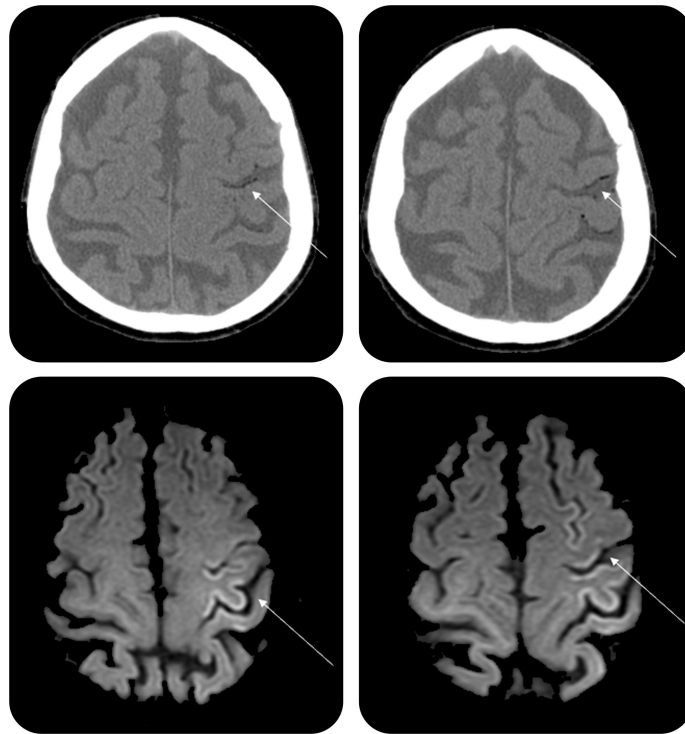


Teaching NeuroImages: Brain air embolism due to YAG laser bronchoscopy

Piero Verro, MS, MD

Address correspondence and
reprint requests to Dr. Piero
Verro, University of California–
Davis Medical Center, 2315
Stockton Boulevard, Room 5308,
Sacramento, CA 95825
piero.verro@ucdmc.ucdavis.edu

Figure CT showing air emboli and MRI showing acute infarct



An 83-year-old man with renal cell carcinoma with lung metastases was admitted with hemorrhage from an endobronchial tumor. He underwent bronchoscopy, and an Nd-YAG laser was used to debulk the tumor. Immediately after, the patient was unarousable with left eye deviation and right arm plegia. Head CT showed air embolism in distal branches of the left middle cerebral artery (figure). MRI showed diffusion-weighted changes consistent with acute infarction (figure).

Air embolism is a rare complication of bronchial laser ablation: it is thought to result from laser tip contact with bronchial tissue as cooling gas is forced into exposed and bleeding pulmonary vessels which have been eroded by the tumor.¹ Air bubbles then embolize to the brain. An

alternative theory is that high local air pressure is created when the bronchoscope occludes a small distal bronchus, impeding the escape of cooling air, with resulting entrapment of air in pulmonary vessels.

Hyperbaric therapy can be an effective treatment for brain air embolism.² In the present case, this therapy was declined.

REFERENCES

1. Tellides G, Ugurlu B, Kim R, Hammond G. Pathogenesis of systemic air embolism during bronchoscopic Nd:YAG laser operations. *Ann Thorac Surg* 1998;65:930–934.
2. Blanc P, Boussuges A, Henriette K, Sainty JM, Deleflie M. Iatrogenic cerebral air embolism: the importance of an early hyperbaric oxygenation. *Intensive Care Med* 2002;28:559–563.

From the University of California–Davis School of Medicine.

Disclosure: Dr. Verro serves on a speakers' bureau for and has received funding for travel and speaker honoraria from Boehringer Ingelheim; receives research support from the American Heart/Stroke Association Bugher grant; and has served as an expert witness in medical malpractice litigation.

Neurology®

Teaching *NeuroImages*: Brain air embolism due to YAG laser bronchoscopy

Piero Verro

Neurology 2010;75:e73

DOI 10.1212/WNL.0b013e3181fb4452

This information is current as of November 1, 2010

Updated Information & Services	including high resolution figures, can be found at: http://n.neurology.org/content/75/18/e73.full
References	This article cites 2 articles, 0 of which you can access for free at: http://n.neurology.org/content/75/18/e73.full#ref-list-1
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): All Cerebrovascular disease/Stroke http://n.neurology.org/cgi/collection/all_cerebrovascular_disease_stroke Embolism http://n.neurology.org/cgi/collection/embolism Other cerebrovascular disease/ Stroke http://n.neurology.org/cgi/collection/other_cerebrovascular_disease__stroke
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://www.neurology.org/about/about_the_journal#permissions
Reprints	Information about ordering reprints can be found online: http://n.neurology.org/subscribers/advertise

Neurology® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright © 2010 by AAN Enterprises, Inc.. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

