

Pacemaker Lead in the LV: to Remove, or not to Remove?

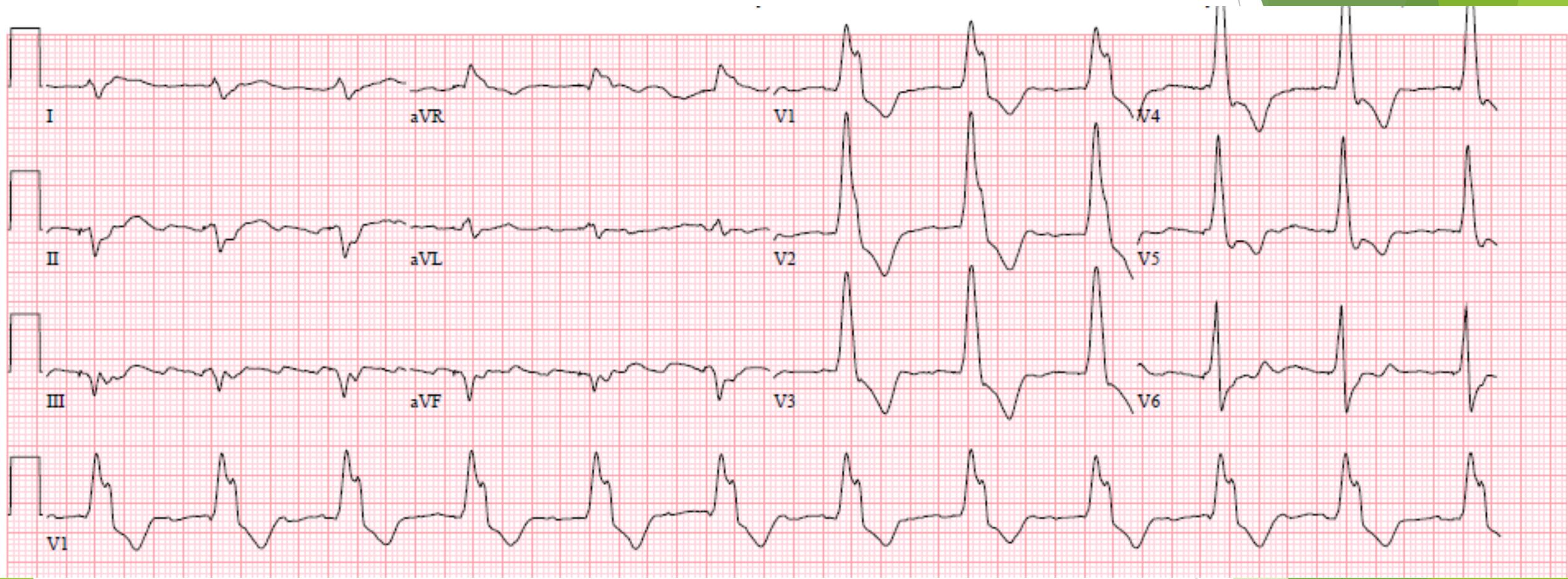
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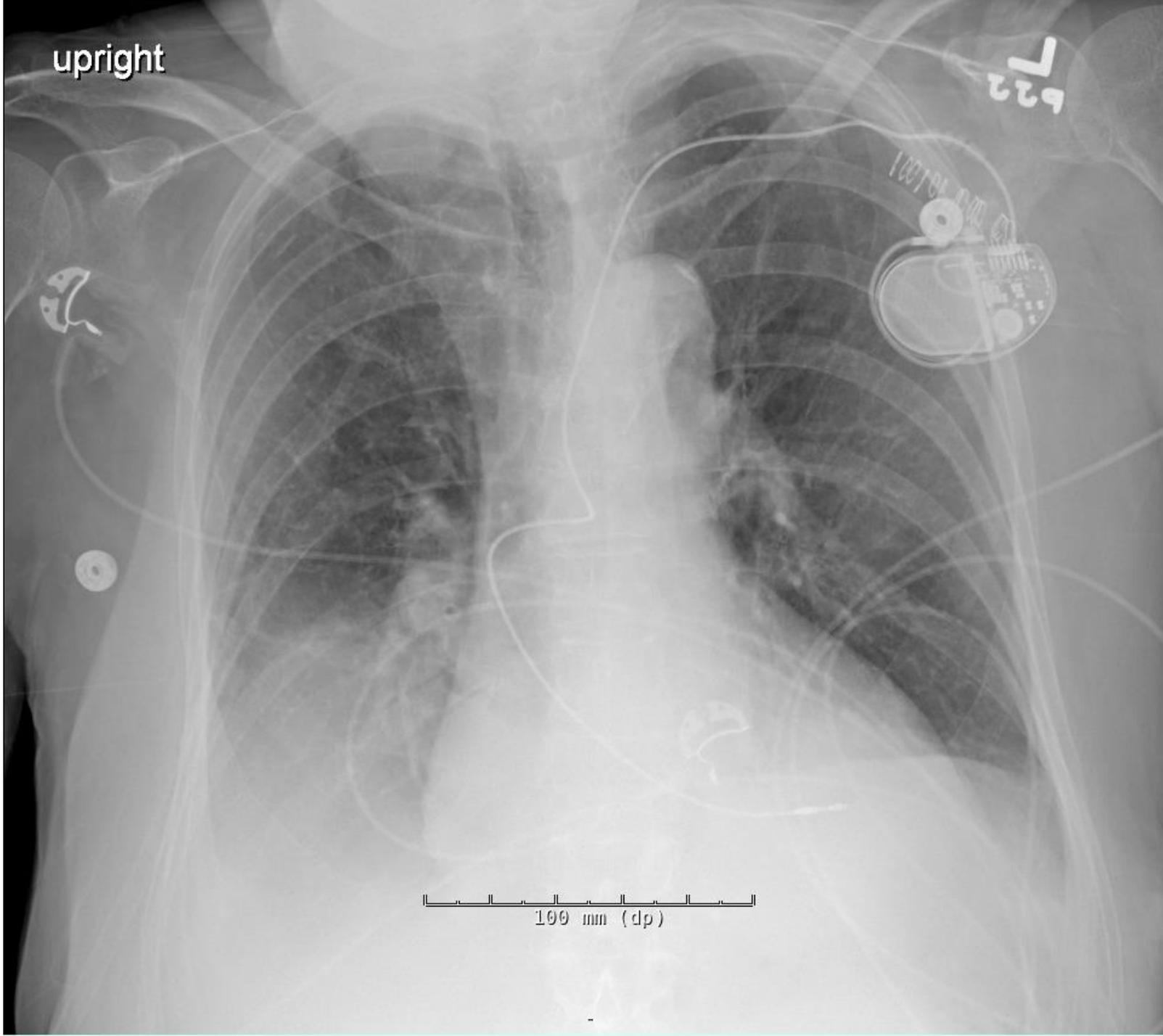
Illinois ACC Annual Meeting, 10/16/2021

