

ЛЬВІВСЬКИЙ НАЦІОНАЛЬНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ
імені Данила Галицького

Факультет післядипломної освіти

Кафедра хірургії та трансплантології

Лікування тромбоемболії легеневих артерій

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2021

Групи ризику

Table 8 Classification of pulmonary embolism severity and the risk of early (in-hospital or 30 day) death

Early mortality risk		Indicators of risk			
		Haemodynamic instability ^a	Clinical parameters of PE severity and/or comorbidity: PESI class III–V or sPESI \geq I	RV dysfunction on TTE or CTPA ^b	Elevated cardiac troponin levels ^c
High		+	(+) ^d	+	(+)
Intermediate	Intermediate–high	-	+ ^e	+	+
	Intermediate–low	-	+ ^e	One (or none) positive	
Low		-	-	-	Assesment optional; if assessed, negative

Стратегії лікування

- Тромболізис
- Хірургічна тромбоемболектомія
- Ендоваскулярні методи
- Антикоагулянти

- Підтримуючі заходи
 - Гіпоксемія
 - Дисфункція ПШ
 - Гемодинамічний провал



Системний тромболізис

Переваги

- Вища ефективність дезобструкції, в порівнянні з гепарином
- Супроводжується кращим відновленням функції ПШ
- Зменшує летальність при високому ризику і середньому ризику
- Попереджає ПТЕЛГ

Термін

- Найвищий ефект – 48 год від початку
- Позитивний ефект – до 6-14 д від початку

Ціна тромболізису

Thrombolysis for Pulmonary Embolism and Risk of All-Cause Mortality, Major Bleeding, and Intracranial Hemorrhage: A Meta-Analysis

Chatterjee S, Chakraborty A, Weinberg I, et al. JAMA 2014;311:2414-21.

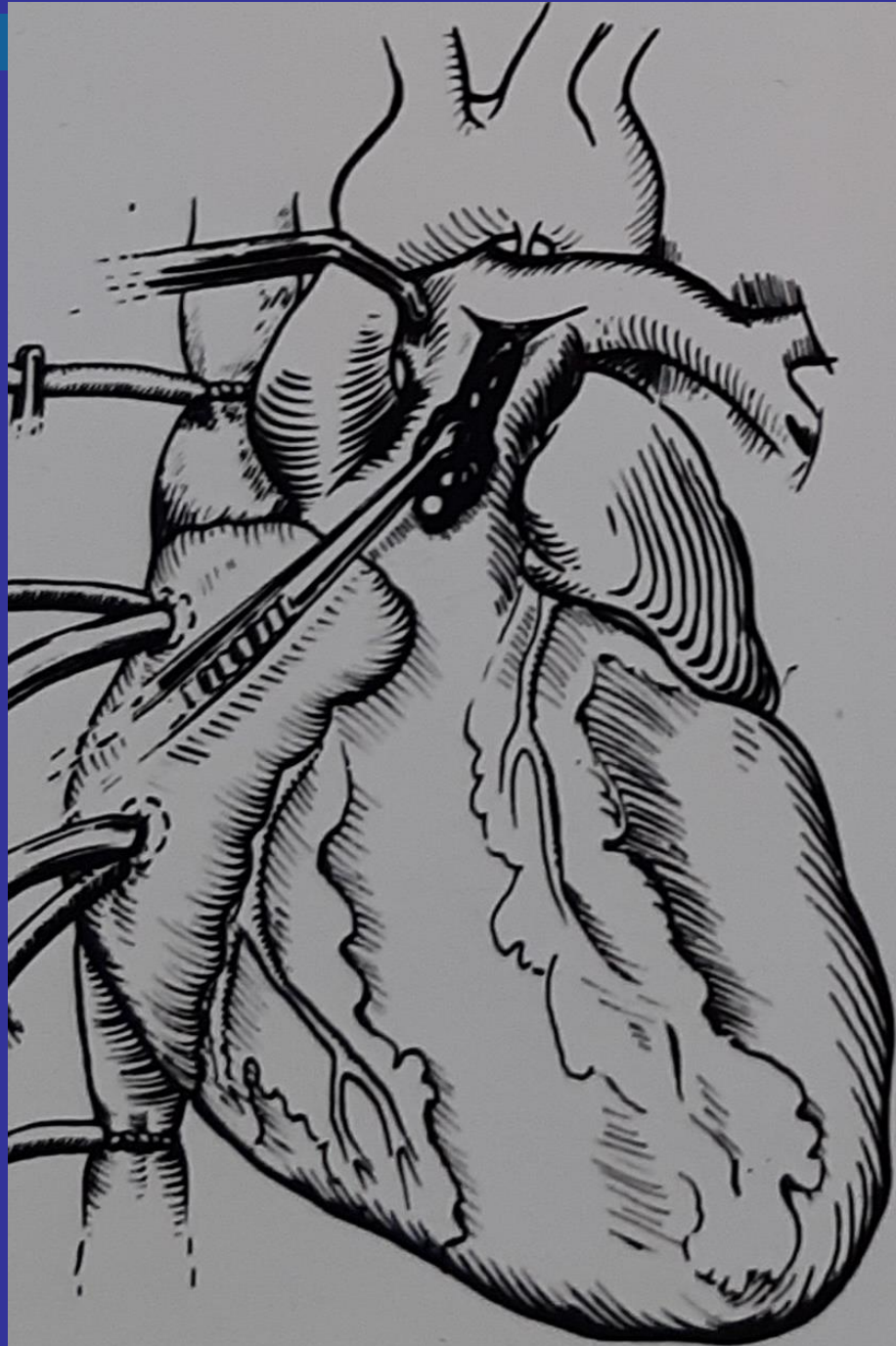
NNT = 54). In inter-
with lower mortality
bleeding events (OR,

