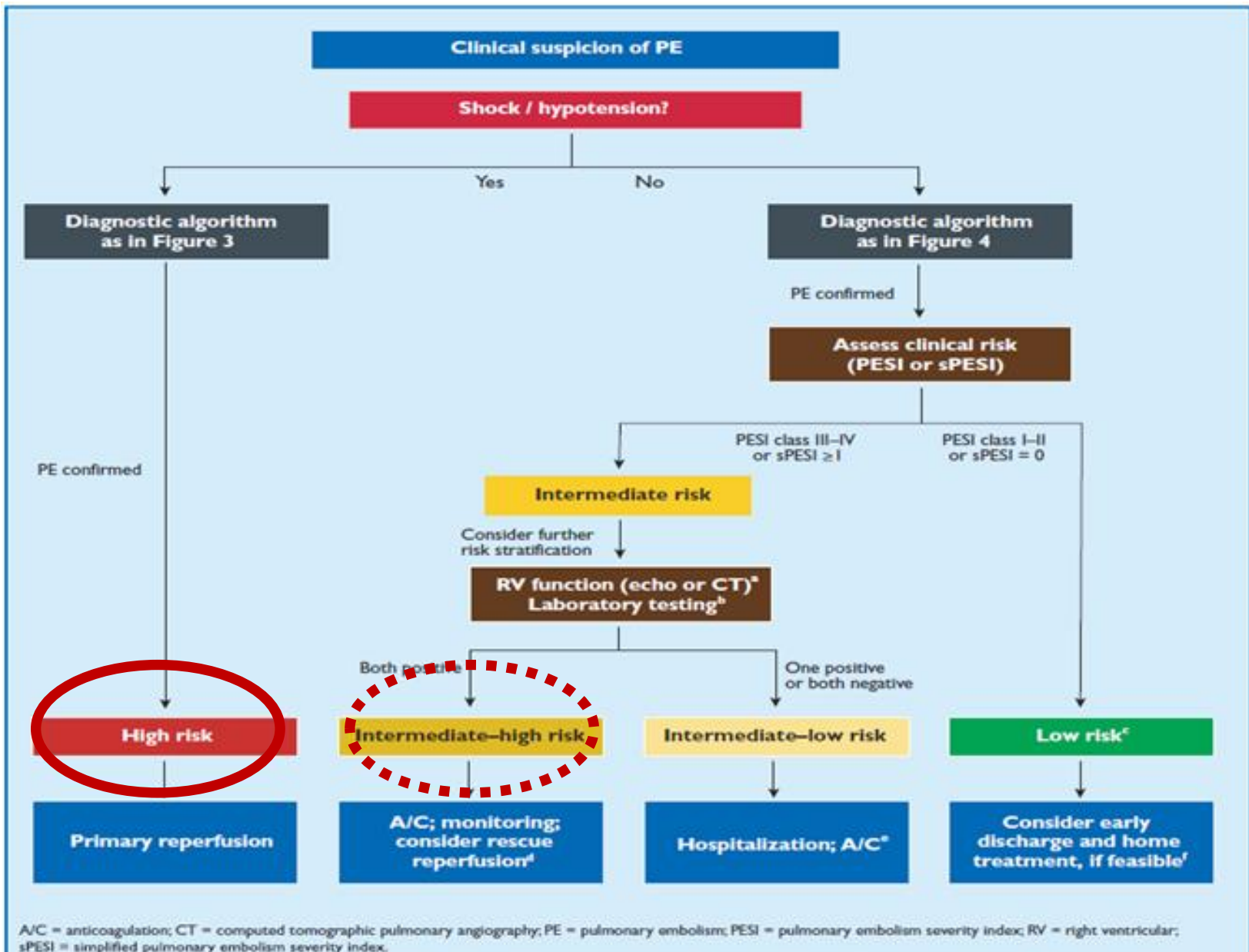


The efficacy and safety of endovascular mechanical fragmentation with thrombolytic therapy in patients with acute massive pulmonary embolism

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Objective: to evaluate the efficacy and safety of endovascular mechanical fragmentation (EMF) with thrombolytic therapy (TLT) in patients with acute massive pulmonary embolism (AMPE).