Disclosures

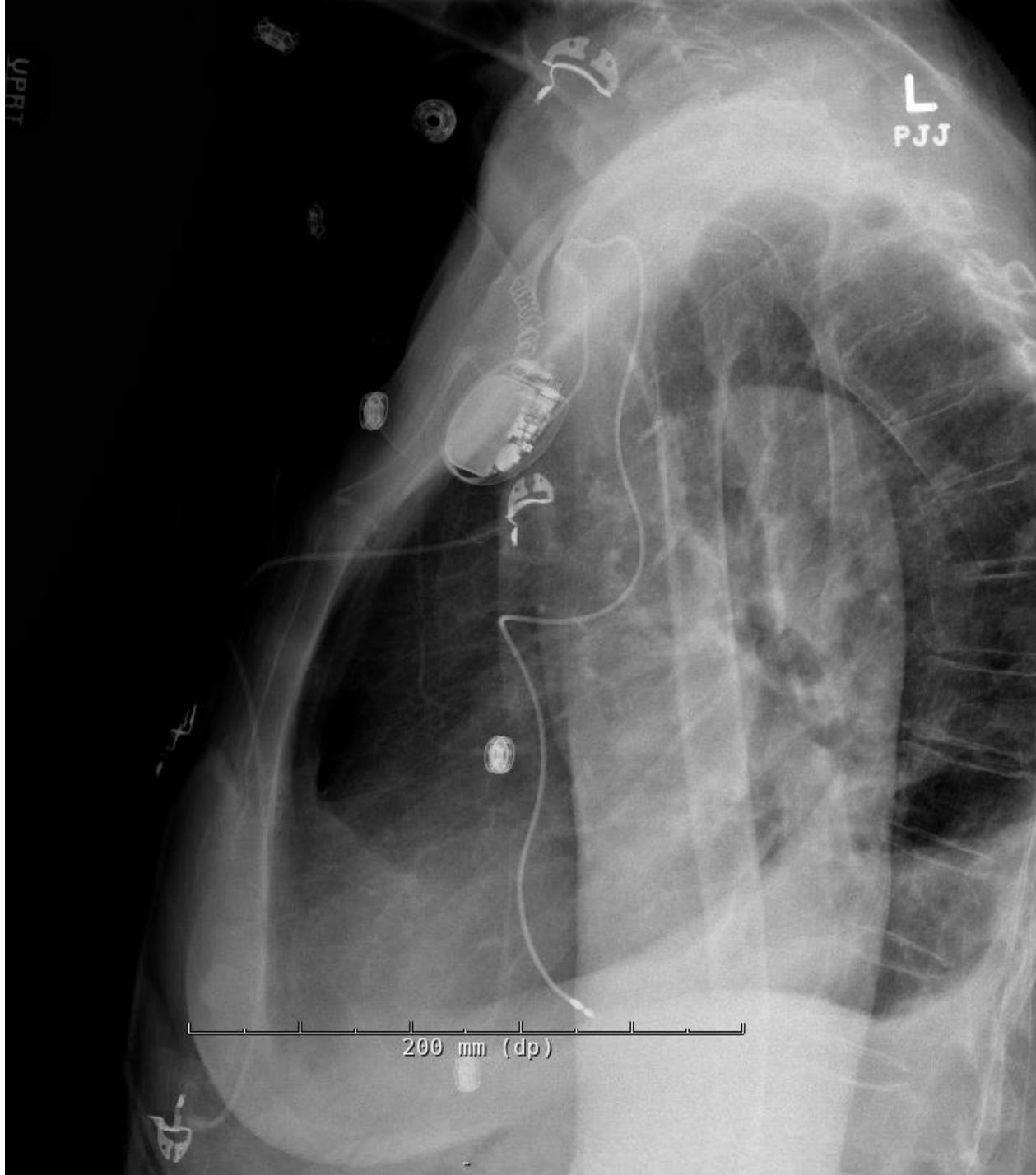
- None

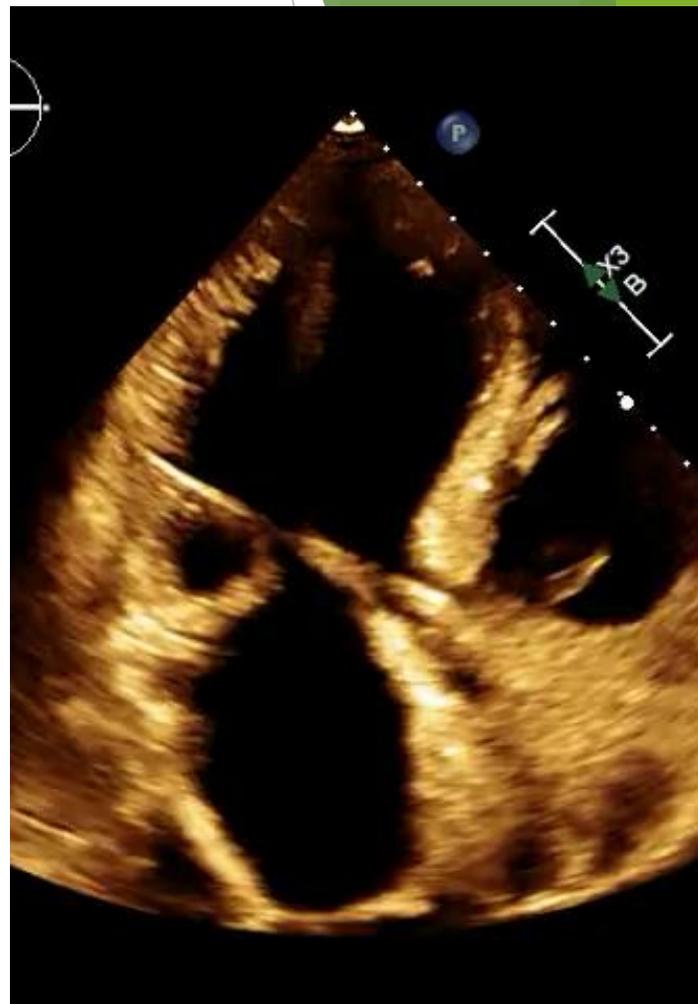
