

## Reply to Letter to the Editor: "How Little Things Can Make a Big Difference?"

To the Editor,

We read the letter to the editor with great interest.<sup>1</sup> "This study suggested that the AnjioJet rheolytic thrombectomy (ART) system might be considered in the treatment of PE patients despite the black box warning," as said by the author. Moreover, the author concluded that "given the difficulties in treating patients with PE, furthermore reliance on imaging surrogates, such as right ventricle (RV) to left ventricle (LV) diameter ratio and thrombus volume reduction, failed to recognize the multifactorial pathophysiology of PE and might provide an incomplete assessment for treatment benefit," and "proximal thrombus volume reduction as measured, by standard thorax CT did not account for distal pulmonary artery perfusion and the impact of hypoxemia and circulating pulmonary vasoconstrictors on pulmonary vascular resistance and RV pressure overload." However, the selected surrogates in our study<sup>2</sup> have been uniformly adopted measures for quantifying the benefit from percutaneous PE treatments before approval of all catheter-directed thrombectomy (CDT) systems.

On the basis of the 7-year experience with ART in patients with PE, we agree with the author of this letter in that the ART system requires the technical skill of the operator during selective cannulation along the occluded pulmonary artery branches, and a teamwork experience against some peri- or post-procedural complications due to massive thrombolysis within seconds resulting in adenosine releases, local hyperthermia and hemolysis for very short-term periods, and hemoglobinuria resulting in renal tubular injury. These issues related to fragmentation and aspiration sequences of ART differ this system from other CDT methods which may be considered as more user-friendly by beginners of percutaneous PE treatments. The ART system seems to be more appropriate than CDT methods in circumstances of high-bleeding risk after the early post-operative period following major surgery, active bleeding such as gastrointestinal bleeding from esophageal varices or other sources, intracranial hemorrhage or tumors, which have been considered as absolute or relative contraindications for any PE treatments including thrombolytics. All the ART catheters used in our treatments were 6 Fr in size, and upsizing to 8 Fr was not needed. In the absence of any sign consistent with failure in the selected treatment, we routinely preferred to acquire chest CT images 3-4 days after the index procedures. The state-of-art in the ART treatment should include renal protection with careful and individualized saline hydration against burden from massive hemoglobinuria and angiographic contrast material, and the potential guilty for post-procedural nephropathy does not matter in case of appropriate diuresis up to 4-5 L for first 24-hour period.

The significant and clinically relevant improvements in the measures of pulmonary arterial thrombotic burden, RV strain, and hemodynamics with acceptable rates of acute renal failure, major and minor bleeding, and mortality rates in a mixed population including high- or intermediate-high-risk PE patients having multiple co-morbidities precluding the systemic full-dose or low-dose adjuvant thrombolytic treatments should be regarded as convincing evidence

### LETTER TO THE EDITOR REPLY

Özgür Yaşar Akbal 

Cihangir Kaymaz 

Department of Cardiology, Hamidiye  
Faculty of Medicine, University of Health  
Sciences Turkey, Koşuyolu Heart Training  
and Research Hospital Istanbul, Turkey

#### Corresponding author:

Cihangir Kaymaz  
✉ cihangirkaymaz2002@yahoo.com

**Cite this article as:** Akbal ÖY,  
Kaymaz C. Reply to letter to the  
editor: "How little things can make  
a big difference?". *Anatol J Cardiol.*  
2022;26(6):499-500.



Copyright@Author(s) - Available online at anatoljcardiol.com.  
Content of this journal is licensed under a Creative Commons Attribution-NonCommercial  
4.0 International License.

DOI:10.5152/AnatolJCardiol.2022.1460

for ART in certain circumstances. Only aging seemed to increase the risk of renal injury while baseline high-risk status translated to in-hospital and long-term mortality risks.

Finally, we would like to thank for this letter stimulating a seminal discussion.

## REFERENCES

1. Özçınar E. How little things can make a big difference?. *Anatol J Cardiol.* 2022;26(6):498.
2. Akbal ÖY, Keskin B, Tokgöz HC, et al. A seven-year single-center experience on AngioJet rheolytic thrombectomy in patients with pulmonary embolism at high risk and intermediate-high risk. *Anatol J Cardiol.* 2021;25(12):902-911. [\[CrossRef\]](#)