# Relationship between postoperative hypoxemia and renin-angiotensin system in patients with stanford type A acute aortic dissection

## Study design

This prospective observational study was approved by the Clinical Research Ethics Committee of Beijing Anzhen Hospital, Capital Medical University, Beijing, China (Identifier: 2021107X), registered at ClinicalTrials.gov (Identifier: NCT05055570), and performed from August 2021 to January 2022 at Beijing Anzhen Hospital, Capital Medical University, Beijing, China.

## Methods

The patient inclusion criteria included age 18-80 years old, diagnosis of Stanford type A aortic dissection, and scheduled for emergency surgery. The exclusion criteria included preoperative hypoxemia, perioperative acute cardiac insufficiency (left ventricular ejection fraction, LVEF < 40%) and rejection of consent. The overall study patients were divided into the hypoxemia group and non-hypoxemia group according to the presence or lack of hypoxemia after surgery. Postoperative hypoxemia is defined by the oxygenation index (OI), which is the ratio of arterial partial pressure of oxygen to fraction inspired oxygen ($PaO_2$ / $FiO_2$), of less than or equal to 200 for two consecutive times within the first 24 h after operation.

Indicators and methods

Basic characteristics, intraoperative details, biochemical parameters and outcome results were obtained, and blood was collected after surgery for the measurement of ANG II and sACE2 concentrations. All samples were tested twice by ELISA, and the average value was used for analysis.

Statistical analysis

Statistical analysis was performed using IBM SPSS software version 26.0. Univariate analysis was first performed to identify the potential risk factors for postoperative hypoxemia. Normally distributed continuous variables with homogeneous variance were compared using Student's t test and otherwise using the Mann–Whitney U test. Categorical variables were compared using the chi-square test

or Fisher's exact test. Correlation analysis was performed using the Spearman rank correlation test. Multivariate logistic regression analysis was performed for factors with $P < 0.1$ or that were considered clinically important. The odds ratio (OR) was calculated with a 95% confidence interval (CI). A $P$ value of less than 0.05 was considered statistically significant.