Study design

Patients with acute massive pulmonary embolism
(Miller index ≥ 22 points)

Stratification

High risk

Intermediate high risk

(sPESI ≥ 1)

Pharmaco-mechanical reperfusion

1. Mortality
2. Safety
3. Outcomes of pulmonary hypertension (6 month follow up)



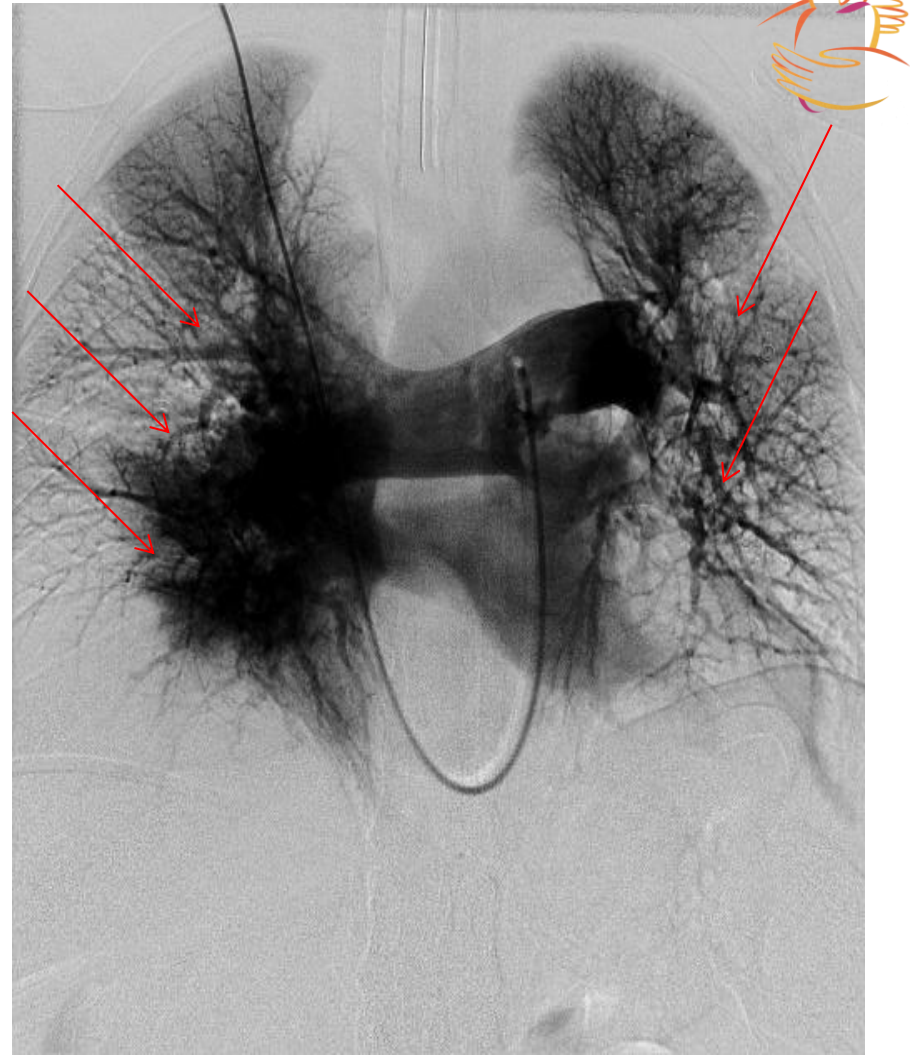
End points:

- Primary endpoint: 30 day mortality
- Secondary end point:
 - hemorrhagic complications,
 - pulmonary artery or heart structure perforation,
 - chronic thromboembolic pulmonary hypertension

From 2008 till 2014 we have included in study **176** patients with AMPE.

Ultrasound examination, echocardiography and pulmonary arteriography were performed to all patients on admission to hospital and 5 day after EMF with TLT.

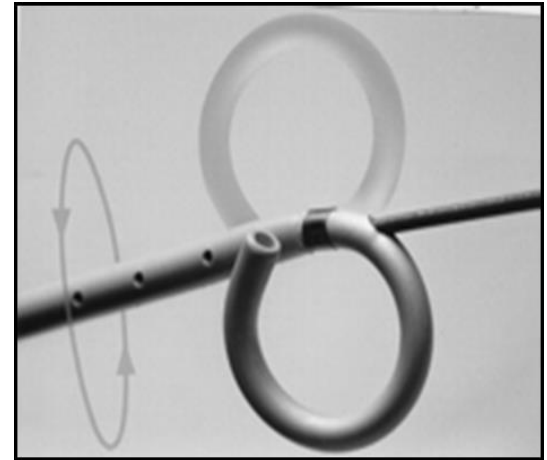
- The average pressure in PA 37 ± 10 torr.
- The original index Miller was 25.6 ± 2.8



Interventional treatments included:



- Mechanical destruction of thromboembolic masses by Pigtail catheter.