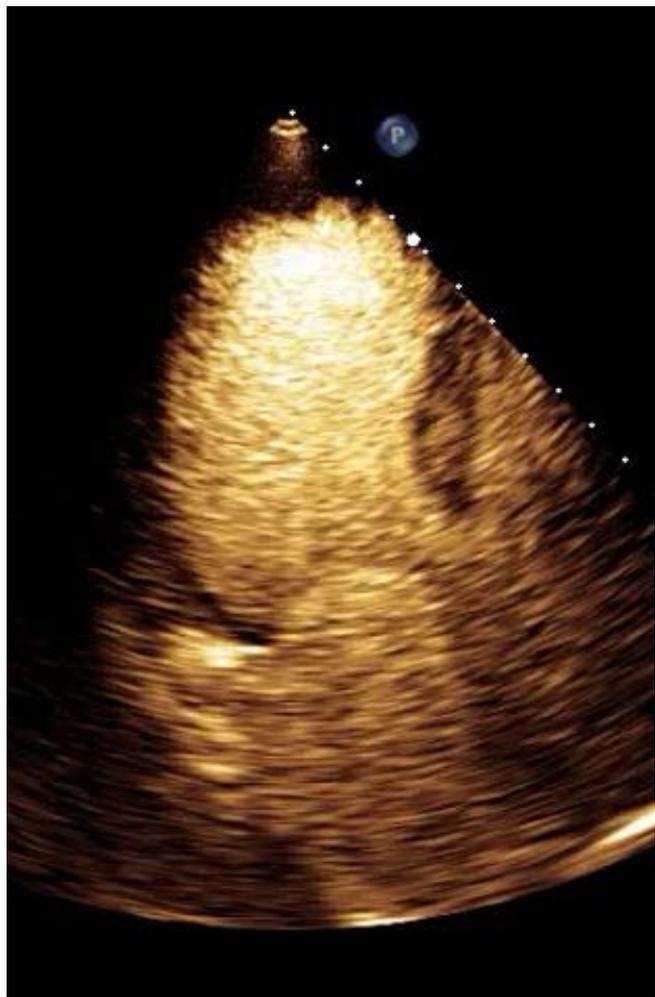
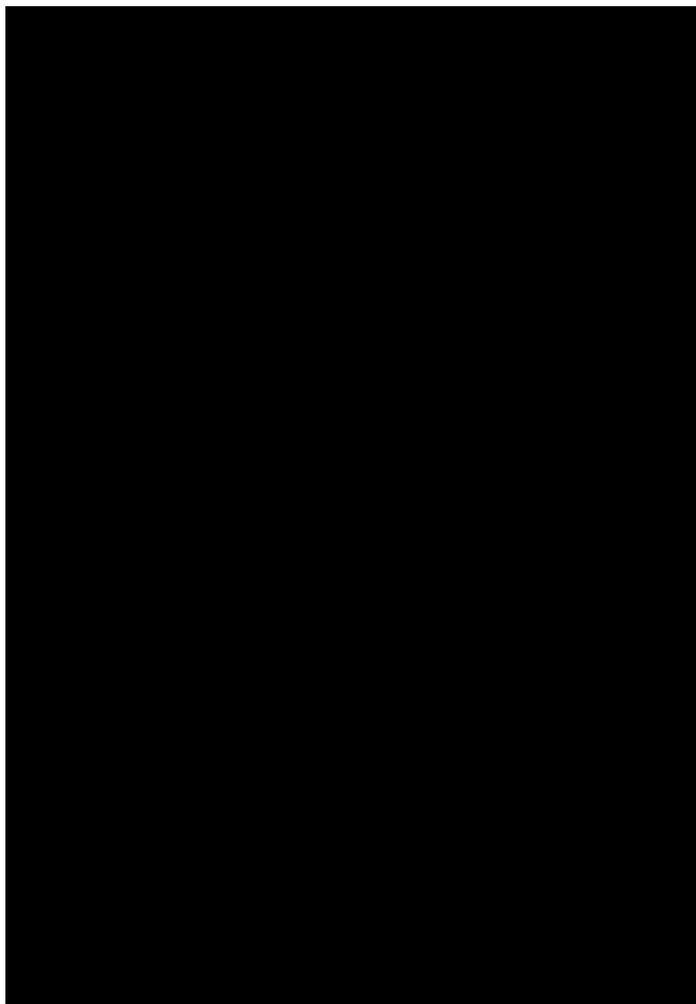


