ΕΠΕΜΥ - IBRE
Πανελλήνιο Διεταιρικό Επιστημονικό Συμπόσιο Καρδιολογίας - Ρευματολογίας 2013

ΘΡΟΜΒΩΣΗ ΚΑΙ ΑΝΤΙΘΡΟΜΒΩΤΙΚΗ ΑΓΩΓΗ

Ιωάννης Δ. Κακίσης

Αν. Καθηγητής Αγγειοχειρουργικής

Αγγειοχειρουργική Κλινική, «Αττικόν» Νοσοκομείο

Σάββατο 19 Οκτωβρίου 2013

Αγγειοχειρουργική Κλινική Ιατρικής Σχολής Πανεπιστημίου Αθηνών Π.Γ.Ν. "Αττικόν"

Dept. of Vascular Surgery - University of Athens

ΘΕΡΑΠΕΙΑ ΕΒΦΘ

ΣΤΟΧΟΣ	Καμία θεραπεία	Φίλτρο ΚΚΦ	Αντιπηκτικά	Θρομβολυτικά	Θρομβεκτομή
Πρόληψη ΠΕ		X	X	X	X
Πρόληψη επέκτασης			X	X	±
Πρόληψη υποτροπής			X	X	±
Αποκατάσταση βατότητας				X	X
Διατήρηση βαλβιδικής λειτουργίας				X	X
Πρόληψη χρόνιας φλεβικής ανεπάρκειας			±	X	X

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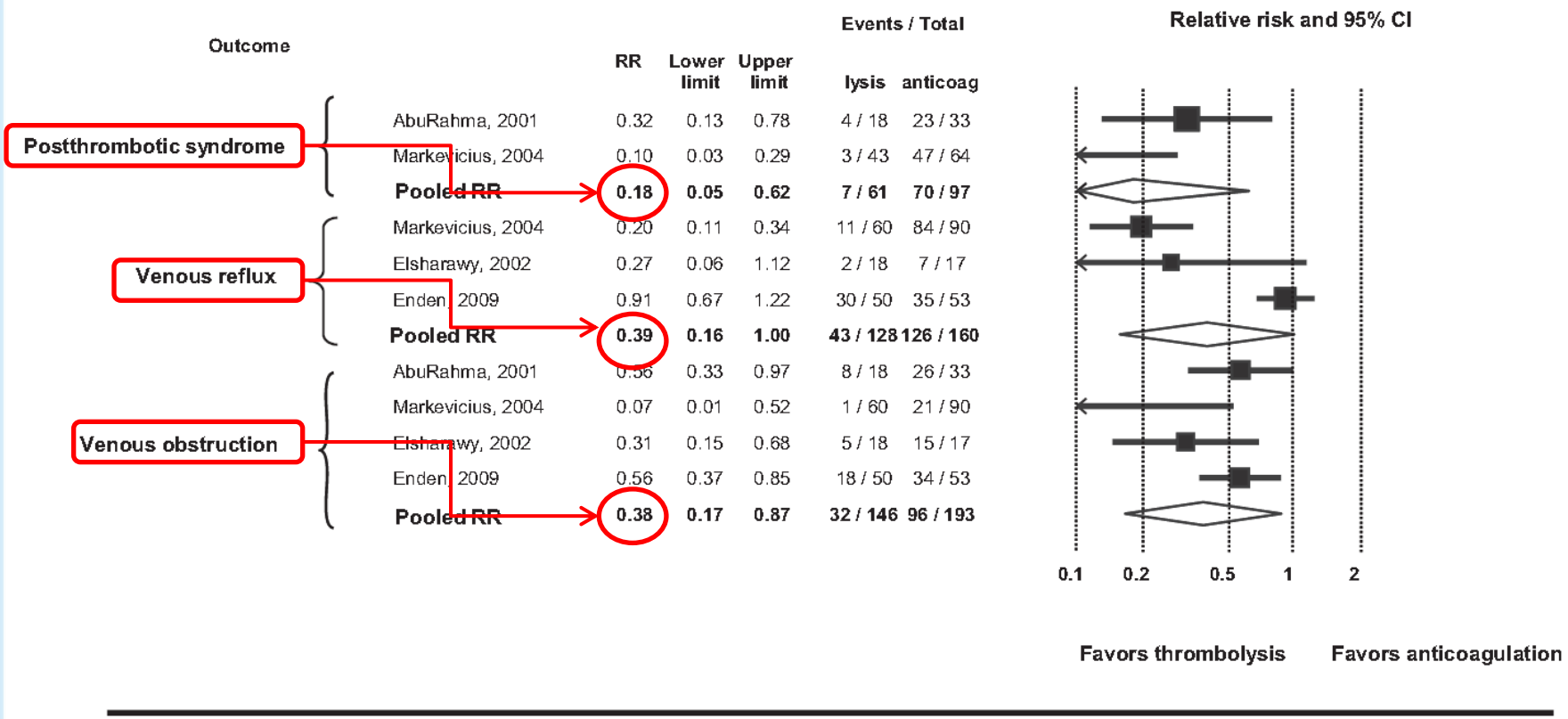
ΜΕΤΑ-ΑΝΑΛΥΣΗ ΤΟΠΙΚΗΣ ΘΡΟΜΒΟΛΥΣΗΣ ΕΝΑΝΤΙ ΑΝΤΙΠΗΚΤΙΚΗΣ ΑΓΩΓΗΣ



