

中文題目：EKOS 融栓術於超高齡、高出血風險病患之病例報告

英文題目：Ekosonic Endovascular System (EKOS) Intervention in an Elderly, High Bleeding Risk Patient: A Case Report

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Introduction: Massive pulmonary embolism (PE) is an acute-onset, life-threatening condition, and percutaneous catheter-directed treatment (CDT) is an alternative reperfusion option in patients with contraindications to thrombolysis. Ekosonic Endovascular System (EKOS) thrombolysis is one of the CDT interventions, but reports to date show that patients undergoing the procedure are rarely over the age of 70, and its safety in high bleeding risk patients has not been well studied.

Case presentation: A 93-year-old bedridden woman was transferred to our medical center with acute dyspnea after four days of treatment for upper gastrointestinal (GI) bleeding and urinary tract infection at a regional hospital. Her oxygen saturation fell to 88-92% while under venturi mask support (6 L/min).

Upon arrival at our hospital, her vital signs were: temperature 35.9 °C, pulse rate 85/min, respiratory rate 24/min, blood pressure 152/73 mmHg. SpO₂ was 96 % on venturi mask at 5 L/min. Echocardiography revealed an enlarged right heart with pulmonary hypertension, presumably due to pulmonary embolization. Emergent computed tomography with angiography found multiple intraluminal filling defects in bilateral pulmonary arteries and their branches, with dilatation of the right ventricle and main pulmonary artery. Deep vein thromboses in major vessels of bilateral lower limbs were also confirmed by compression ultrasound. Subcutaneous low molecular weight heparin (enoxaparin) was administered immediately. The patient was categorized as having massive pulmonary emboli since she rapidly became hemodynamically unstable.

With recent active GI bleeding the patient was at high risk of hemorrhage for systemic thrombolysis. Yet her very advanced age, bedridden status, and ongoing urinary tract infection also put her at extremely high risk for bleeding. Ekosonic Endovascular System (EKOS) thrombolysis was eventually selected after shared decision making with her family and was successfully performed in our cardiac catheterization lab. The patient's oxygen saturation and blood pressure improved within hours of EKOS thrombolysis. She was transferred to regular ward from the intensive care unit three days later. There were no bleeding complications during the whole treatment course.

Discussion: Management of multi-comorbidity patients with high bleeding risk and life-threatening massive PE is fraught with difficulties. Our patient is at a very advanced age and has had recent

active GI bleeding, which put her at an extreme risk for recurrent hemorrhage under systemic thrombolysis. On the other hand, without thrombolysis there is the immediate danger of hemodynamic instability and death. Current literature suggests CDT as an alternative, but there have been no cases reported of patients over the age of 80. After weighing the risks and benefits, ultrasound-assisted CDT with the EKOS system was chosen and was performed safely and effectively in our catheterization lab. As of this date our case is the oldest patient successfully undergoing EKOS intervention for pulmonary embolism.

Conclusion: Our case demonstrates the successful use of EKOS in a patient with massive PE and extreme bleeding risk due to recent GI bleeding and very old age. We offer this case as an example for future decision-making in treating patients with similar backgrounds.