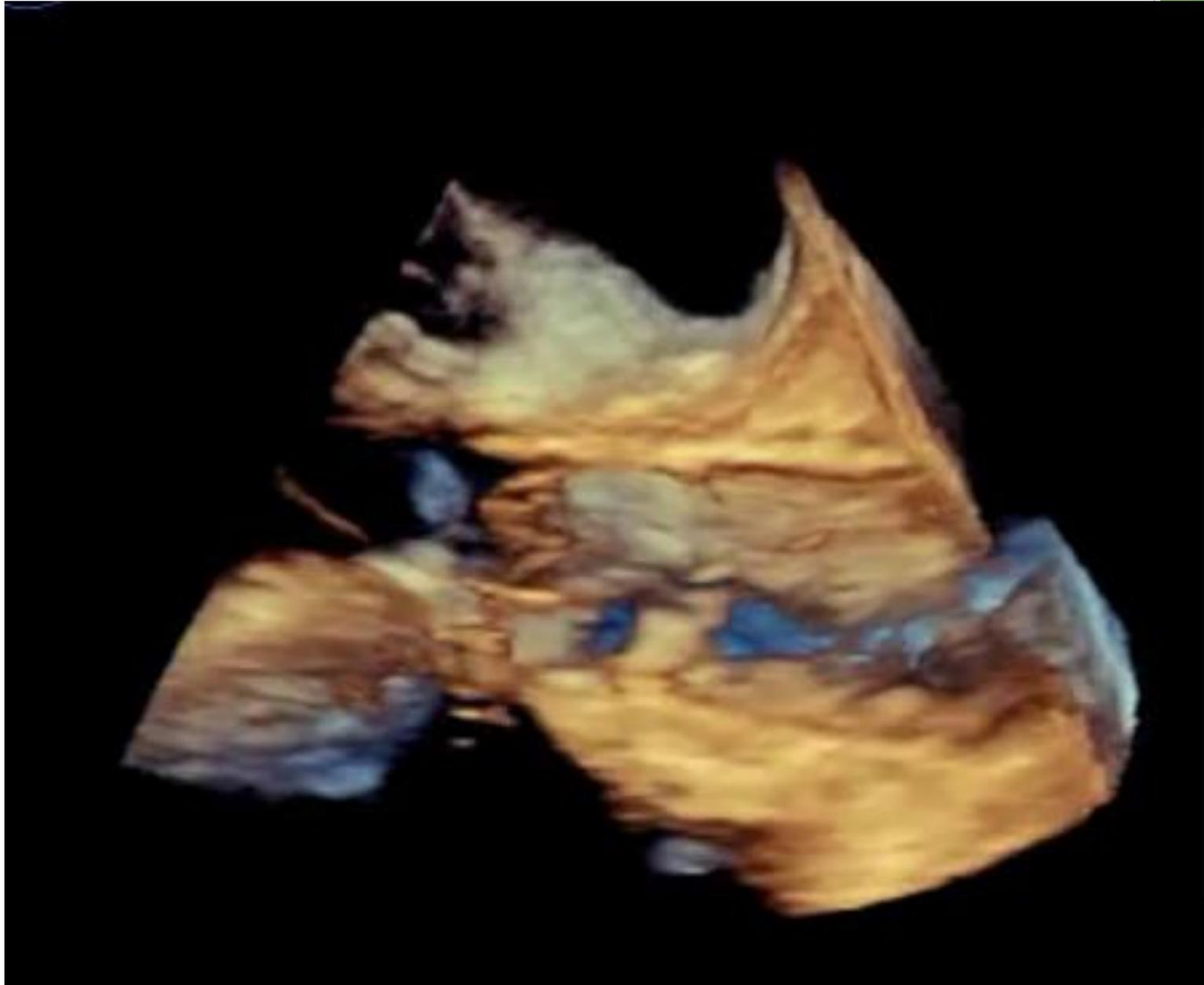
upright



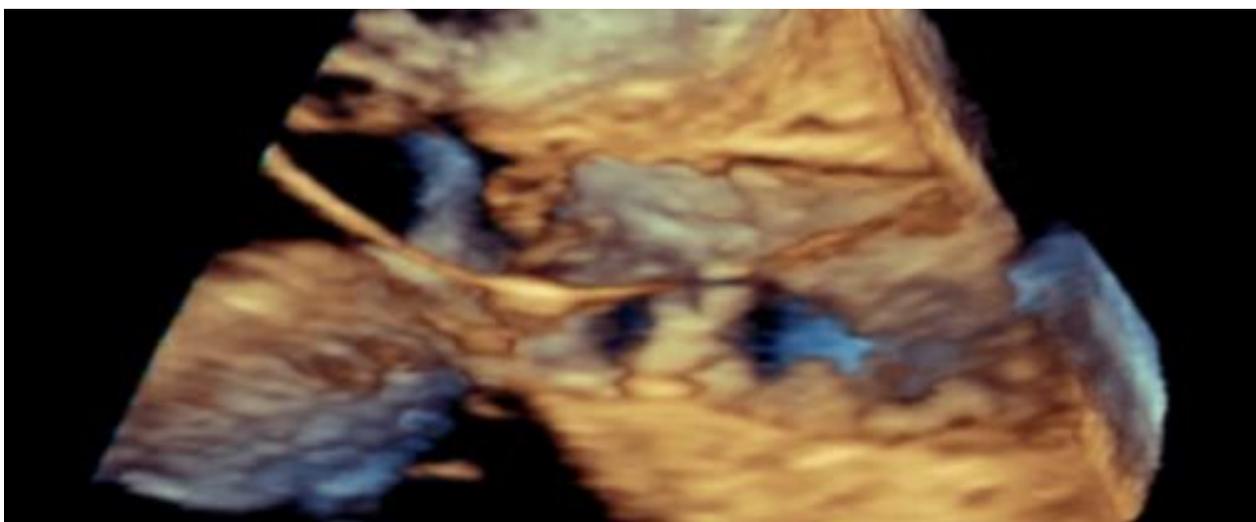
