Oxygen Reserve Index Predicts Hypoxemia During One-Lung Ventilation: An Observational Diagnostic Study.

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OBJECTIVE: To determine the accuracy of the Oxygen Reserve Index (ORi) to predict hypoxemia during one-lung ventilation (OLV).
DESIGN: An observational diagnostic test study.
SETTING: A tertiary care teaching hospital.
PARTICIPANTS: Forty consecutive patients scheduled for thoracic surgery with OLV.
MEASUREMENTS AND MAIN RESULTS: Patients were ventilated with tidal volumes of 8 mL/kg ideal body weight during two-sided ventilation and 6 mL/kg during OLV, and with fraction of inspired oxygen (FIO2) of 60%. ORi was measured continuously. Sensitivity, specificity, positive and negative predictive values, likelihood ratios, and accuracy were calculated for ORi = 0 in different phases of anesthesia. Hypoxemia during OLV was defined as SpO2 < 90%. Hypoxemia owing to malpositioning of the double lumen tube was an exclusion criterion. ORi = 0 five minutes after tracheal intubation in the supine position showed a sensitivity of 63.6% (confidence interval [CI] 95% 31.6-87.6), specificity of 93.1% (95% CI 75.8-98.8), and an accuracy of 85.0% (95% CI 69.5-93.8). The rate of hypoxemia was 27.5% (95% CI 15.14-44.14).

CONCLUSIONS: An ORi value equal to zero, 5 minutes after the onset of mechanical ventilation in the supine position, predicts the development of hypoxemia during OLV. These findings may be helpful to adjust FIO2 individually in patients undergoing OLV and to avoid unnecessary high concentrations of oxygen.