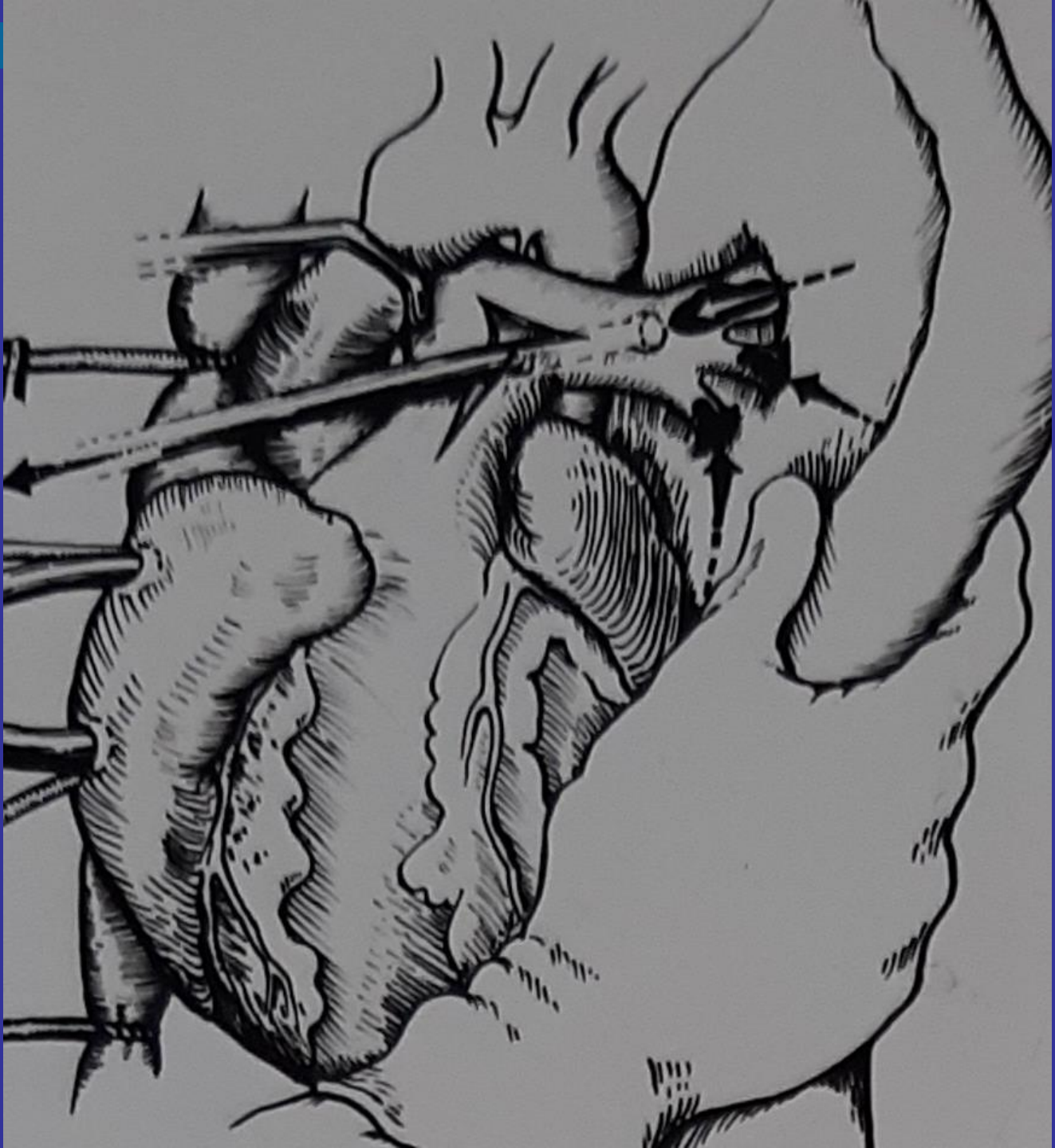
Comment: The
is the first analysis of
statistical power to det
including hemodynamically stable patients with right ventricular dysfunction. However, if so, then improvement in mortality must be tempered by what appears to be significantly increased risk of major bleeding and intracranial hemorrhage with use of thrombolytic therapy for PE, particularly in patients older than 65 years of age.