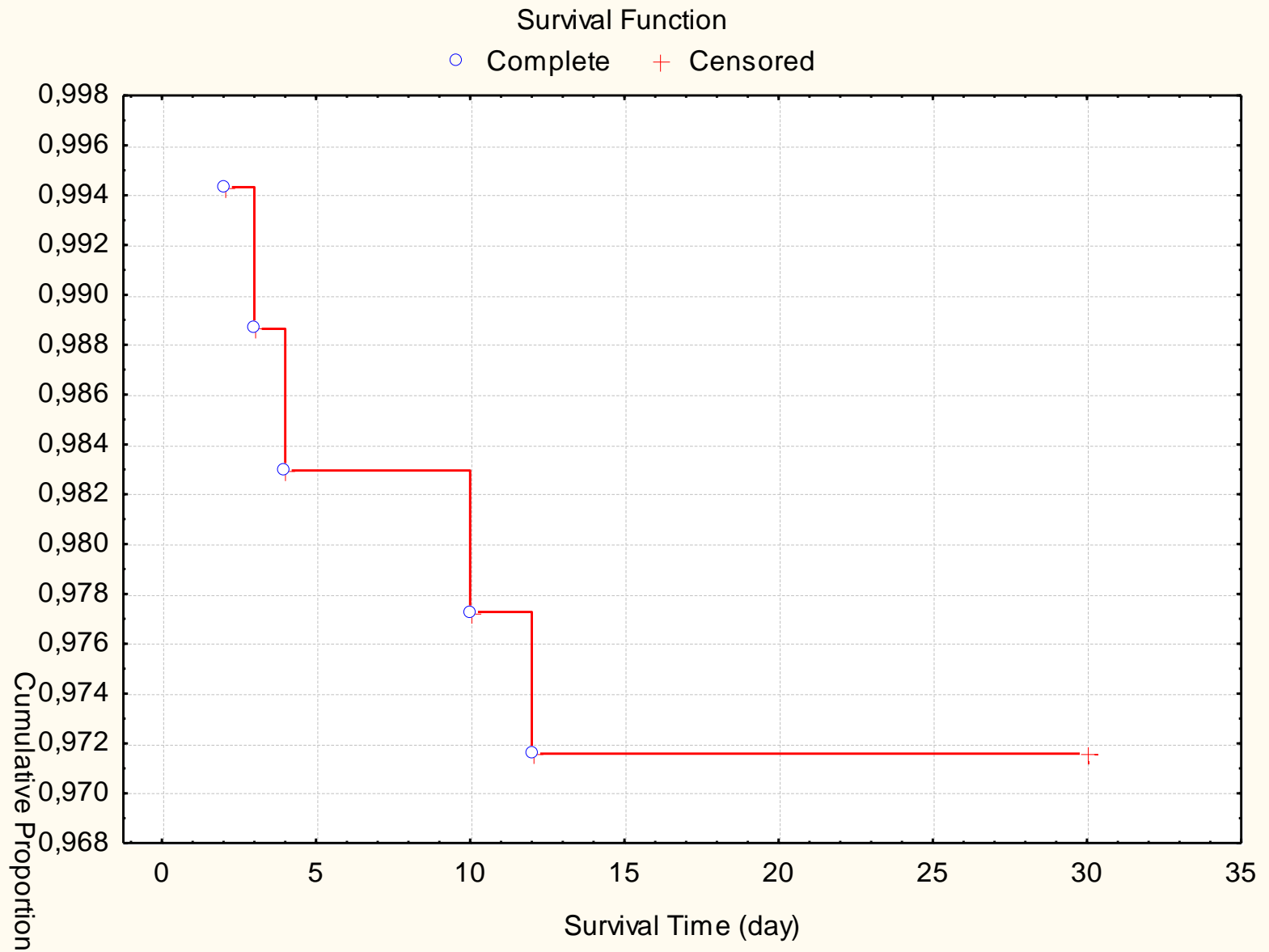


- During EMF, 50 mg of recombinant tissue plasminogen activator (rt-PA) was injected into embolus through catheter
- followed by 2hrs intravenous infusion 50 mg of rt-PA.
- Within the first 24 hrs on embolus fragmentation completion all patients received heparin sodium at a dose 1,000 IU/h (increase of activated partial thromboplastin time to 1.5-2 times from the reference range).



Results:

- ✓ Regression of clinical manifestations of acute respiratory failure in the early period was observed in 172 patients (97.7%).
- ✓ Hemoptysis, chest pain, shortness of breath at rest were controlled in all patients at discharge from the hospital.





Results:

- Early hospital mortality (30-day) occurred in 5 (2.8%) patients.
- 4 (2.3%) patients died due to progressive respiratory and heart failure.
- 1 (0.6%) case of fatal hemorrhagic stroke after TLT was determined.
- The average pressure in pulmonary artery PA decreased from 36.3 ± 8.9 to 23.8 ± 8.5 torr ($p < .05$).
- Pulmonary hypertension in 21 cases (16%)



Conclusions:

- ✓ **Restoration of blood flow in PA improves perfusion of lungs and reduces the pressure in PA, RA, RV.**
- ✓ **Endovascular mechanical fragmentation with thrombolytic therapy is the efficient and safe treatment of patients with acute massive pulmonary embolism**



**Thank you for your
attention !**

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