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Nursing care in a patient with intermediate-high-risk acute pulmonary embolism treated with the EKOS system: a case report

Leonarda Berišić*, Biljana Hržić, Ivica Benko, Matea Anđelić, Martina Vidak

Dubrava University Hospital, Zagreb, Croatia

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***ADDRESS FOR CORRESPONDENCE:** Leonarda Berišić, Klinička bolnica Dubrava, Av. G. Šuška 6, HR-10000 Zagreb, Croatia. / Phone: +385-98-916-9072 / E-mail: berisicleonarda@gmail.com

ORCID: Leonarda Berišić, https://orcid.org/0009-0003-6902-5791 • Biljana Hržić, https://orcid.org/0000-0001-5441-0900
Ivica Benko, https://orcid.org/0000-0002-1878-0880 • Matea Anđelić, https://orcid.org/0009-0000-0806-7451
Martina Vidak, https://orcid.org/0009-0006-1973-8509

Introduction: Pulmonary embolism commonly results from deep vein thrombosis. Treatment is guided by clinical severity, hemodynamic status, and risk stratification. Anticoagulation is the cornerstone of therapy, while selected patients may require reperfusion strategies, including systemic thrombolysis, catheter-directed thrombolysis, or surgical embolectomy.[1,2] The EKOS system uses ultrasound-assisted catheter-directed thrombolysis to deliver a thrombolytic agent locally into the pulmonary artery while applying low-intensity ultrasound energy.[2]

Case report: We present the case of a 36-year-old patient admitted to the emergency department with intermediate-high-risk acute pulmonary embolism. Symptoms had started 3–4 days before admission, with exertional chest tightness. CT pulmonary angiography revealed a saddle pulmonary embolus extending into both pulmonary arteries and their lobar, segmental, and some subsegmental branches. Laboratory testing showed elevated hs-troponin I and NT-proBNP levels, while echocardiography demonstrated right ventricular dilatation and pressure overload, with an estimated pulmonary artery pressure of approximately 55 mmHg. Venous Doppler ultrasonography confirmed left lower-extremity deep vein thrombosis. Treatment with unfractionated heparin was initiated. Given the extensive pulmonary embolism and evidence of right ventricular strain, digital subtraction angiography of the pulmonary arteries was performed via right femoral venous access. The mean pulmonary artery pressure was 30 mmHg, and an EKOS catheter was positioned for local thrombolytic therapy. The procedure and subsequent treatment were completed without complications, with clinical and echocardiographic improvement. Nursing care plays a key role throughout treatment. It includes continuous monitoring of vital signs, respiratory and hemodynamic status, and level of consciousness, along with timely recognition of potential complications, particularly bleeding. Attention is paid to monitoring the femoral vascular access site, maintaining the prescribed patient positioning and bed rest, monitoring thrombolytic and anticoagulant therapy and relevant laboratory parameters, and ensuring appropriate catheter positioning and patency of the associated infusion lines.[3]

Conclusion: The use of the EKOS system enabled catheter-directed local thrombolytic therapy with a favorable clinical outcome. Continuous and structured nursing surveillance is an important component of safe treatment and timely recognition of potential complications.

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LITERATURE

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