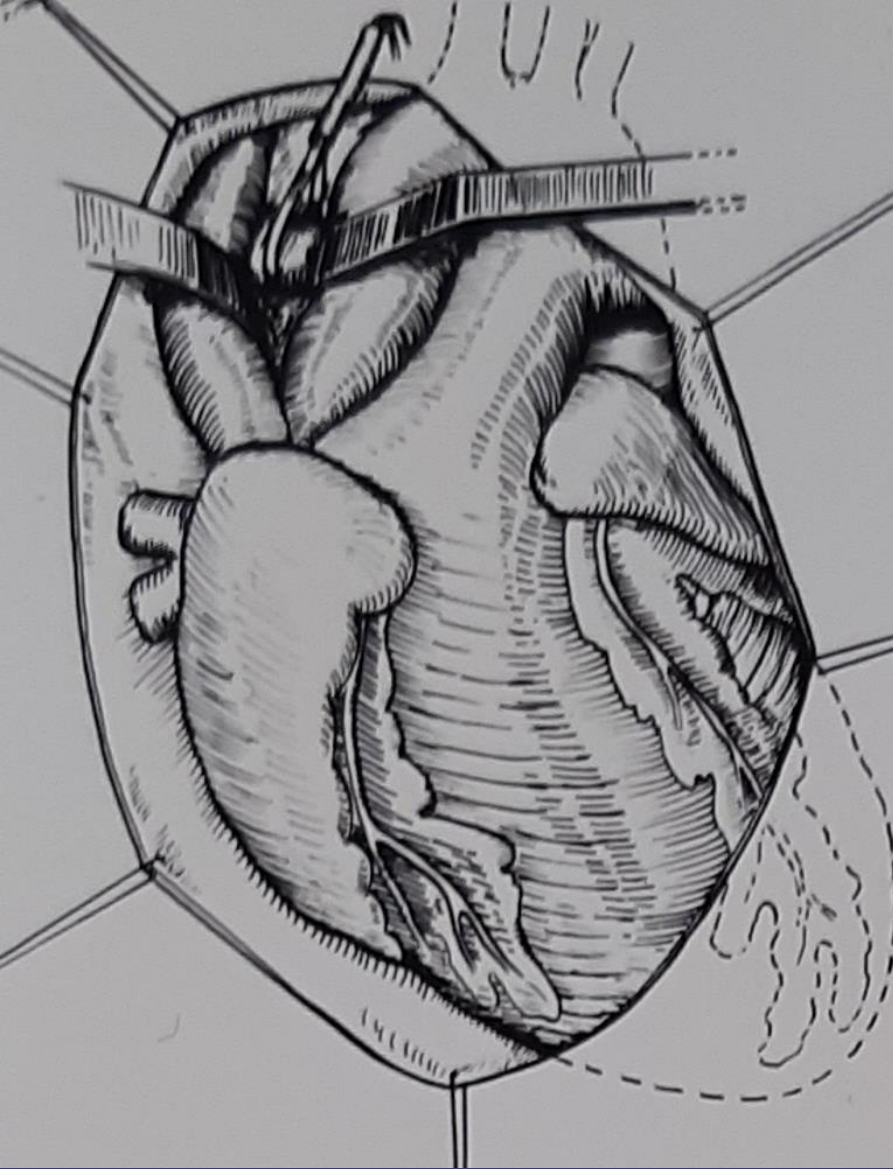
that systemic thrombolytics for PE are associated with a 47% mortality risk reduction but this came at the cost of a 9.2% major bleeding rate and a 1.5% stroke rate. As a result, only 30% of patients eligible for systemic thrombolytics end up receiving the treatment [38]. The Pulmonary Embolism



