Protokol intervencijskog liječenja masivne i submasivne embolije pluća 12-satnom mehaničkom i farmakološkom trombolizom uz 72-satnu hospitalizaciju

Protocol for interventional treatment of massive and submassive pulmonary embolism by 12-hour mechanical and pharmacological thrombolysis during 72-hours hospitalisation

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1. Postavljanjem kliničke sumnje na plućnu emboliju, injicira se bolus doza heparina, i započinje obrada koja uključuje žurni ehokardiogram, hsTnT, proBNP-NT i MSCT angiogram plućne arterijske cirkulacije, testiranje prokoagulantnih čimbenika. Definira se stupanj težine plućne embolije (masivna, submasivna), procijene se kontraindikacije za trombolitičku terapiju, pozove se pripravan intervencijski tim, a bolesnik se transportira u invazivni laboratorij (u težem kliničkom stanju, žurno, na temelju kliničke procjene i bez MSCT angiograma), uz prethodnu punkciju kubitalne vene.^{1,2}
2. U intervencijskom laboratoriju se preko žice, u venu uvede 6F uvodnica. Potom se uz fluoroskopiju, u glavnu plućnu arteriju smjesti 5F angiografski kateter („Multipurpose“ ili JR 4). Potom se izmjene kateteri, uvede se 5 ili 6F „Pigtail“ kateter. Izmjeri se tlak u plućnoj arteriji te se uradi plućna angiografija. Zatim se uradi mehanička fragmentacija embolusa rotacijom katetera. Cilj mehaničke fragmentacije je reducirati stupanj opstrukcije trombom u deblu i glavnim ograncima plućne arterije, ukloniti neposrednu životnu opasnost. Potom se, aplicira bolus alteplaze od 2,5 mg tijekom 2 min. Ukoliko je klinički i angiografski indicirano, procedura se ponovi drugoj grani plućne arterije. Potom se nastavi intrapulmonalna trombolitička terapija kontinuiranom infuzijom 25 mg alteplaze kroz sljedećih 12 sati. Po isteku 12 sati nastavlja se kroz kateter infuzija heparina. Uradi se kontrolna angiografija i mjerenje plućnog tlaka. Potom se kateter i uvodnica izvuče iz vene.
3. Liječenje se nastavlja primjenom niskomolekularnog heparina, u dozi prilagođenoj tjelesnoj težini.
4. Heparin se zamijeni oralnom antikoagulacijskom terapijom optimalno NOAC-om (rivaroksaban, dabigatran, apixaban) tijekom 6-12 mjeseci.
5. Za 6 mjeseci predviđi se kontrolni pregled (EKG, ehokardiogram, DLCO).

1. Upon clinical suspicion of pulmonary embolism, bolus dose of heparin is administered, and diagnostic process including urgent echocardiogram, hsTnT, NT-proBNP and MSCT pulmonary angiogram, procoagulant factors begun. The degree of severity of pulmonary embolism (massive, submassive), as well as contraindications to thrombolytic therapy, is assessed, the interventional team prompted, and the patient transported to invasive laboratory (in severe clinical condition, urgently, on the basis of clinical assessment and prior to MSCT angiography), puncture of the cubital vein being done in the Coronary Care Unit.^{1,2}
2. In the intervention lab, 6F sheath is introduced cubitally. Under fluoroscopic guidance, 5F angiographic catheter (Multipurpose or JR 4) is placed in the main pulmonary artery, and exchanged for 5F pigtail catheter. The pulmonary artery pressure is registered, and pulmonary angiography done, followed by mechanical fragmentation of emboli by rotating of the catheter. The goal is to reduce the degree of obstruction caused by thrombi in the trunk and main branches of the pulmonary artery, and resolve the immediate threat to life. Bolus of 2.5 mg/min of alteplase is administered in one of main branches of pulmonary artery. If clinically and angiographically indicated, procedure should be repeated in the other main branch. Intrapulmonary thrombolytic therapy is continued by infusion of 25 mg alteplase over the next 12 hours, followed by standard heparin infusion (starting at 1000 i.e. per hour). Control angiography and of pulmonary pressure measurement is performed as soon as interventional laboratory is available, and catheter and sheath removed.
3. Treatment is continued with subcutaneous low molecular weight heparin (LMWH), at a dose adjusted to body weight.
4. LMWH is replaced with the oral anticoagulation therapy, optimal NOAC (rivaroxaban, dabigatran, apixaban) and continued for 6-12 months.
5. Follow-up is performed at 6 months (ECG, echocardiogram, DLCO).

LITERATURE

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