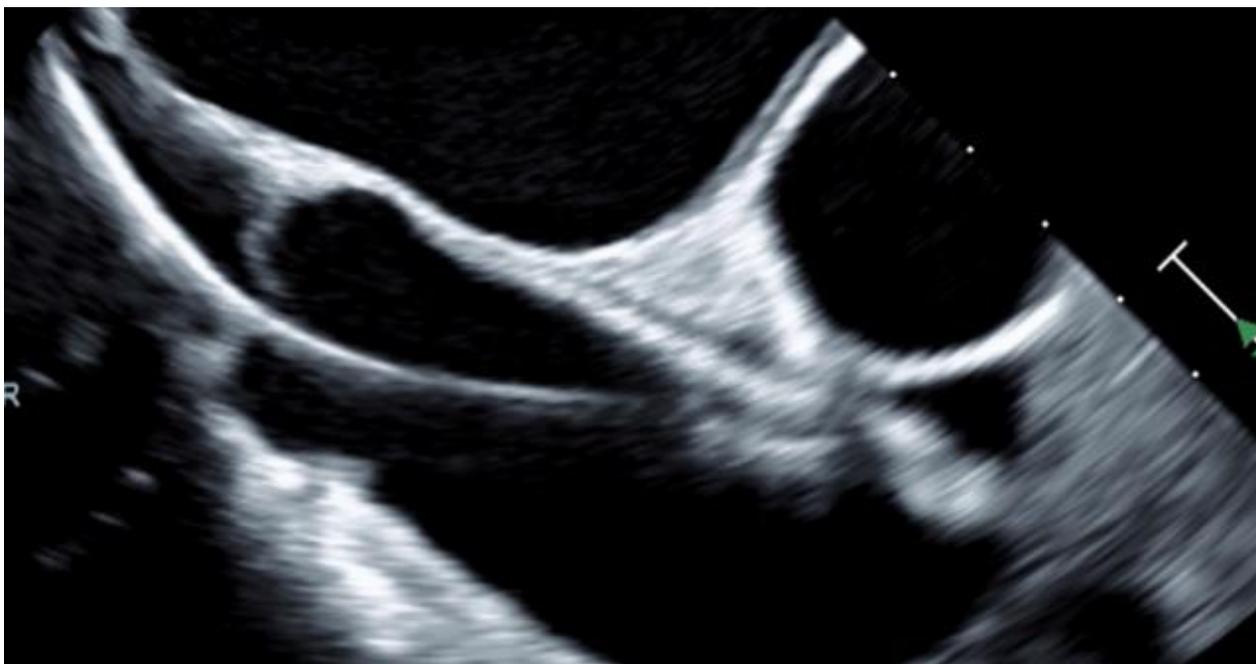
100 mm (dp)

