

## Comment on: Dialysis catheter-related sepsis resulted in infective endocarditis, septic pulmonary embolism and acute inferolateral STEMI: a case report

We read the recent article entitled 'Dialysis catheter-related sepsis resulted in infective endocarditis, septic pulmonary embolism and acute inferolateral STEMI: a case report' published online in January 2023 of *European Heart Journal—Case Reports* by Ahmed *et al.*<sup>1</sup> Authors reported a rare case of infective endocarditis (IE) presenting with pulmonary embolism (PE) and embolic myocardial infarction, which resulted in a poor prognosis due to missed diagnosis. After further discussion, we would like to raise two points with the authors.

### Ideas for diagnosis of septic pulmonary embolism

There is no consensus or guideline on the diagnosis and treatment of septic pulmonary embolism (SPE). However, previous studies have identified certain risk factors for SPE, particularly in patients with right-sided IE, such as central venous lines and immunocompromised status.<sup>2</sup>

There are several key factors to consider when considering the diagnosis of SPE. Firstly, the patient had a history of haemodialysis via a right-sided double-lumen tunnelled catheter, which increased the risk of SPE.<sup>3</sup> Secondly, the patient had a low-grade fever on admission. A temperature spike may suggest an underlying infectious cause in PE patients with low-grade fever, while one-third of PE patients without an apparent infectious cause may exhibit a low peak value and short duration of fever, which reminded us to pay attention to body temperature changes.<sup>2</sup> Thirdly, inflammatory indicators, which are closely related to IE,<sup>4</sup> may also be present in SPE. These indicators can be significantly abnormal with infection, prompting physicians to conduct further tests such as transthoracic echocardiography and blood culture to diagnose IE.

Failure to diagnose SPE may result in further spread of the infection and increased risk of bleeding with anticoagulation therapy alone. Hence, appropriate antibiotic therapy and timely surgical eradication of the source of infection are necessary interventions to prevent subsequent adverse events.

### Reflection on information of coronary arteries

We suspect occlusion of the right coronary artery (RCA) and left circumflex artery (LCX) from the electrocardiogram (ECG), whereas coronary angiography revealed the posterior descending of RCA. ST-segment elevation in II and III and aVF in preoperative ECG may indicated RCA or/and LCX occlusion, while ST elevation in leads V4, V5, and V6 indicated the

LCX occlusion.<sup>5</sup> Moreover, occlusion of the LCX without prompt intervention could lead to complications of myocardial infarction, such as the complete heart block that developed later in this case. Conversely, isolated occlusion of the RCA without massive infarction was unlikely to cause cardiogenic shock. Moreover, the patient was at high risk of multi-vessel occlusion due to her prolonged catheterization and concurrent PE and IE, which increased the likelihood of embolization.

Therefore, we hope that the authors provide more specific information on the left coronary artery to confirm our hypothesis. If confirmed, treating multiple culprit vessels simultaneously can reduce complications. Further investigation was necessary to rule out other possible causes such as myocarditis and takotsubo syndrome, especially related to sepsis.

Generally, SPE should be considered in patients with concurrent indwelling catheters for PE. Early diagnosis is aided by identifying fever and inflammatory indicators. In cases of multiple vascular infarctions, IE possibility should be considered. A thorough cardiovascular evaluation should be performed with tests such as electrocardiography and coronary angiography, and physicians should be aware of potential complications to prevent adverse outcomes.

**Conflict of interest:** No conflict of interest is pertinent to this work.

**Funding:** None declared.

### Data availability

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

### References

1. Ahmed IA, Asiri AA, Attia M, Alshehri S. Dialysis catheter-related sepsis resulted in infective endocarditis, septic pulmonary embolism and acute inferolateral STEMI: a case report. *Eur Heart J Case Rep* 2023;**7**:ytad036. PMID: 36733688; PMCID: PMC9887670.
2. Nucifora G, Badano L, Hysko F, Allocca G, Gianfagna P, Fioretti P. Pulmonary embolism and fever: when should right-sided infective endocarditis be considered? *Circulation* 2007; **115**:e173–e176. PMID: 17296860.
3. Ye R, Zhao L, Wang C, Wu X, Yan H. Clinical characteristics of septic pulmonary embolism in adults: a systematic review. *Respir Med* 2014;**108**:1–8. Epub 2013 Oct 17. PMID: 24183289.
4. Zampino R, Iossa D, Ursi MP, Bertolino L, Andini R, Molaro R, *et al.* Prognostic value of pro-adrenomedullin and copeptin in acute infective endocarditis. *BMC Infect Dis* 2021;**21**: 23. PMID: 33413127; PMCID: PMC7791699.
5. Zimetbaum PJ, Josephson ME. Use of the electrocardiogram in acute myocardial infarction. *N Engl J Med* 2003;**348**:933.

Shiyan Jiang<sup>1</sup>, Dongze Zheng<sup>1</sup>, and Bin Wang\*<sup>1</sup>

Department of Cardiology, The First Affiliated Hospital of Shantou University Medical College, 57 Changping Road, Shantou 515041, China

\* Corresponding author. Tel: +86 075488905399, Email: [asch369@126.com](mailto:asch369@126.com)