

INFERIOR STEMI AND
 CONCOMITANT PULMONARY
 EMBOLI IN A YOUNG PATIENT WITH
 FACTOR II MUTATION AND
 PULMONARY AVM

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BACKGROUND

Acute coronary syndrome (ACS) and pulmonary embolism (PE) are life-threatening events with high mortality. This case describes a young male who suffered cardiac arrest from concurrent STEMI and sub-massive PE, successfully managed through rapid diagnosis and intervention.

PRESENTATION & HOSPITAL COURSE

A 27-year-old male with a history of tobacco use disorder and a recent gunshot wound to the left leg had been consuming excessive alcohol and energy drinks lately and presented following sudden cardiac arrest while exercising.

EMS found him pulseless, achieving ROSC within one minute of CPR initiation. ECG indicated inferolateral STEMI and angiography revealed 100% thrombotic occlusion of the proximal and distal left posterior descending artery (LPDA) with other arteries appearing healthy. He underwent a successful mechanical thrombectomy with the resolution of TIMI 3 flow. Intravascular ultrasound did not reveal any obvious site of plaque rupture or erosion suggestive of coronary artery disease. A CT thorax revealed an acute embolus in the segmental pulmonary artery of the left upper lobe and multiple emboli in the subsegmental arteries of the right lower lobe.

Right heart catheterization confirmed cardiogenic shock with right ventricular failure (mean RA 17 mmHg, RVSP 46 mmHg, PCWP 19 mmHg, mPA 37 mmHg, PAPi 0.88). Post revascularization, he was admitted to the ICU, received unfractionated heparin for PE, and briefly required vasoactive support with norepinephrine, and epoprostenol infusions. His father later confirmed that his grandmother was diagnosed with a coagulation disorder.

Venous ultrasound revealed a thrombus extending from the left femoral to the popliteal vein. Echocardiography showed LVEF of 50–55%, with bubble study suggesting a possible pulmonary arteriovenous malformation (PAVM) with delayed bubble appearance in the right ventricle. Laboratory testing confirmed heterozygous Factor II mutation.

The patient was discharged a week later in stable condition with clopidogrel, rivaroxaban, and close outpatient cardiology and hematology follow-up.

A rare case of pulmonary
 arteriovenous malformation in a
 patient with factor II mutation led
 to concomitant inferior STEMI
 and pulmonary embolism.

Prompt diagnosis and
 interventions led to a stable
 recovery.