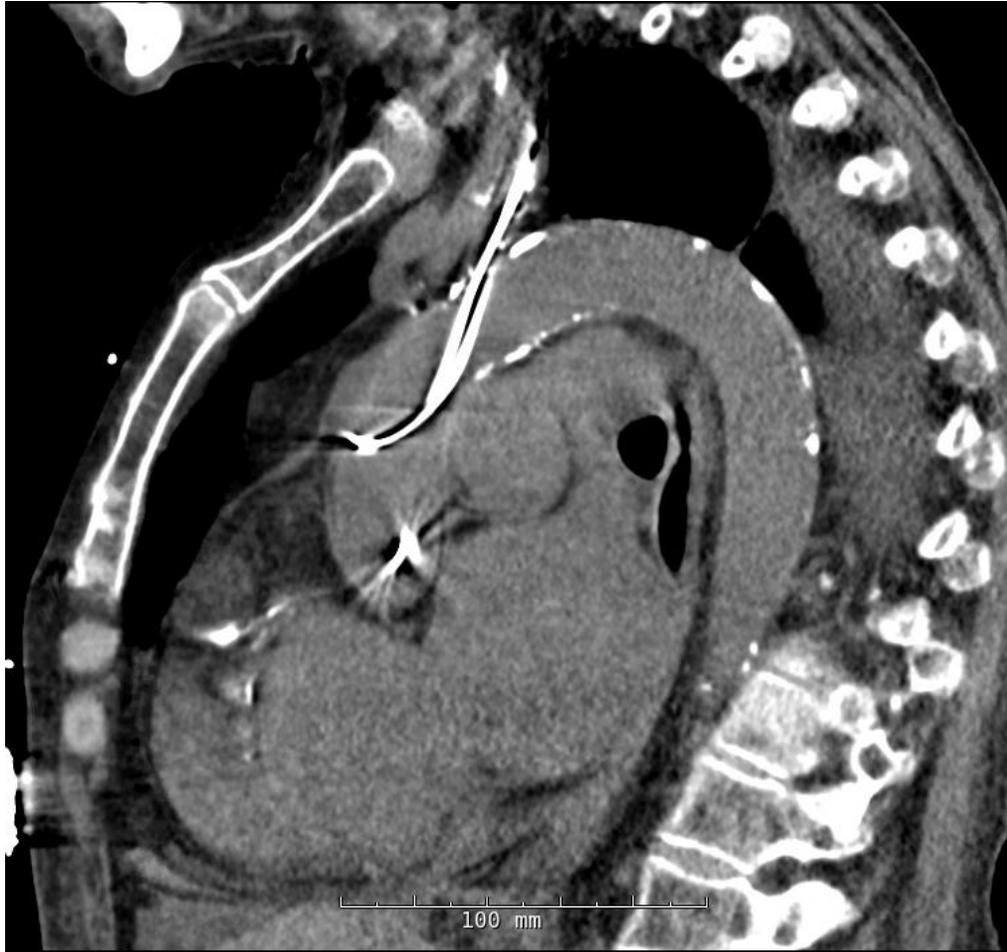












Management

- Initial plan - leave the lead in place
- Start anticoagulation
- GI bleed - 6 grams
- EGD/Colonoscopy without active bleed
- Retrial of heparin - repeat bleed

Extraction

- Placed temporary pacemaker
- Placed covered stent in the subclavian artery across the area of the arteriotomy
- Removed Lead
- Deployed covered stent
- Screwed new pacing lead into the interventricular septum and recruited the left bundle branch





Discussion

- ▶ Micropuncture limitations
- ▶ Fluoroscopy
- ▶ ECG post implantation
- ▶ Echo v. CT if malposition a concern
- ▶ To remove, or not to remove?

Questions?



Thank you!

- 1) Kosmidou, I., Karpaliotis, D., Kandzari, D. E., & Dan, D. (2012). Inadvertent transarterial Lead placement in the left ventricle and Aortic CUSP: Percutaneous lead removal with Carotid Embolic protection AND Stent Graft Placement. *Indian Pacing and Electrophysiology Journal*, 12(6), 269-273. [https://doi.org/10.1016/s0972-6292\(16\)30565-4](https://doi.org/10.1016/s0972-6292(16)30565-4)
- 2) Wynn, G. J., Weston, C., Cooper, R. J., & Somauroo, J. D. (2013). Inadvertent left ventricular pacing through a patent foramen ovale: Identification, management and implications for postpacemaker implantation checks. *Case Reports*, 2013(jun27 1). <https://doi.org/10.1136/bcr-2012-008312>
- 3) Trohman, R. G., & Sharma, P. S. (2018). Detecting and managing device leads inadvertently placed in the left ventricle. *Cleveland Clinic Journal of Medicine*, 85(1), 69-75. <https://doi.org/10.3949/ccjm.85a.17012>
- 4) Ananthasubramaniam, K., Alam, M., & Karthikeyan, V. (2001). Abnormal implantation of permanent pacemaker lead in the left ventricle via a patent foramen ovale: Clinical and echocardiographic recognition of a rare complication. *Journal of the American Society of Echocardiography*, 14(3), 231-233. <https://doi.org/10.1067/mje.2001.108347>

Soluble urokinase-type plasminogen activator receptor and thromboembolic risk in COVID-19

