



Contents lists available at ScienceDirect

Current Problems in Cancer

journal homepage: www.elsevier.com/locate/cpcancer

Bronchial artery aneurysms arising from antiangiogenic therapy

Miguel Borregón Rivilla^{a,*}, Katherin Aly Martínez Barroso^a,
 Elia Martínez Moreno^a, Alba María Ramos Garrido^a,
 Irene Ramos Reguera^a, Manuel Alejandro Mazariegos Rubí^a,
 Beatriz Berzal Hernández^a, Aitana Palomares Morales^b,
 Celia Ástor Rodríguez^b, Ruth Álvarez Cabellos^a

^a Medical Oncology Service, Virgen de la Salud Hospital, Toledo, Spain

^b Radiodiagnostic Service, Virgen de la Salud Hospital, Toledo, Spain

A 53-year-old man under treatment with Lenvatinib for metastatic papillary thyroid carcinoma, developed bronchial artery aneurysms.

Lenvatinib is a tyrosine kinase inhibitor of vascular endothelial growth factor (VEGF) receptors. It was approved in 2015 by the FDA for the treatment of differentiated iodine-resistant thyroid cancer.^{1–3} The most common adverse reactions described are hypertension, diarrhea, and embolic and hemorrhagic events.^{4,5}

After two years of treatment with Lenvatinib, computer imaging revealed a partial response. However, irregular-shaped and irrigated aneurysms (diameter > 54 mm) appeared over congenital asymptomatic bronchial artery dysplasia^{6,7} (Image 1 and Image 2).

Due to the risk of bleeding, these aneurysms were embolized by interventional radiology, which is considered to be the gold-standard treatment for this pathology^{8–10} (Image 3 and Image 4).

In vitro endothelium restructuring in murine models is well-documented. These clinical images provide macroscopic *in vivo* evidence and demonstrate how Lenvatinib modifies the human endothelium, leading to not only an anti-neoplastic effect but also to increased risk for bleeding risk. With cancer treatment constantly evolving, real life experience and adverse events related to new drugs must be disseminated.

☆ Conflict of Interests: All authors from this clinical picture declare that there exists no conflict of interests on its publication. The main aim is helping to the development of medical science.

☆☆ There exists no other funding source than the Spanish Government and its basic salary for medical doctors. No external private firm has participated on this research.

* Correspondence to: Hospital Virgen de la Salud de Toledo, 45004 Toledo, Spain

E-mail address: miguelborregonrivilla@gmail.com (M.B. Rivilla).

<https://doi.org/10.1016/j.currprobcancer.2020.100569>

0147-0272/© 2020 Elsevier Inc. All rights reserved.

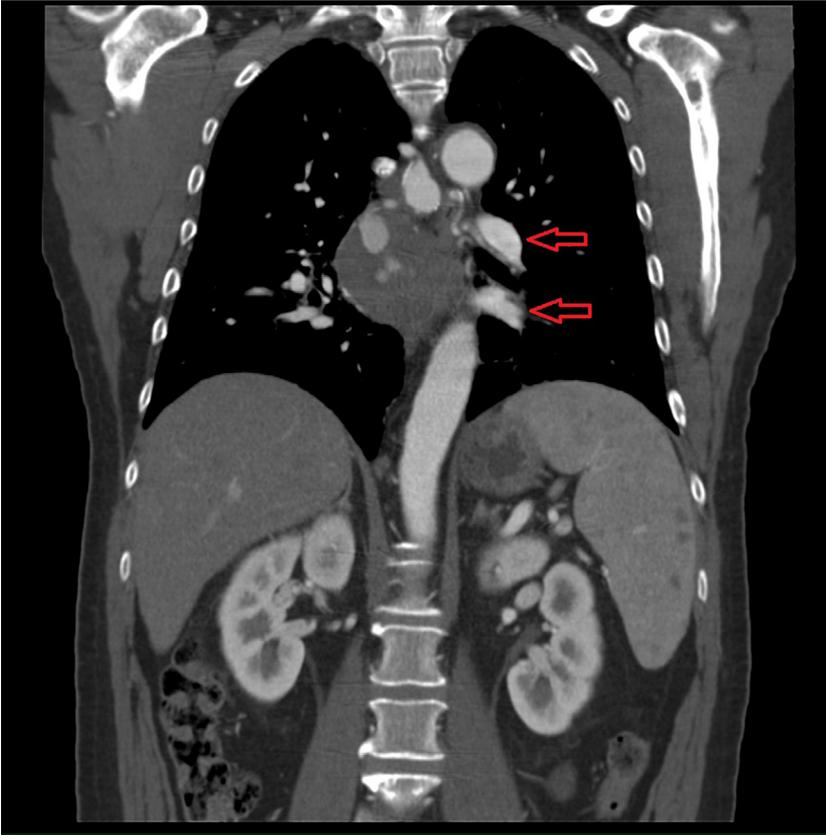


Image 1. Bronchial arteries aneurysms.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.currprobcancer.2020.100569](https://doi.org/10.1016/j.currprobcancer.2020.100569).

