Catheter Related Atrial Thrombus: Diagnosis and Treatment - Time for Consensus?

Tushar Vachharajani, MD, FASN
Chief of Nephrology
VAMC, Salisbury, NC

Catheter related thrombosis
- Catheter thrombosis
  - Intraluminal
  - Extraluminal
- Physiological process starts with endothelial damage during insertion
- Propagation of inflammatory and coagulation cascade
- Inadequate and improper flushing during dialysis
- Inadequately filling of the lumen with anticoagulant

Intraluminal Thrombus
- Often due to improper handling and care during dialysis
- Higher incidence in femoral CVC than IJ CVC
- Effect of gravity and difference in viscosity between heparin and blood leads to leakage
- Leakage of heparin is more in catheters with multiple side holes

Extraluminal Thrombus
- Central vein thrombus
- Right atrial thrombus
- Presence of CVC can lead to thrombus formation in the central vein
- Central vein thrombus is generally asymptomatic
- Incidence reported in literature – 2-64%
- Two common associated risk factors
  - Duration of CVC
  - Infection

Superior Vena Cava Thrombosis
- Multiple hardware as in patients with cardiac rhythm device
- SVC stenosis

Central vein thrombosis associated with underlying stenosis
Central Vein thrombosis

Incidence is higher with left sided catheters


Right Atrial Thrombus

- Relatively uncommon
- Detected on angiography
- Large thrombus defined as >2cm
- Additional studies such as TEE required for diagnosis
- CVC malfunction because tip is embedded in the thrombus
- Serious complication such as hemothysis
- High mortality – 27%


Management of thrombosis

- Intraluminal thrombosis
  - Prevention
    - Catheter lock solution
  - Treatment
    - Thrombolytics
    - Exchange over a guide wire

Management of right atrial thrombus

- Removal of CVC
- Systemic anticoagulation for at least 6 months
- Low risk patients - surgical thrombectomy
- High risk patients - appropriate management not established
- Weekly monitoring with echocardiography is recommended

Summary

- Optimal management of a dialysis catheter-associated atrial thrombus remains unclear.
- Catheter removal followed by 1 month of anticoagulation, or in the case of small (less than 2 cm) thrombi, 6 months of anticoagulation, and catheter removal only if there is no resolution of the thrombus.
- A repeat echocardiogram to test for resolution of the thrombus is also warranted.
- If the thrombus is larger than 2 cm, especially in the presence of bacteremia, urgent thrombectomy followed by antibiotic therapy and anticoagulation should be considered.