

Abstract

We performed a retrospective cohort study of 911 high-energy trauma patients who underwent chest CT scans at least twice after admission. We hypothesized that in high-energy trauma patients, a high-inspired oxygen concentration delivered after admission results in dorsal atelectasis. The study's primary outcome was dorsal atelectasis formation diagnosed based on CT images. We defined dorsal atelectasis as the presence of atelectasis at ≥ 10 mm thick on CT images. We defined high-inspired oxygen concentration as $>60\%$ oxygen delivered between two CT scans. Four hundred sixty-five patients (51.0%) developed atelectasis according to the second CT scan, and 338 (37.1%) received a high-inspired oxygen concentration. A univariate analysis showed that the rate of the high-inspired oxygen concentration in the atelectasis group was significantly higher than that in the non-atelectasis group (43.4% vs. 30.1%, $p < 0.001$). However, a logistic regression analysis showed that there was no significant relationship between the oxygen concentration and the formation of dorsal atelectasis (OR: 1.197, 95% CI: 0.852–1.683, $p = 0.30$). Age, the Injury Severity Score, BMI, and smoking were found to be risk factors of dorsal atelectasis formation in high-energy trauma patients. There was no relationship between the oxygen concentration and atelectasis formation in our series of high-energy trauma patients.

Key words: trauma patient, dorsal atelectasis, oxygen concentration