References

1. Schlumberger M, Tahara M, Wirth LJ, et al. Lenvatinib versus placebo in radioiodine-refractory thyroid cancer. *N Engl J Med*. 2015;372:621–630. doi:[10.1056/NEJMoa1406470](https://doi.org/10.1056/NEJMoa1406470).
2. Catharina B, Nikola R, Sacha IR, et al. Lenvatinib in advanced radioiodine-refractory thyroid cancer - a retrospective analysis of the swiss lenvatinib named patient program. *J Cancer*. 2018;9:250–255. doi:[10.7150/jca.22318](https://doi.org/10.7150/jca.22318).
3. Haugen BR, Alexander EK, Bible KC, et al. 2015 American thyroid association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: the american thyroid association guidelines task force on thyroid nodules and differentiated thyroid cancer. *Thyroid*. 2016;26:1–133.
4. Ye X, Zhu Y, Cai J. Relationship between toxicities and clinical benefits of newly approved tyrosine kinase inhibitors in thyroid cancer: a meta-analysis of literature. *J Cancer Res Ther*. 2015;11:185.
5. Zhu C, Ma X, Hu Y, et al. Safety and efficacy profile of lenvatinib in cancer therapy: a systematic review and meta-analysis. *Oncotarget*. 2016;7:44545–44557.
6. Kraybill EN, Runyan DK, Bose CL, Khan JH. Risk factors for chronic lung disease in infants with birth weights of 751 to 1000 grams. *J Pediatr*. 1989;115:115.
7. Sinkin RA, Cox C, Phelps DL. Predicting risk for bronchopulmonary dysplasia: selection criteria for clinical trials. *Pediatrics*. 1990;86:728.
8. Chun JY, Morgan R, Belli AM. Radiological management of hemoptysis: a comprehensive review of diagnostic imaging and bronchial arterial embolization. *Cardiovasc Interv Radiol*. 2010;33:240–250.

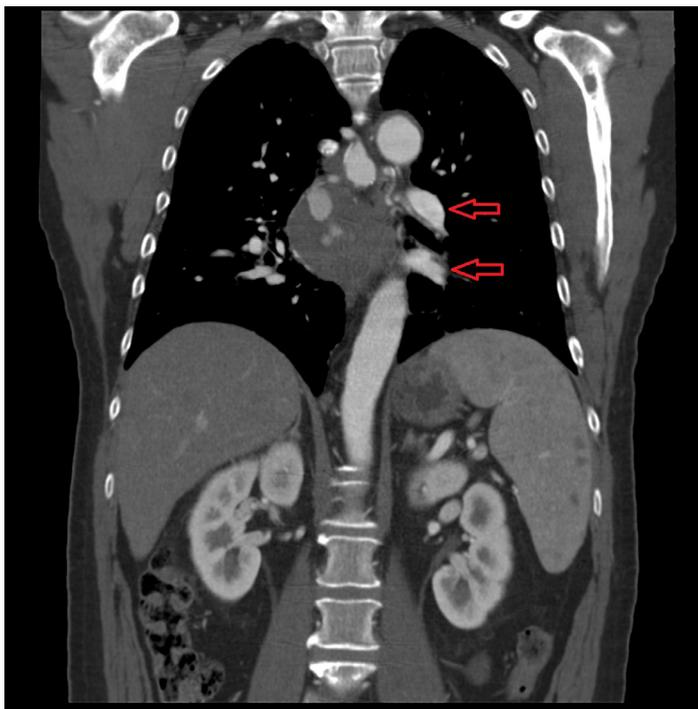


Image 2. Bronchial arteries aneurysms arrows.

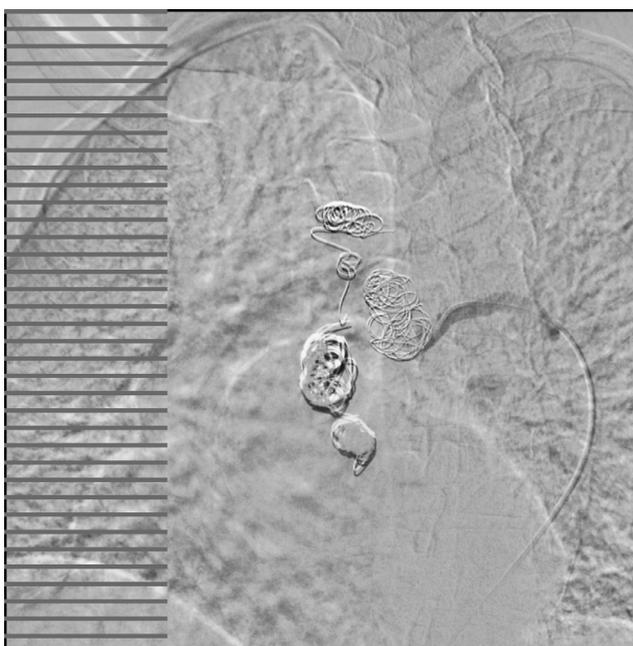


Image 3. Embolization.



Image 4. Embolization arrows.

9. Davies PL, Spiller OB, Beeton ML, et al. Relationship of proteinases and proteinase inhibitors with microbial presence in chronic lung disease of prematurity. *Thorax*. 2010;65:246.
10. Najarian KE, Morris CS. Arterial embolization in the chest. *J Thorac Imaging*. 1998;13:93–104.