Advanced Imaging For PE: What Is The Optimal Strategy For The Diagnosis Of Acute And Chronic PE?

Brian Ghoshhajra, MD, MBA
Service Chief, Cardiovascular Imaging Section
Assistant Professor of Radiology, Harvard Medical School
Massachusetts General Hospital, Boston, MA

VEITH 2019
SESSION 17: MANAGEMENT OF PULMONARY EMBOLISM: THE ULTIMATE TEAM APPROACH - PART 1
Moderator: Michael R. Jaff, DO
7:35 AM - 7:45 AM

Relevant Disclosures
Siemens Healthcare, unrelated consulting
Medtronic, unrelated consulting
VasCore, unrelated (Physician Interpreter)

Can you spot the PE?
Can you spot the PE?

Can you spot the PE?

Can you spot the PE?

CTPA Yield

Adapted from Jaff MR et. al Circ 2011

CTPA Yield


CTPA Yield, no thromboembolic risk factors
CT Pulmonary Angiography

2016 ACR Appropriateness Criteria

Filling defect, characteristic of acute thrombus

Location of thrombus, calcification, position in PA

2-chamber, 4-chamber, Short axis (mrgated)
CTA PE Protocol

Incremental value of venous evaluation?

Leg venography
IVC / May-Thurner

Lung cancer patient with ? PE

Lung cancer patient with ? PE

10% incidental PE rate in cancer f/u CT!
Mimics of PE

CTA is first line...and second line
Filling defect + supporting signs; use MPRs
Remember the overall low yield (~6%) of CT PA, signs of risk
All outside cases should get an official local read!
Radiology 101: Consider mimics of PE

Thank you @ghoshhajra

References


V/Q Scintigraphy?
Unknown Case

29 yo Caucasian ♂ with severe SOB, diaphoresis, ↓BP, worsening fatigue, recent subtherapeutic INR on warfarin

PMHx: Antiphospholipid antibody syndrome, + lupus anticoagulant

What test do we start with? CTA / VQ / US / MRI?
What additional tests?

Cardiac MRI?

Cardiac-gated CTA
Temporal resolution from 66-200 msec (vs. ~30 msec for echo)
Potentially increased radiation exposure (but now median ~3 mSv)
RV, LV function possible

Dual-energy CTA
Improved images
- or -
Reduce contrast
Ventilation/ perfusion “map”

29 yo Caucasian ♂ with severe SOB, diaphoresis, worsening fatigue, ↓BP, APLS and +LAC subtherapeutic INR on coumadin, No PE?

CTV Abdomen/pelvis

PMHx: Antiphospholipid antibody syndrome, + lupus anticoagulant

29 yo Caucasian ♂ with severe SOB, diaphoresis, worsening fatigue, ↓BP, APLS and +LAC subtherapeutic INR on coumadin, No PE?
29 yo Caucasian ♂ with severe SOB, diaphoresis, worsening fatigue, ↓BP, recently subtherapeutic INR on coumadin

Today

7 days earlier

Bilateral massive adrenal hemorrhage