REGIONAL MEDICAL CENTER

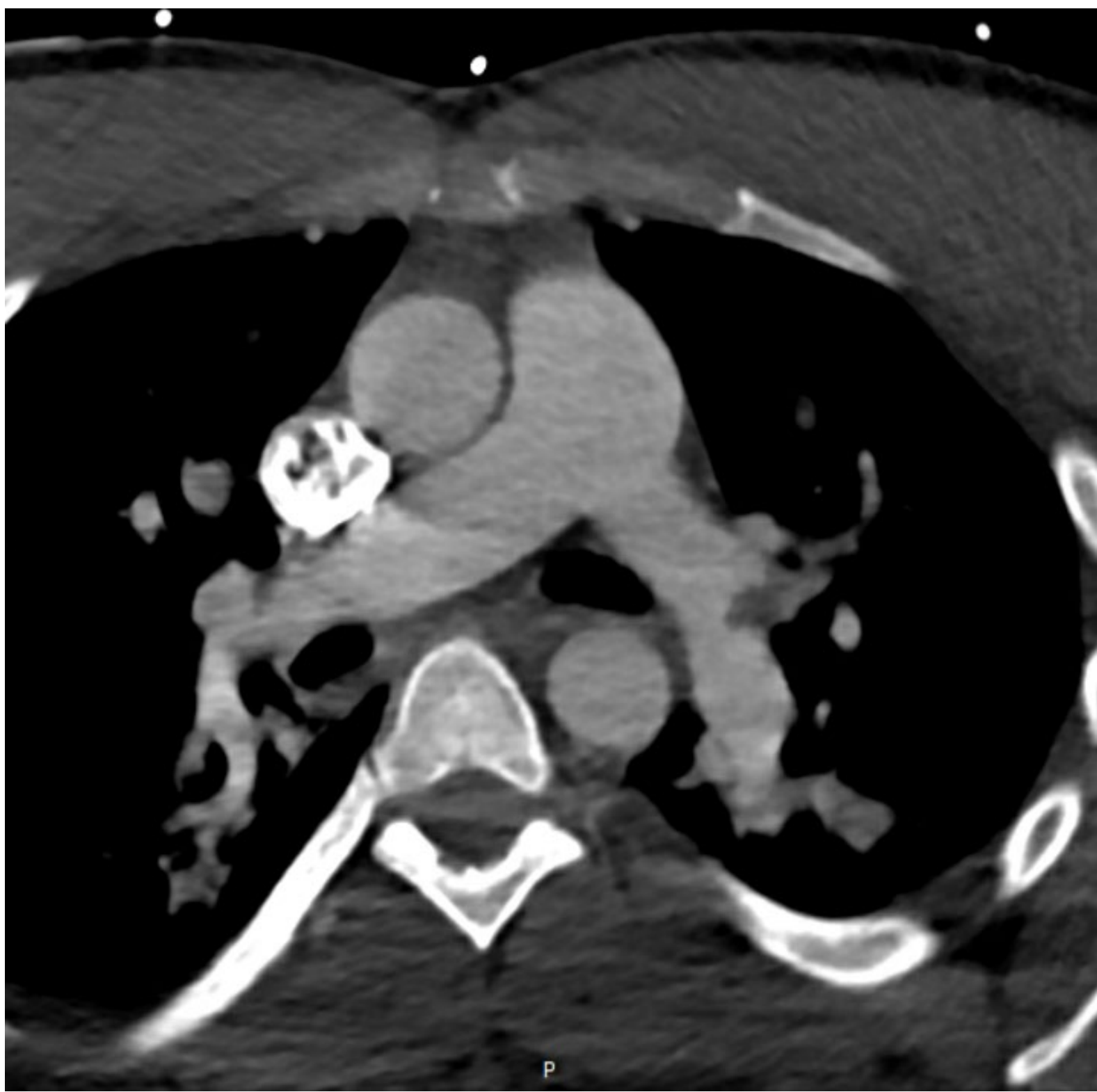
DISCUSSION

Simultaneous STEMI and PE are rare, especially in young adults without significant atherosclerotic risk factors. Such cases are often linked to paradoxical embolism through a PFO or clotting disorders involving both arterial and venous systems. The patients hypercoagulable state - linked to recent left leg gunshot wound, tobacco, alcohol, and energy drinks combined with dehydration from exercising in the setting of factor II mutation - likely led to embolization from left femoral vein causing both PE and STEMI via the suspected PV shunt, or arterial thrombus formation in LPDA.

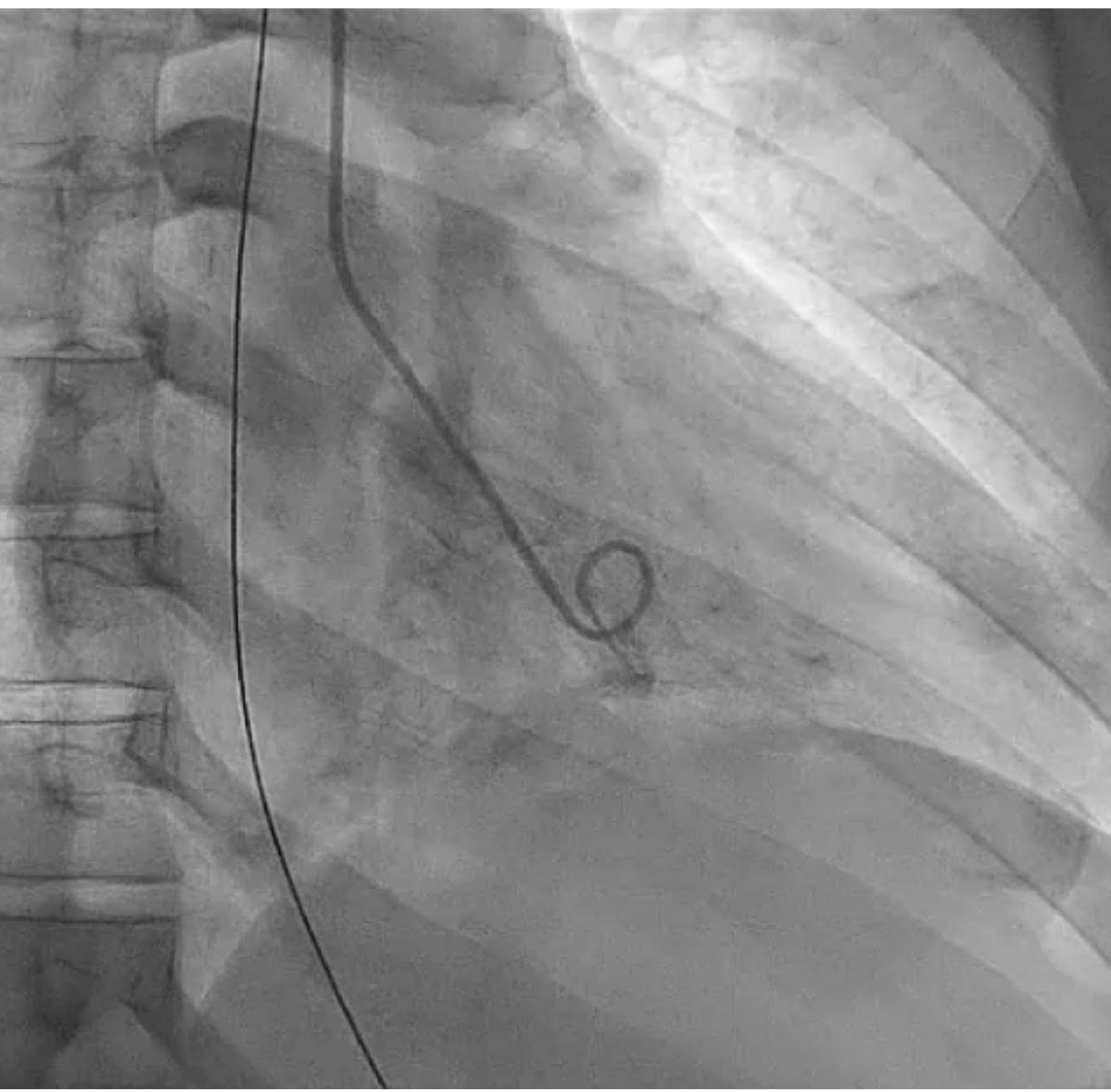
Prompt diagnosis and intervention are critical. Mechanical thrombectomy successfully restored coronary perfusion in LPDA, while systemic anticoagulation with unfractionated heparin helped treat pulmonary embolism. Upon discharge, the patient was transitioned to oral anticoagulation and monotherapy with a single anti-platelet agent, which will be crucial in preventing recurrent thromboembolic events.