Хірургічна тромбоемболектомія







Survival and recurrence after acute pulmonary embolism treated with pulmonary embolectomy or thrombolysis in New York State, 1999 to 2013



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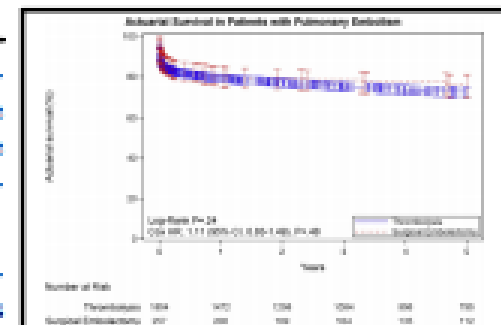
ABSTRACT

Background: Pulmonary embolism (PE) results in more than 250,000 hospitalizations annually in the United States, with high mortality. Outcome data are limited, and reperfusion strategies remain controversial. Here we evaluated the outcomes of thrombolysis and surgical embolectomy in patients with acute PE using a statewide database.

Methods: Among 174,322 patients hospitalized with PE in New York State between 1999 and 2013, we performed a retrospective comparison of 2111 adults with acute PE who underwent either thrombolysis (n = 1854; 88%) or surgical embolectomy (n = 257; 12%) as first-line therapy. Patients were identified using a mandatory database. The median follow-up was 4.2 years (range, 0-16.3 years). The primary study endpoint was all-cause mortality; secondary outcomes included recurrent PE, recurrent deep vein thrombosis, reintervention, and stroke.