Casey et al. J Vasc Surg 2012;55:1463-73

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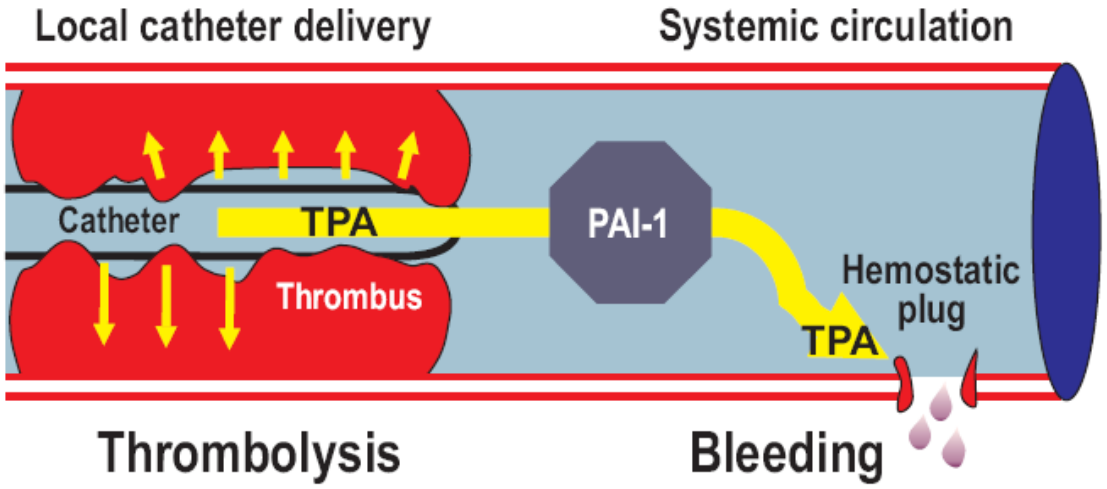

Συγγραφέας	Έτος	Αιμορραγία
Goldhaber	1990	0-3%
Turpie	1990	3-33%
Schweizer	1998	5%
Schweizer	2000	2-10%
Aburahma	2001	0
Elsharawy	2002	0
Laiho	2004	6%
Enden	2009	3%

ΘΡΟΜΒΟΛΥΣΗ

- **Ενδείξεις:** νέοι, μη χειρουργημένοι, με πρόσφατο θρόμβο στη λαγονομηριαία περιοχή
- **Αντενδείξεις:**
  - πρόσφατο χειρουργικό τραύμα
  - πεπτικό έλκος
  - κακοήθη νοσήματα πεπτικού
  - αιμορραγική διάθεση
  - ενδοκαρδιακοί θρόμβοι