IMAGING

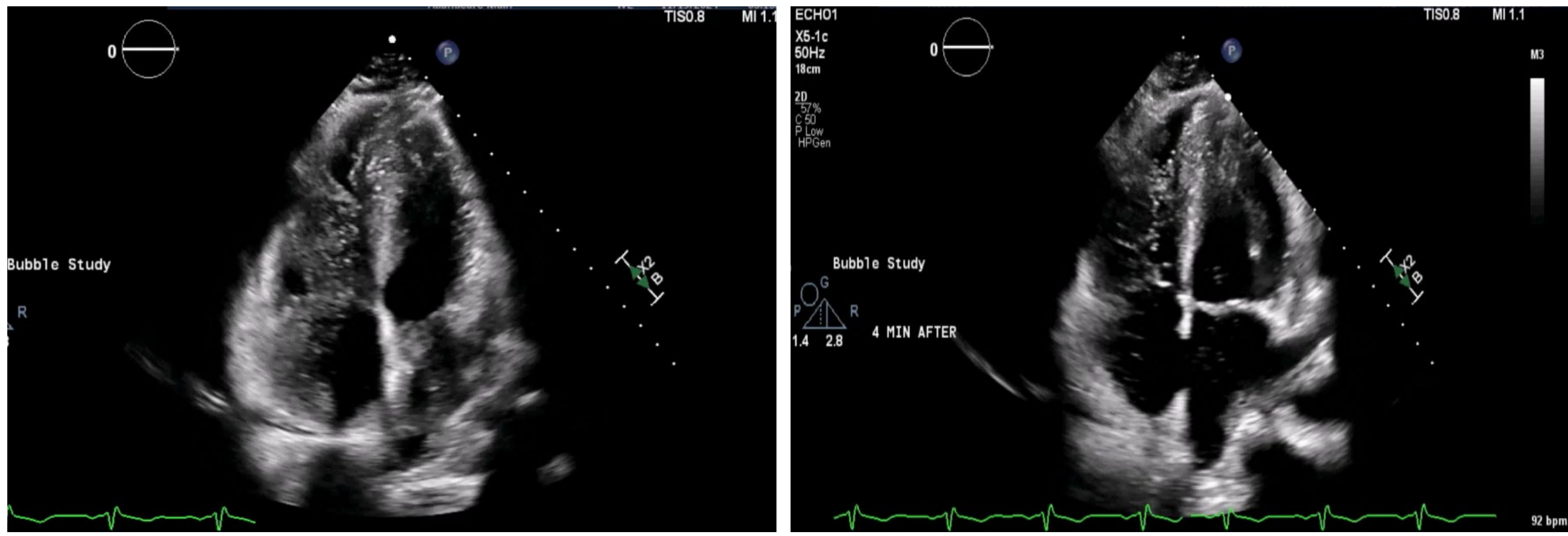
CT ANGIO CHEST



CARDIAC CATHETERIZATION



ECHOCARDIOGRAPHY



Late bubbles appearing in right ventricle (RV) 4 minutes after agitated saline injected suggestive of pulmonary AV malformation

REFERENCES

1) Alkhalil, M., Cahill, T. J., Boardman, H., & Choudhury, R. P. (2017). Concomitant pulmonary embolism and myocardial infarction due to paradoxical embolism across a patent foramen ovale: a case report. *European heart journal. Case reports*, 1(2), ytx010. <https://doi.org/10.1093/ehjcr/ytx010>