%. The HRG levels on postoperative day 1 were significantly lower in patients who developed postoperative complications (n=60; 21.50 [18.12–25.74] μg/mL) than in those who did not develop postoperative complications (n=90; 25.46 [21.05–31.63] μg/mL). The Harrell C-index scores for postoperative complications were HRG, 0.65; white blood cell, 0.50; C-reactive protein, 0.59; procalcitonin, 0.73; and presepsin, 0.73. HRG was independent predictor of postoperative complications when adjusted for age, the presence of preoperative cardiovascular comorbidities, American Society of Anesthesiologists Physical Status Classification, operative time, and the volume of intraoperative bleeding (adjusted hazard ratio=0.94; 95% confidence interval, 0.90–0.99).

Conclusions

The HRG levels on postoperative day 1 could predict postoperative complications. Hence, HRG may be a useful biomarker for predicting postoperative complications.