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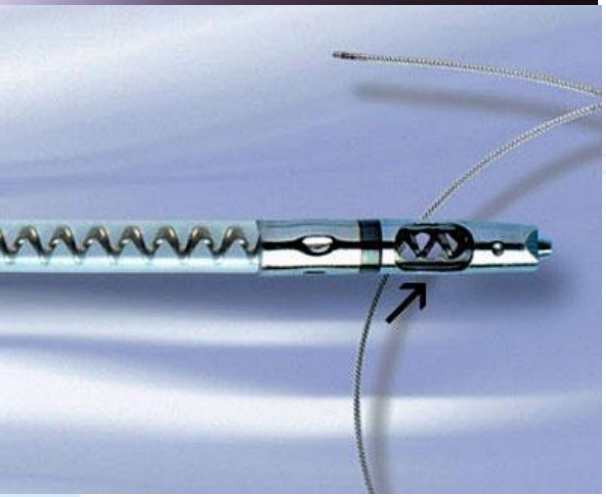
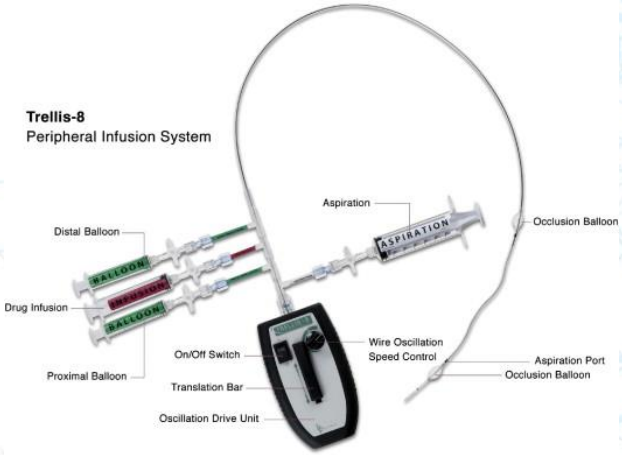
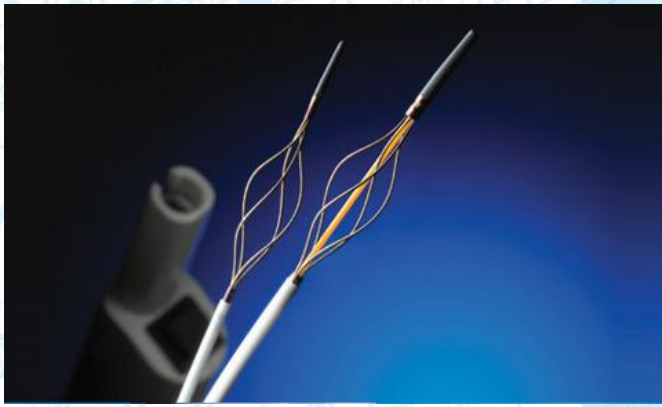
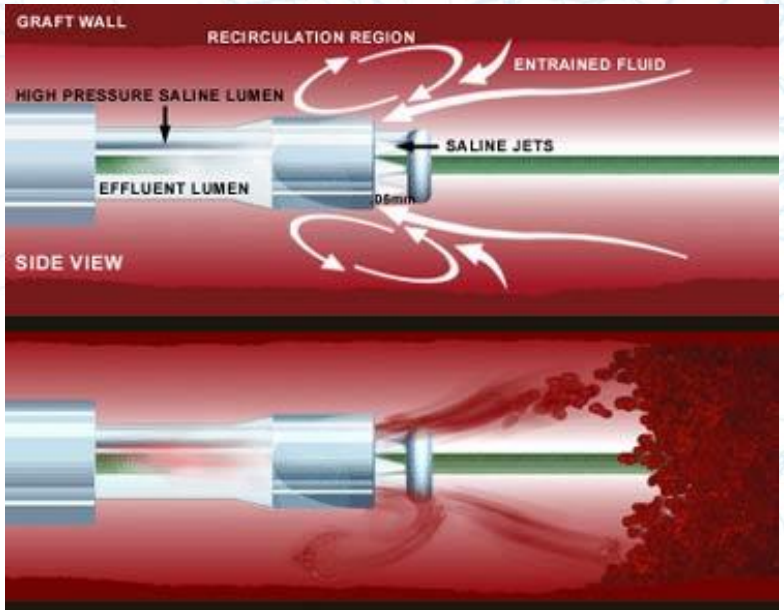
ΘΡΟΜΒΟΛΥΣΗ – ΜΗΧΑΝΙΚΗ ΘΡΟΜΒΕΚΤΟΜΗ









