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Intravenous Vitamin K: Rapid Reversal of Warfarin and Lack of Subsequent Warfarin Resistance

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Case: An elderly man was admitted with choledocholithiasis. He was taking warfarin 3.75 mg/d, and his international normalized ratio (INR) was 3.17. Semiurgent reversal of warfarin to INR < 1.6 was requested for an endoscopic retrograde cholangiopancreatogram (ERCP) 10 hours later. Six hours after he received 10 mg of IV vitamin K, the INR fell from 2.87 to 1.86. Three hours after an additional 5 mg of IV vitamin K, the INR was 1.5, then 1.17. Warfarin was restarted at 2.5 mg/d. A single dose of 2.5 mg of warfarin resulted in an INR of 1.5, so warfarin was held. The next day the INR was 4.6.

A 57-year-old woman taking warfarin 6 mg/d with an INR of 3.17 needed semiurgent reversal of warfarin for ureteral stent within 8 hours. Six and one-half hours after 10 mg of IV vitamin K, her INR was 1.5. Two days later her INR was 1.08 and warfarin 6 mg was restarted. After three 6-mg doses of warfarin, her INR was 2.3.

An elderly woman was admitted with vertebral compression fracture. She was taking warfarin 4 mg/d. Her INR was 3.94. Kyphoplasty was planned in 12 hours, requiring rapid reversal of warfarin. Seven hours after 10 mg of IV vitamin K, her INR was 1.47, then 1.08. Warfarin was reinstated at 4 mg/d; after seven doses, her INR was 1.6.

Discussion: Despite a lack of randomized trials, persistent claims in the literature suggest that IV vitamin K has a slow onset of action, high rate of anaphylaxis, and potential for warfarin resistance. These three cases illustrate that high-dose IV vitamin K results in rapid warfarin reversal (within 6–8 hours) without significant warfarin resistance. No anaphylaxis was seen and current literature suggests a very low rate of anaphylaxis when IV vitamin K is given by slow infusion. In fact, vitamin K may be safer and more effective than plasma, a commonly used alternative.

Conclusion: IV vitamin K is underutilized to reverse warfarin in patients needing semiurgent procedures. It is effective in reversing warfarin INR to desired levels within 6 to 8 hours and may not cause significant warfarin resistance as current literature suggests.