Results: In 2111 patients who underwent reperfusion, there was no difference in 30-day mortality between those who underwent thrombolysis and those who underwent surgical embolectomy (15.2% vs 13.2%; odds ratio [OR], 1.12, 95% confidence interval [CI], 0.72-1.73). Thrombolysis was associated with higher risk of stroke (1.9% vs 0.8%; OR, 4.70; 95% CI, 1.08-20.42) and reintervention (3.8% vs 1.2%; OR, 7.16; 95% CI, 2.17-23.62) at 30 days. Five-year actuarial survival was similar in the 2 groups (72.4% [95% CI, 70.3%-74.5%] vs 76.1% [95% CI, 70.2%-81.0%]; hazard ratio (HR) for death, 1.11; 95% CI, 0.83-1.49). Thrombolysis was associated with a higher rate of recurrent PE necessitating inpatient readmission (7.9% [95% CI, 6.9%-9.4%] vs 2.8% [95% CI, 1.1%-5.8%]; HR, 3.38; 95% CI, 1.48-7.73).

Conclusions: Pulmonary embolectomy and thrombolysis are associated with similar early and long-term survival, supporting guideline recommendations for embolectomy when thrombolysis is contraindicated. (*J Thorac Cardiovasc Surg* 2018;155:1084-90)



Actuarial survival after thrombolysis or surgical embolectomy in New York State, 1999 to 2013.

Central Message

Pulmonary embolectomy is associated with similar early and long-term survival compared to thrombolysis, supporting guideline recommendations for embolectomy when thrombolysis is contraindicated.

Perspective

Pulmonary embolism results in more than 250,000 hospitalizations annually in the United States, with high mortality. Outcome data are limited, and choice of reperfusion strategy remains controversial. We provide the first multi-center data evaluating early and long-term outcomes after pulmonary embolectomy and thrombolysis.

See Editorial Commentaries pages 1091 and 1093.

See Editorial page 1080.

2019 ESC Guidelines for the diagnosis and management of acute pulmonary embolism developed in collaboration with the European Respiratory Society (ERS)

6.6 Recommendations for acute-phase treatment of high-risk pulmonary embolism^a

Surgical pulmonary embolectomy is recommended for patients with high-risk PE, in whom thrombolysis is contraindicated or has failed.^{d 281}

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6.7 Recommendations for acute-phase treatment of intermediate- or low-risk pulmonary embolism