Presenter: Shengyuan Luo

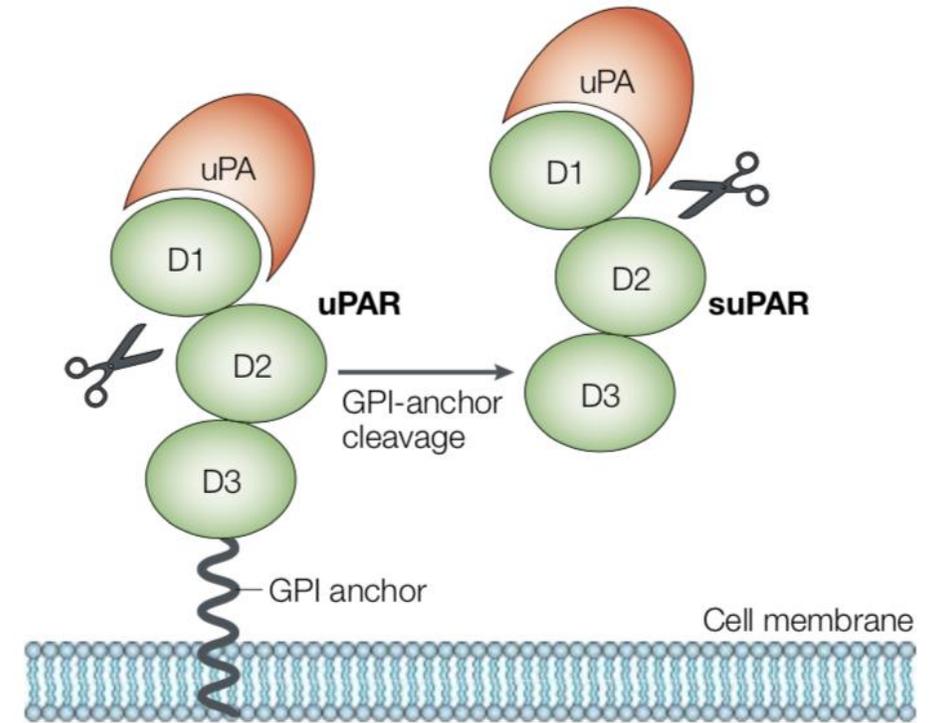
Co-authors: Beata Samelko, Jeanne M. Du-Fay-de-Lavallaz, Joanne M.D. Gomez, Anna Zemke, Tisha Suboc, Kim Williams, Setri Fugar, J. Alan Simmons, Annabelle Santos Volgman, Salim Hayek, Jochen Reiser

Disclosures

None

Background

- The high prevalence of thromboembolism in COVID-19 causes significant morbidity and mortality
- Coagulopathic state in the setting of immune-dysregulation possibly underlies poor COVID-19 outcomes
- The soluble urokinase-type plasminogen activator receptor (suPAR), a cleavage product from uPAR, a 3-domain, GPI-anchored membrane-bound protein in a variety of cells of hematopoietic lineage, which is likely a key regulator in vascular inflammation, immunity, and coagulation cross-reactions
- SuPAR has been established as immune mediator in certain cardiorenal conditions, was recently associated with respiratory and renal complications in observational studies of COVID-19



Blasi, F. et al (2022) Nat Rev Mol Cell Biol 3(12): 932-943.

Methods

- A retrospective cohort study among 2204 patients in the International Study of Inflammation in COVID-19 (ISIC), an ongoing multicenter observational study aiming to characterize associations between inflammatory biomarkers and outcomes
- Inclusion: ≥ 18 years of age, positive for SARS-CoV-2 in naso- or oropharyngeal swab RT-PCR, blood sample collected within 48 hours of hospitalization for suPAR measurement (suPARnostic, ViroGates, Denmark)
- Followed from hospital admission (baseline) till discharge or death for radiographically confirmed acute or new progression of deep vein thrombosis (DVT), pulmonary embolism (PE), or both
- Clinical and laboratory data were obtained through manual review of electronic medical records by at least two independent reviewers
- Multivariable logistic regression to assess the association between baseline suPAR and outcome with adjustments for clinical thromboembolic risk factors

