Cathflo for Clearance of Thrombotic Central Catheter Occlusions: Comparing the Efficacy of a 1mg/ 2mL vs. 2mg/ 2mL dose

Snowberger, Erin; Williams, Lauri; Swedish Medical Center, Seattle, WA

Purpose: To analyze the effectiveness of the recently adopted reduced-dose of Cathflo™ activase (alteplase) at achieving sustained restoration of central catheter patency in our inpatient and outpatient patient population with central catheters who experience partial or complete central catheter occlusions.

Background: In March of 2016, Swedish Medical Center reduced our standard dose of Cathflo™ activase (alteplase) to 1mg/ 2 mL from the FDA approved and manufacture recommended dose of 2mg/ 2 mL. The data regarding Cathflo™ activase for catheter clearance has been provided by pharmacy and analyzed to compare the number of patients who required multiple doses to achieve restoration of central catheter patency.

Synthesis of evidence: According to the manufacturer, Genentech, restoration of catheter patency is achieved after administration of Cathflo™ activase 2mg/ 2ml in 75% of central catheters after a dwell of up to 120 minutes. Additionally, after two doses of Cathflo™ activase 2mg/ 2mL, restoration of patency was achieved in 88% of central venous catheters with thrombotic occlusions. For patients with thrombotic occlusions of their central venous catheters treated with Cathflo™ activase 2mg/ 2mL who had restoration of patency after up to two doses maintained it for up to 30 days after treatment. Additionally, in a study published in 2004 in the Journal of Vascular Interventional Radiology, it was found that with a dose of 2mg/ 2mL administered to patients with thrombotic occlusions of peripherally inserted central catheters (PICCs), 92.9% of patients treated with Cathflo™ activase achieved restoration of patency after treatment with two doses that dwelled for 120 minutes each. In a 2015 comparison study published in Hospital Pharmacy that compared the standard treatment (2mg/ 2mL) with a reduced intraluminal dose (1mg/ 1mL), they found similar rates of patency restoration between the two doses (93.3% for 1mg/ mL vs. 94.4% for 2mg/ 2 mL). However, patients treated with the intraluminal dose had more occurrences of line re-occlusions (2.0 vs. 1.6/ re-occlusion per patient), and the time between restoration of patency and line re-occlusion was shorter for patients who received treatment with the intraluminal dose (5.3 vs. 6.7 days).

Change in Practice: There is sufficient evidence that the reduced dose of Cathflo™ activase may be effective at clearing thrombotic catheter occlusions. However, research shows that lines treated with the reduced dose have higher rates of re-occlusion and that re-occlusions happen at a faster rate than patients treated with the standard dose. The cost savings of the reduced dose can be significant, but achieving best patient outcomes is our goal. After a review of current literature as well as analysis of Cathflo™ activase usage at Swedish Medical Center before and after the reduced dosage implementation, our policy is being updated to include an escalating dose schedule. The policy is being amended to advise that patients who are found to have partial or complete thrombotic occlusions receive an initial dose of 1mg/ 2mL (3mL for IVADs), and allowing the Cathflo™ activase to dwell for at least 30 minutes, if the line is
needed for use, and for 120 minutes when able. If patients achieve restoration of patency, no further action will be required. However, for patients who do not achieve successful restoration of patency, the second dose will be escalated to the standard dose of 2mg/2mL (3mL for IVADs), and allowed to dwell for at least 30 minutes, and 120 minutes when able.

Implementation: Pharmacy is currently developing an updated order set that will include the escalating dose schedule, as well as a way to order the Cathflo™ activase in the correct preparation based on the patient’s line type. In an effort to reduce unnecessary Cathflo™ administration, there will be a requirement for an assessment of the line by the Vascular Access Team to be done prior to placing an order for the Cathflo™ activase.

Results: Our results will need to be analyzed after implementation of our new recommendations.

Conclusion: It was found that after our transition to the reduced dose of Cathflo™ activase, patients who received multiple doses went up at four of our five campuses. Based on this data, in conjunction with the review of the current research, we made a recommendation for a practice change. This change process is still development, and will be implemented later this year, along with an updated policy regarding Cathflo™ activase administration. We will need to re-evaluate our data to see if there has been a change in frequency of administration of multiple doses of Cathflo™ activase after our new policy and practice change have been implemented.

Contact: Erin.Snowberger@Swedish.org

References:

1. Cathflo Activase Prescribing Information. Genentech USA, INC.