Removal of Catheter with clotted Lumen

Question:

What are the current recommendations for the removal of a central venous catheter that is clotted? We occasionally have multiple lumen catheters with a clotted lumen. The physicians request that we continue to use the other lumens for remaining therapy, which may be 3 more days or 3 more weeks. The physicians also will not prescribe a fibrinolytic agent to restore lumen patency.

Answer:

You described catheters that are "clotted." It is important to remember that catheter lumens become occluded from thrombotic, precipitate and mechanical causes. The treatment and prevention strategies are based on the cause of the occlusion. The risks associated with no treatment are different for each cause. There could also be differences for each type of central venous catheter.

I would first do a thorough assessment of the catheter use and any problems. Has there been a sudden change in the ability to infuse or aspirate blood? Has there been difficulty obtaining a good blood return during the entire dwell time? Does the ability to infuse or aspirate change when the patient's position is changed? What medications have been infused? Have there been incompatible solutions infused? Can you document that appropriate catheter flushing procedures have been performed?

According to the Infusion Nursing Standards of Practice, the catheter should be removed immediately if a catheter-related complication is suspected. As you mentioned, therapy must continue and catheter removal is not totally your decision to make. This requires collaboration between the nurses and physicians.

If you determine that the problem is caused by thrombosis inside the catheter lumen, my recommendation would be to treat this with a fibrinolytic agent such as alteplase or retavase. Thrombi and fibrin deposits inside the catheter lumen can be the source of microbial colonization, increasing the risk of bloodstream infection for your patients. Therefore it is extremely important that this is treated or the catheter be removed.

Your assessment must include a risk-benefit analysis. Will the risk of removing and replacing this catheter outweigh the benefit? Or will the benefit outweigh the risk? How long has the catheter been in place? What is the therapy or therapies being infused? What is the anticipated length of therapy remaining? Is this a percutaneously placed catheter or a surgically placed catheter? What is the immune status of the patient?

Let's analyze this situation for a multiple lumen, nontunneled catheter percutaneously inserted via the subclavian vein in a geriatric patient. The catheter has been in place for 10 days and the patient has received hydration and antibiotics to treat urosepsis. The fluids for hydration have been discontinued and the patient is now eating and drinking

adequately. There is 48 hours remaining for the antibiotics. The patient has very poor skin turgor and very limited peripheral venous sites. In this case, it could be reasonable to continue to use the patent lumens and remove this catheter as soon as the last dose of antibiotics has infused. The risk of placing another catheter would outweigh the potential benefits in this situation.

If this were a dual lumen implanted port needed for several future courses of antineoplastic agents in addition to the remaining antibiotics, the risk of allowing a clotted lumen to remain untreated would be very high. For implanted ports, the problem could be a thrombotic lumen occlusion but it could also be a mechanical problem such as a poorly placed port access needle or pinch-off syndrome. In this situation, the risk could include bloodstream infection, infiltration of the port pocket with infused fluid, and catheter emboli related to pinch-off syndrome.

The bottom line is that you cannot rely on assumptions and physician orders based on those assumptions. It appears the physicians are assuming that the risks are low, however this is not always the case. You must document the reason for the occlusion, your assessment, and your actions to prevent further negative outcomes for these patients. It also would appear that the physicians might not understand the procedure for restoring catheter patency with fibrinolytic agents. There is now a drug packaged for the purpose of clearing catheter lumen occlusions – alteplase or Cathflo, 2 mg from Genentech. Maybe these physicians are not aware of the availability of this drug. Physician education may be required. Many times the drug or product manufacturer will have printed resources and access to the physicians that you do not have.

You also must assess the frequency of these problems and determine what is causing a high rate of catheter lumen occlusion. Is this a problem with staff knowledge that can be addressed with inservice training? Is this some other type of performance problem that requires changing the flushing practice or the type of needleless injection system being used?

While there is no clear recommendation that a catheter always be removed when a lumen is clotted, there is definitely a need for some action on your part to reduce the risk for each patient and your facility's liability for these complications.

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