Massive pulmonary embolism post decannulation from Extra Corporeal Membrane Oxygenation: an unexpected complication

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H Ismail, F Caetano, LC Price, C Ridge, B Patel, S Ledot

Adult Intensive Care Unit, Royal Brompton Hospital, Part of "Guy's and St. Thomas' NHS Foundation Trust"

Introduction

Massive pulmonary embolism is a rare complication following Veno-Venous Extra Corporeal Membrane Oxygenation (VV-ECMO) decannulation.

Management can be challenging. The authors present a case that required VV-ECMO re-cannulation and catheter-directed thrombolysis.

- A 58-year-old man, with background of hypertension and asthma, was admitted with severe respiratory failure secondary to COVID-19 pneumonitis.
- After failing conventional ARDS treatment, he was referred and retrieved on VV-ECMO.
- Decannulated of VV-ECMO on day 7 after being off sweep gas for more than 24 hours. Of note, Patient had no PE or DVT on admission imaging.
- Five hours after decannulation, the patient acutely deteriorated:
  - He became tachycardic(HR 135bpm), hypotensive (MAP 50mmHg), and hypoxic (SpO2 80%).
  - TTE showed severely dilated and impaired right ventricle (figure 1).
  - The patient was started on milrinone and nitric oxide. Nevertheless, he deteriorated further and became profoundly hypoxic and hypercapnic, and a decision was made to start him on VV-ECMO.
  - A TOE was done to guide cannulation and showed a thrombus in the RV and in the left pulmonary artery (figure 2).
- Next day, a CT-pulmonary angiogram (CTPA) was done which showed saddle-shaped pulmonary embolism, with a large occlusive clot in the left main pulmonary artery causing complete non-perfusion of the left lung (figures 3,4).
- An MDT discussion took place, the patient had catheter-directed thrombolysis, with some haemodynamic improvement.
- After 48 hours, TTE was repeated showing no significant improvement on RV function.
- CTPA showed very mild decrease of the clot burden.
- Decision was made to repeat catheter-directed thrombolysis and partial thrombectomy (figure 5).
- Repeated imaging revealed decrease in the size of the left main pulmonary artery thrombus.

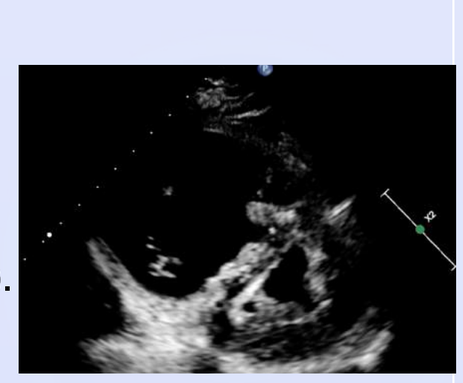

Fig (1)

Fig (2)

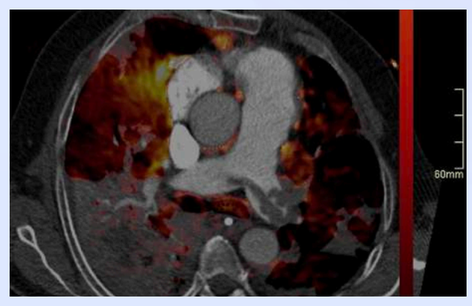

Fig (3)

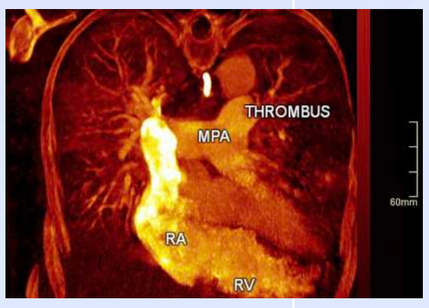

Fig (4)

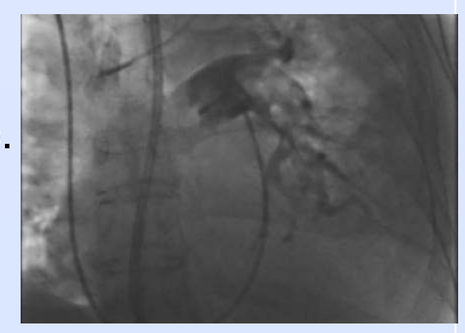

Fig (5)

Clinical impression: It is thought that the massive pulmonary embolism could have been caused by showering of ECMO cannulas-related thrombi, which were dislodged during decannulation.

Follow-up: Patient remained on VV-ECMO for 32 days and was decannulated successfully afterwards and was discharged home on apixaban. On follow-up, patient did not have any residual perfusion defects or resting pulmonary hypertension.

Conclusions

- ECMO cannulas related thrombi are not uncommon complications because of prolonged stay and coagulopathy related to ECMO circuit.
- The use of echocardiography was paramount on the differential diagnosis and management of undifferentiated shock and hypoxia after VV-ECMO decannulation.