

between the patient and a bronchoscopist or a caregiver.  
 Results : The first simulation showed that using the surgical mask, the aerosol leaked from top and bottom of the mask and diffused into air. The newly modified closed mask appeared to prevent droplets from the mouth. Significantly reduced amount of droplet was confirmed leaking between the edge of the mask and the face during the bronchoscopy. Three times coughing produced a similar pattern of generated particles, with peak numbers of airborne droplets as high as 2556 is reached to 60 cm and as low as 2552 is counted in 30 cm. When the same procedure was done during the bronchoscopy through the newly mask over the model's mouth, the flash count remained 39 in 60 cm and 68 in 30 cm.

Conclusion : Our results suggested the use of closed mask protected bronchoscopists and health-care workers from the COVID-19 transmission.

### 3-①-2.

#### Effect of photodynamic therapy (PDT) on bleomycin-induced interstitial pneumonia rat models—Does PDT exacerbate interstitial pneumonia?

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【Objective】 The number of early-stage lung cancer has been increasing owing to recent development in diagnostic imaging technology. However, medically inoperable patients with low lung function or high-risk surgical candidates require effective alternatives to surgery. At present, a clinical trial of photodynamic

therapy (PDT) for peripheral small lung cancer is ongoing to develop minimally invasive treatment techniques for such lesions. It is necessary to evaluate the effect of PDT on interstitial pneumonia (IP) when we perform PDT in the peripheral lung field. In this study, we investigated the effect of PDT on bleomycin (BLM)-induced IP rat models.

【Materials and Methods】 BLM was administered intratracheally to 7-week-old rats to prepare IP rat models. Seven days after administration, left thoracotomy was performed under general anesthesia. Talaporfin sodium was intravenously injected, and laser irradiation (150 mW, 100J/cm<sup>2</sup>) was performed on the left lungs. Seven days after irradiation, whole blood was collected, and plasma was cryopreserved. After euthanizing the rats, the left lungs were resected and fixed with formalin to prepare paraffin sections. Twenty-three rats, including BLM-administered + PDT group (4 rats), BLM-administered + non-PDT group (10 rats), normal lung + PDT group (2 rats), normal lung + non-PDT group (5 rats), and 2 rats which died immediately after irradiation, were examined. KL-6, SP-D, LDH, and CRP were measured in each plasma sample. Each paraffin sections were pathologically evaluated by staining with HE/EVG, anti- $\alpha$ -SMA antibody, anti-CD68 antibody. Scorings of fibrosis and infiltration of inflammatory cells and the area of collagen fiber were measured.

【Results】 In both the BLM administration group and the normal lung group, there was no significant difference in the value of each marker with and without PDT. Similarly, there was no difference in the score of fibrosis and macrophage infiltration. The percentage of collagen fiber was slightly higher in the PDT group. We considered it the effect of laser irradiation because it was localized just below the pleura in the laser-irradiated area. The reason for the two death immediately after PDT was considered to be acute lung injury caused by technical problems because they had pulmonary edema and severe inflammatory cell infiltration.

【Conclusions】 No acute exacerbation of IP was observed after PDT in this study. In the future, PDT can be a safe treatment option for peripheral small lung cancer with IP.