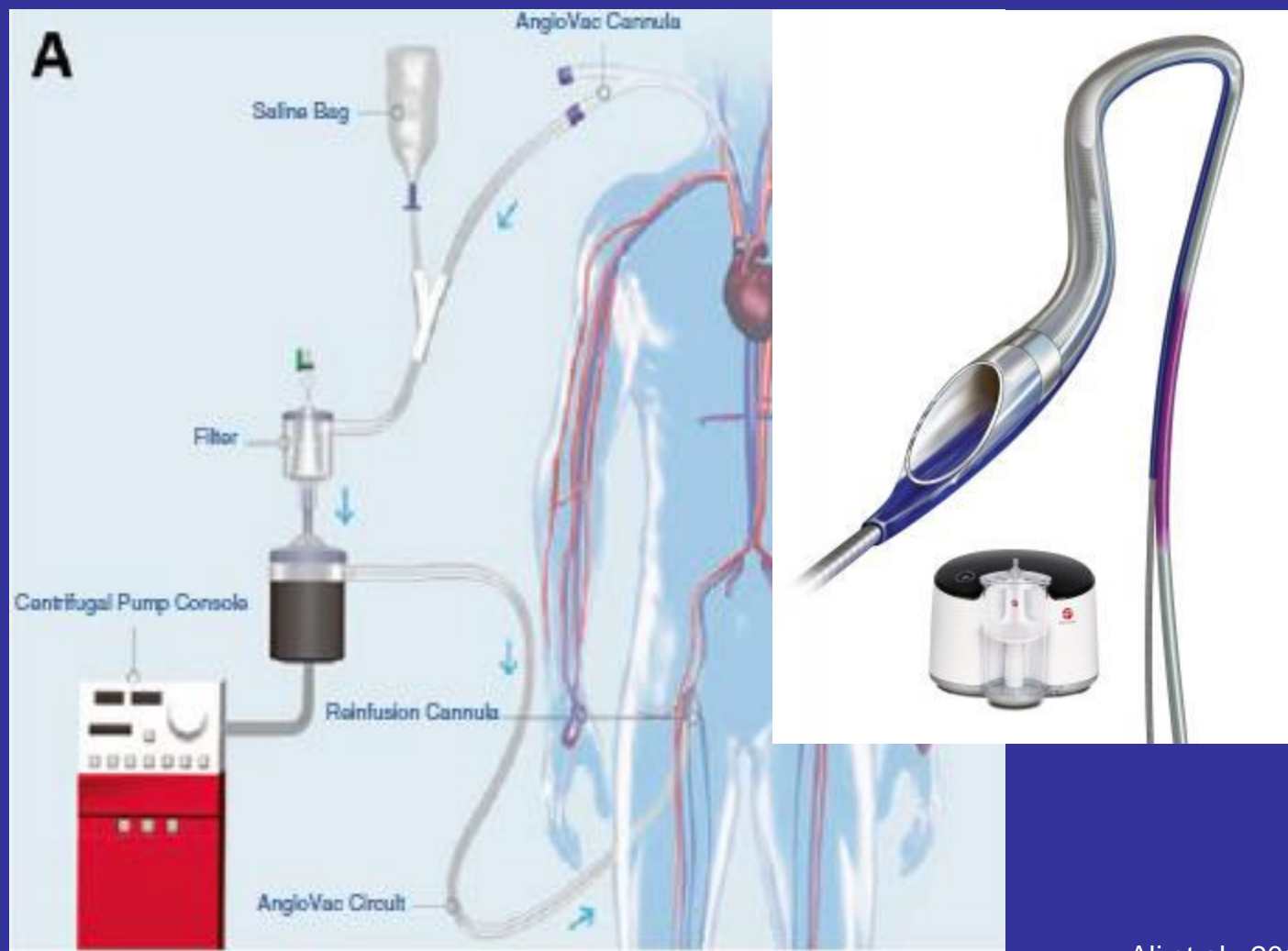
As an alternative to rescue thrombolytic therapy, surgical embolectomy^e or percutaneous catheter-directed treatment^e should be considered for patients with haemodynamic deterioration on anticoagulation treatment.

