

## Diffuse Cystic Airspaces in Bilateral Lungs Caused by Anlotinib

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### 1. Description

A 31-year-old woman, who was diagnosed of stage IVB pulmonary adenocarcinoma in July, 2018, accepted first-line treatment of afatinib and second-line treatment of platinum-based doublet chemotherapy. On April 26th, 2019, the patient complained with occasional dry cough and was admitted to the hospital to evaluate the therapeutic effect of previous chemotherapy. Chest CT scan (Figure, A) showed a disease progression with diffusely distributed lung nodules beside a main nodule in the left upper lobe. Thus, third-line treatment of anlotinib was administered. Two cycles later, the patient coughed less and the high-resolution CT showed a reduction of the previous nodules size and number. Simultaneously, newly formed diffuse cystic airspaces at the nodules place or around the nodules were present in both lungs. They were in eclipse or irregular shape with thin and smooth cystic wall, and part of them had small blood vessels passing through (Figure, B). The disease was evaluated as partial response (PR) according to the RECIST (Response Evaluation Criteria in Solid Tumors). There upon, the patient was given two more cycles of anlotinib.

The following CT scan (Figure, C) showed enlarged main nodule in left upper lobe and new nodules in right upper lobe. Additionally, disseminated bilateral cystic airspaces massively increased both in quantity and volume, some of which contained incomplete separation but without mural nodule. Considering that the disease progressed based on the RECIST and that the patient's performance status was three, she was given the best supportive care without further anti-cancer treatment. Shortly afterwards, the patient expired in one months.

Pulmonary malignancies related with cystic or cavitory lesions are rare. Cystic or cavitory change after anti-cancer treatment for lung adenocarcinoma is seldomly reported, particularly for young and barely smoking women. Undoubtedly, this is the first time to report of diffuse cystic airspaces caused by anlotinib, which is a new oral multiple tyrosine kinase inhibitor. Unfortunately, because the patient refused further lung tissue biopsy, pathological characteristics of the massive cystic change are still unknown. Thus, further studies on the mechanism of the formation of cystic airspaces by anlotinib are needed.



**Figure:** Chest CT scan. (A) Before anlotinib treatment. (B) After two cycles of anlotinib treatment. (C) After four cycles of anlotinib treatment.

## **2. Contributors**

Yuanqiang Wu and Yuyao Liu cared for the patient, collected the data and wrote the report. Juan Chen collected the picture and did the literature search. Chunhong Hu took care of the patient and reviewed the report.

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## **5. Disclosure of Interest**

The authors report no conflict of interest.