Open Respiratory Archives 6 (2024) 100307

Sociedad Española de Neumología y Cirugía Torácica SEPAR

Open Respiratory Archives

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Clinical Image

Bronchoscopic Lung Volume Reduction: Extremely Rare Complication

Reducción de volumen broncoscopica: una complicación extremadamente extraña

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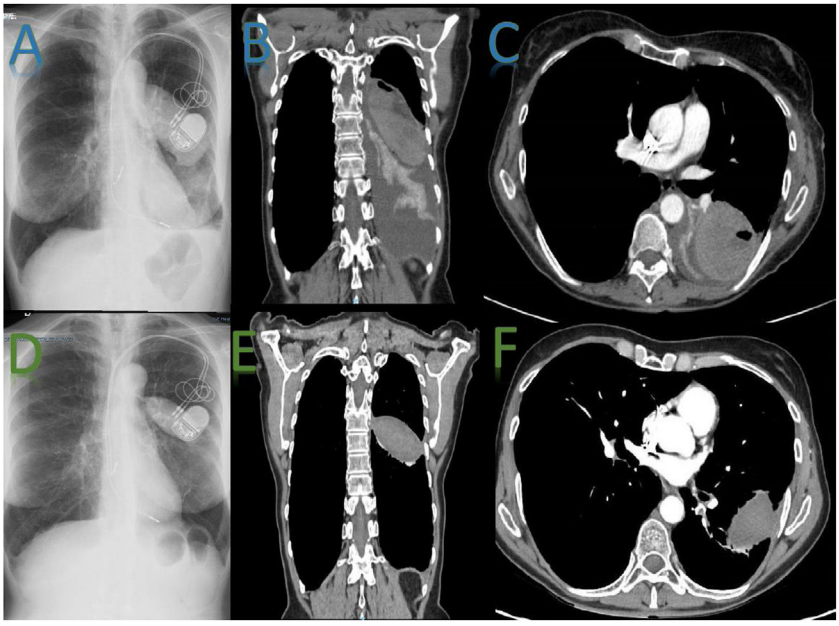

Fig. 1. (A) Chest X-ray: mild impingement of the right costophrenic sinus, suggestive of left pleural effusion, along with homogeneous opacity in the left mid-lung field. (B) Thorax computer tomography (CT): intracisural image suggestive of hematoma due to its homogeneity and attenuation, confirming the presence of left pleural effusion and atelectasis of the left lower lobe. (C) Axial image, thorax CT: intracisural image suggestive of hematoma due to its homogeneity and attenuation, confirming the presence of left pleural effusion and atelectasis of the left lower lobe. (D) Chest X-ray: reduction of hematoma size and resolution of the previously observed pleural effusion in the left area, with normalization of the corresponding costophrenic space. (E) Thorax CT: notable reduction in the size and extent of the previously identified intracisural hematoma. The attenuation of the hematoma has significantly improved, indicating partial resolution. The disappearance of atelectasis in the left lower lobe is confirmed, with complete expansion of pulmonary structures in that region. There is no evidence of pleural effusion on the CT scan, suggesting complete resolution of this finding. (F) Axial image, thorax CT: reduction of hematoma size, disappearance of effusion and absence of atelectasis. Notable improvement compared to previous studies.

This case involves a 59-year-old woman with chronic obstructive pulmonary disease (COPD) and alpha-1 antitrypsin deficiency undergoing bronchoscopic lung volume reduction (BLVR). Despite initial success with the implantation of three valves, the patient experienced complications, including left pleural effusion and cysural hematoma (Fig. 1A–C). Thoracic computed tomography (CT) confirmed these issues, prompting thoracentesis (100 ml) and ruling out hemothorax. Although the patient remained stable, a red blood cell transfusion was administered. The patient was discharged after three days with improved hemoglobin levels and reduced hematoma, as confirmed by chest X-ray and CT (Fig. 1D–F). Three-month follow-up revealed improved lung function, including FEV_1 (pre-BLVR 760 ml, 30%; post-BLVR 850 ml, 34%), DLCO (pre-BLVR 25%, post-BLVR 35%), the 6-min walking test (6MWT) (pre-BLVR 287 m, post-BLVR 352 m) and an improvement in dyspnea (pre-BLVR 4 mMRC, post-BLVR 1 mMRC). These results highlight the importance of dynamic hyperinflation in symptom

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https://doi.org/10.1016/j.opresp.2024.100307

development, as although FEV_1 has improved slightly, significant improvements have been observed in the 6MWT and dyspnea. This case underscores the uncommon complication of cysural hematoma in BLVR procedures for COPD patients. However, successful management and improved lung function post-treatment align with studies supporting the efficacy and safety of similar interventions in COPD patients.[1,2]

Informed consent

I confirm that I have obtained all consents required by applicable law for the publication of any personal details or images of patients, that are used in the materials submitted to Elsevier.

Funding

The authors state that no funding has been used for the elaboration of this manuscript.

Authors' contributions

All authors have participated equally in the preparation of this article.

Conflicts of interest

The authors declare no conflicts of interest.

References

1. Everaerts S, Hartman JE, Van Dijk M, Koster TD, Slebos DJ, Klooster K. Bronchoscopic lung volume reduction in patients with emphysema due to alpha-1 antitrypsin deficiency. Respiration. 2023;102:134–42, http://dx.doi.org/10.1159/000528182. Epub 2022 Dec 22. PMID: 36549279; PMCID: PMC9932842.
2. Hillerdal G, Mindus S. One- to four-year follow-up of endobronchial lung volume reduction in alpha-1-antitrypsin deficiency patients: a case series. Respiration. 2014;88:320–8, http://dx.doi.org/10.1159/000365662. Epub 2014 Sep 11. PMID: 25227936.