The pathogenesis of emphysema is hypothesized to be the imbalance of elastase/α-1-antitrypsin (α-1-AT)\(^1\). In this study, we investigated the distribution of elastin and α-1-AT in emphysematous lungs in the following way.

MATERIALS AND METHODS: Paraffin embedded lung tissues from autopsy cases of panacinar emphysema due to α-1-AT deficiency (n=1), centriacinar emphysema due to anthracosis (n=12) and control lungs (n=3) were used. Tissue sections were reacted with anti-elastin antibody or anti-α-1-AT antibody and they were visualized by immunoperoxidase methods.

RESULTS AND DISCUSSION: Elastin was distributed on elastic fibers and they were disrupted, granular, poorly outlined and showed occasionally evenly stained elastic masses in the emphysematous areas (Fig. 1A-1C). α-1-AT was detected on these abnormal elastic fibers of emphysematous lesions of centriacinar emphysema (Fig. 2A,2B). But α-1-AT was not detected on elastic fibers of controls or non-emphysematous areas of centriacinar emphysema. α-1-AT was not detected on elastic fibers of α-1-AT deficiency (Fig. 2C), and the elastic fibers of this disease were severely degraded\(^2\). These elastic fibers may be damaged by elastase without α-1-AT. In centriacinar emphysema, it is suggested that both α-1-AT and elastase may be present on elastic fibers of emphysematous lesions and these elastic fibers have been degraded by elastase or elastase/α-1-AT complex known to have elastolytic activity\(^3\).

REFERENCES
Fig. 1. Immunohistochemistry (IH) for elastin. A) Control. Elastic fibers in alveolar walls are clearly outlined. (X150) B) Anthracosis. Elastic masses in emphysematous lesion react evenly. (X100) C) α-1-AT deficiency. Elastic fibers of the alveolus are poorly outlined and evenly stained. (X500)

Fig. 2. IH for α-1-AT. A) Anthracosis. α-1-AT is detected in elastic fibers and elastic mass located in emphysematous lesion. (X25) B) High magnification of Fig. 2A. Elastic fibers are intensely stained. (X130) C) α-1-AT deficiency. α-1-AT is not detected in these lung tissues. (X500)