Results

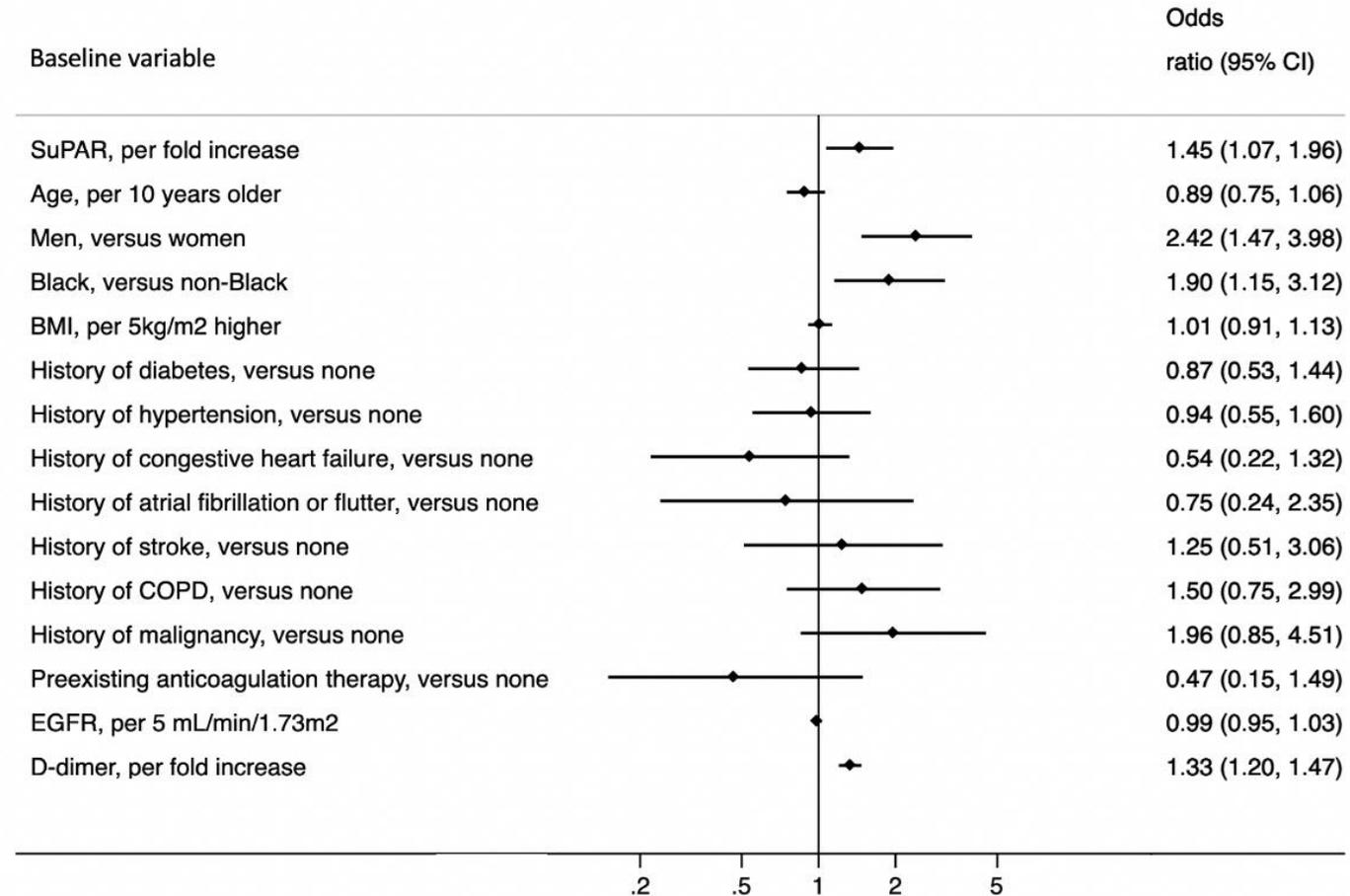
Table. Baseline characteristics, overall, and by thromboembolic event during hospitalization among patients with SARS-CoV-2 infection.

| Characteristic | Overall (N=2044) | Incident thromboembolism during hospitalization (N=192) | No thromboembolism during hospitalization (N=1852) |
|--|------------------|---|--|
| Mean age (S.D.), years | 60 (16) | 58 (17) | 60 (17) |
| Men (proportion), N | 1191 (58%) | 139 (72%) | 1052 (57%) |
| Mean body mass index (S.D.), kg/m ² | 32 (9%) | 33 (9) | 32 (9) |
| Black race (proportion), N | 419 (21%) | 52 (27%) | 367 (20%) |
| History of diabetes mellitus (proportion), N | 886 (43%) | 92 (48%) | 794 (43%) |
| History of hypertension (proportion), N | 1177 (58%) | 104 (54%) | 1073 (58%) |
| History of congestive heart failure (proportion), N | 223 (11%) | 11 (6%) | 212 (11%) |
| History of atrial fibrillation or atrial flutter (proportion), N | 200 (10%) | 7 (4%) | 193 (10%) |
| History of stroke (proportion), N | 137 (7%) | 9 (5%) | 128 (7%) |
| History of chronic obstructive pulmonary disease (proportion), N | 208 (10%) | 189 (10%) | 19 (10%) |
| History of malignancy (proportion), N | 101 (5%) | 17 (9%) | 84 (5%) |
| Prior to admission anticoagulation therapy (proportion), N | 233 (11%) | 12 (6%) | 221 (12%) |
| Median serum creatinine, mg/dl | 1.0 (0.8, 1.4) | 1.1 (0.9, 1.5) | 1 (0.8, 1.4) |
| Median serum D-dimer (IQR), mg/L | 0.9 (0.5, 1.9) | 2.0 (1.0, 9.2) | 0.9 (0.5, 1.7) |
| Median serum SuPAR (IQR), ng/ml | 7.3 (5.2, 11.0) | 9.7 (6.2, 13.8) | 7.1 (5.1, 10.6) |

IQR, interquartile range. S.D., standard deviation. SuPAR, soluble urokinase-type plasminogen activator receptor.

Results

Figure. Adjusted associations between admission suPAR level and incident deep vein thrombosis or pulmonary embolism in patients hospitalized with SARS-CoV-2 infection.



Conclusion

- Thromboembolic complications, i.e., deep vein thrombosis (DVT) and pulmonary embolism (PE), are highly prevalent in a multinational cohort of patients hospitalized with COVID-19
- More incident thromboembolic events were seen among those with higher serum suPAR levels on hospital admission for COVID-19
- The significant association between circulating suPAR and incident DVT or PE was independent of known clinical thromboembolic risk factors such as d-dimer.