IIa**C**



Ендоваскулярні методики

Катетерна аспірація тромбоемболів





Антикоагулянти

Гепарин

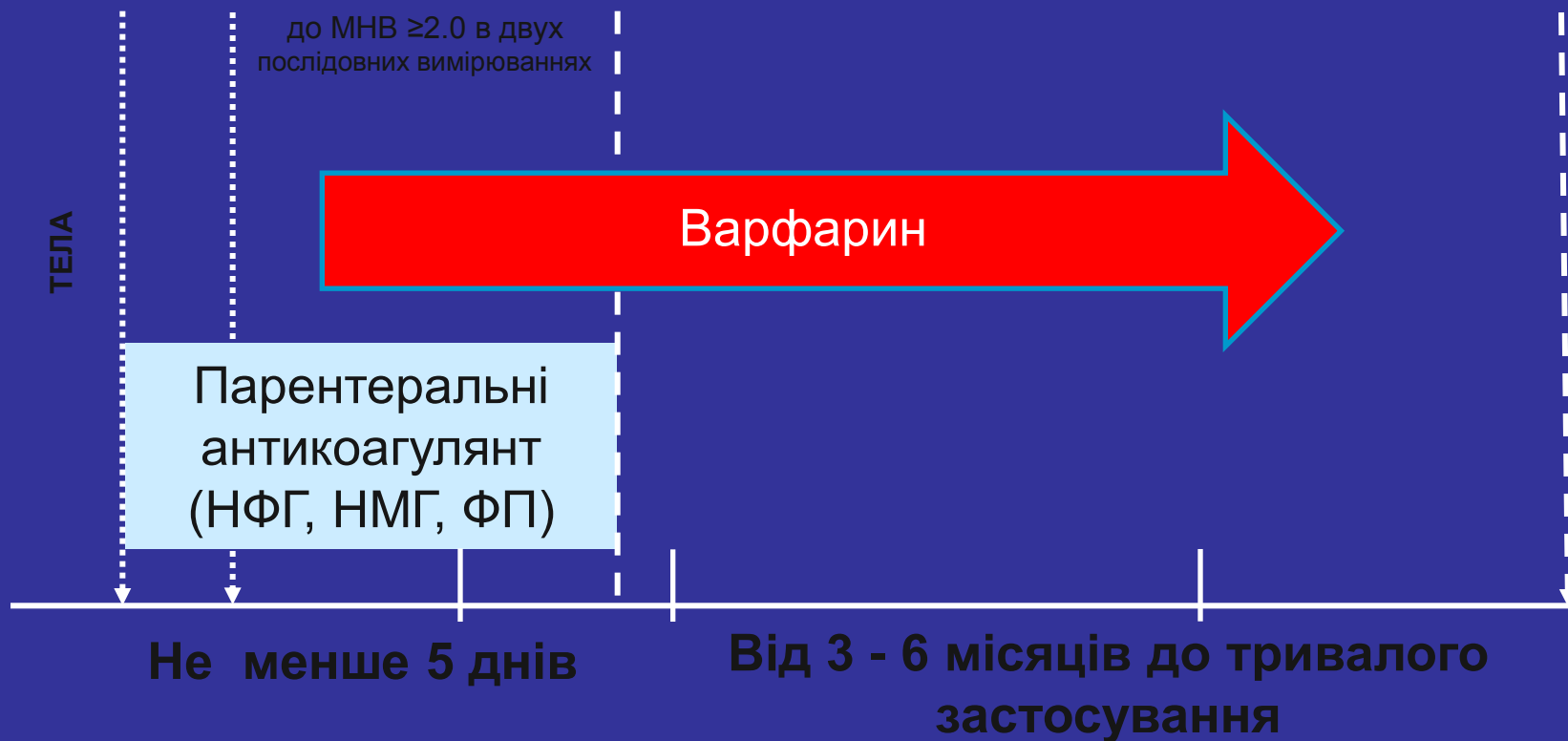
Supplementary Table 7 Adjustment of unfractionated heparin dosage

Activated partial thromboplastin time	Change of dosage
<35 s (<1.2 × control)	80 U/kg bolus, increase infusion rate by 4 U/kg/h
35–45 s (1.2–1.5 × control)	40 U/kg bolus, increase infusion rate by 2 U/kg/h
46–70 s (1.5–2.3 × control)	No change
71–90 s (2.3–3.0 × control)	Reduce infusion rate by 2 U/kg/h
>90 s (>3.0 × control)	Stop infusion for 1 h, then reduce infusion rate by 3 U/kg/h

НМ Гепарин

	Dosage	Interval
Enoxaparin	1.0 mg/kg	Every 12 h
	or	
	1.5 mg/kg ^a	Once daily ^a
Tinzaparin	175 U/kg	Once daily
Dalteparin	100 IU/kg ^b	Every 12 h ^b
	or	
	200 IU/kg ^b	Once daily ^b
Nadroparin ^c	86 IU/kg	Every 12 h
	or	
	171 IU/kg	Once daily
Fondaparinux	5 mg (body weight <50 kg);	Once daily
	7.5 mg (body weight 50–100 kg);	
	10 mg (body weight >100 kg)	

Традиційна схема антикоагулянтної терапії



МНВ = міжнародне нормалізоване відношення;

1. Kearon C et al. Chest 2016; 2. Pradaxa SPC; 3. Lixiana SPC; 4. Xarelto SPC; 5. Eliquis SPC.

Current versions available online at: <http://www.medicines.org.uk/emc/> Також актуальніе

версии инструкций доступны на сайте <http://www.driz.com.ua/>

Нові пероральні антикоагулянти