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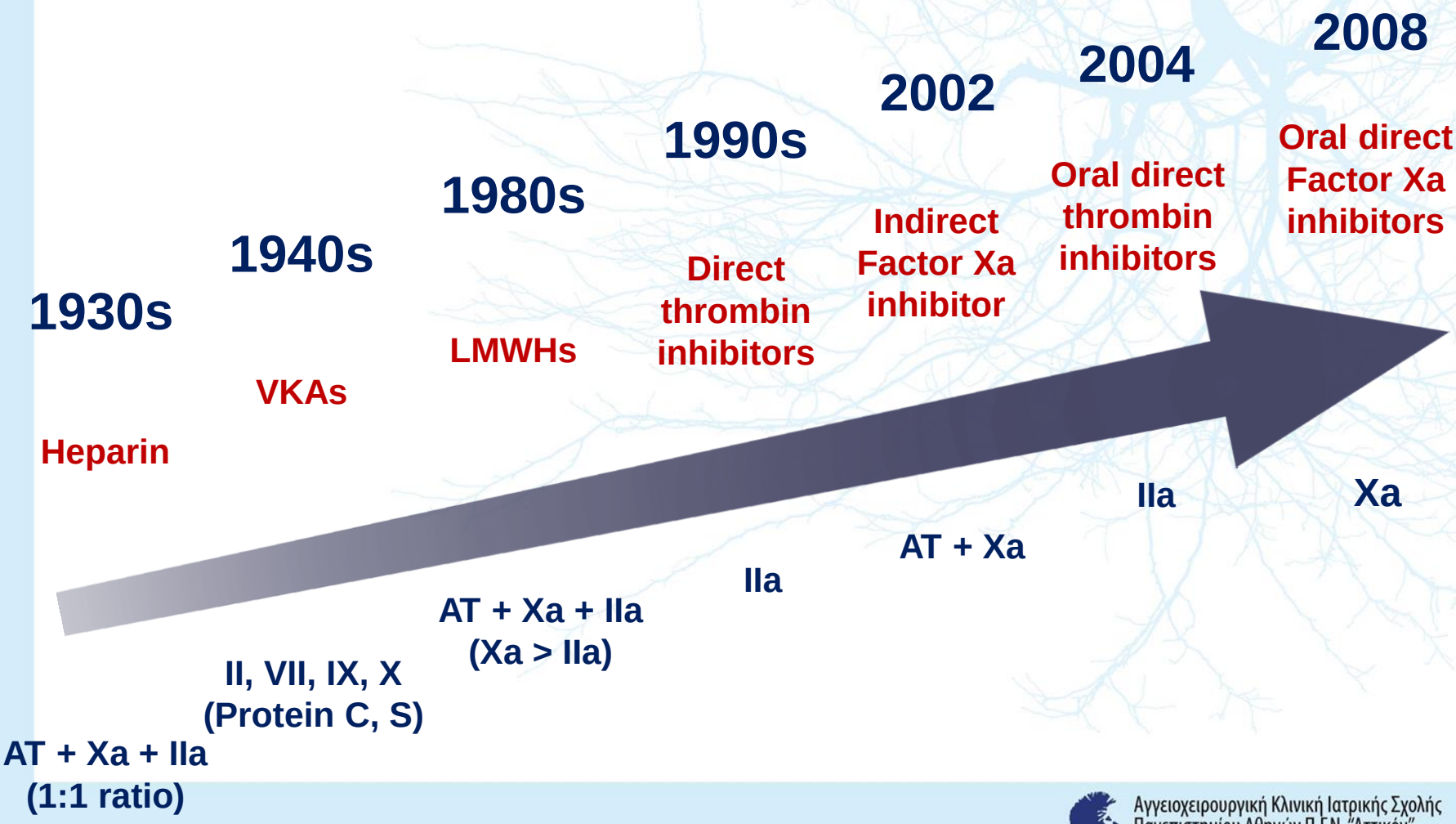
Early thrombus removal strategies for acute deep venous thrombosis: Clinical Practice Guidelines of the Society for Vascular Surgery and the American Venous Forum

- Συνιστούμε φαρμακομηχανικές στρατηγικές έναντι της τοπικής θρομβόλυσης μόνο, αν υπάρχουν τα μέσα (2C).
- Τα δεδομένα είναι κακής ποιότητας

Meissner et al. J Vasc Surg 2012;55:1449-62

Η ΕΞΕΛΙΞΗ ΤΩΝ ΑΝΤΙΠΗΚΤΙΚΩΝ



Perzborn E *et al. Nat Rev Drug Discov* 2011;10:61-75

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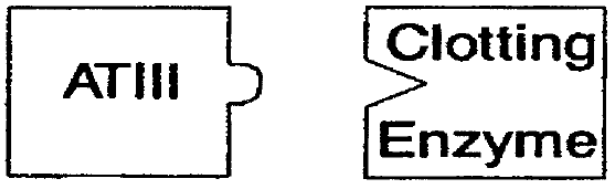
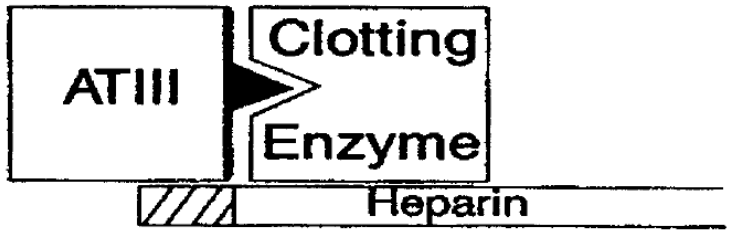
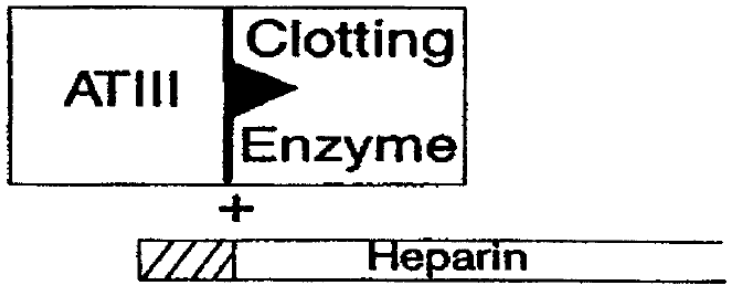
ΜΗΧΑΝΙΣΜΟΣ ΔΡΑΣΗΣ ΗΠΑΡΙΝΗΣ



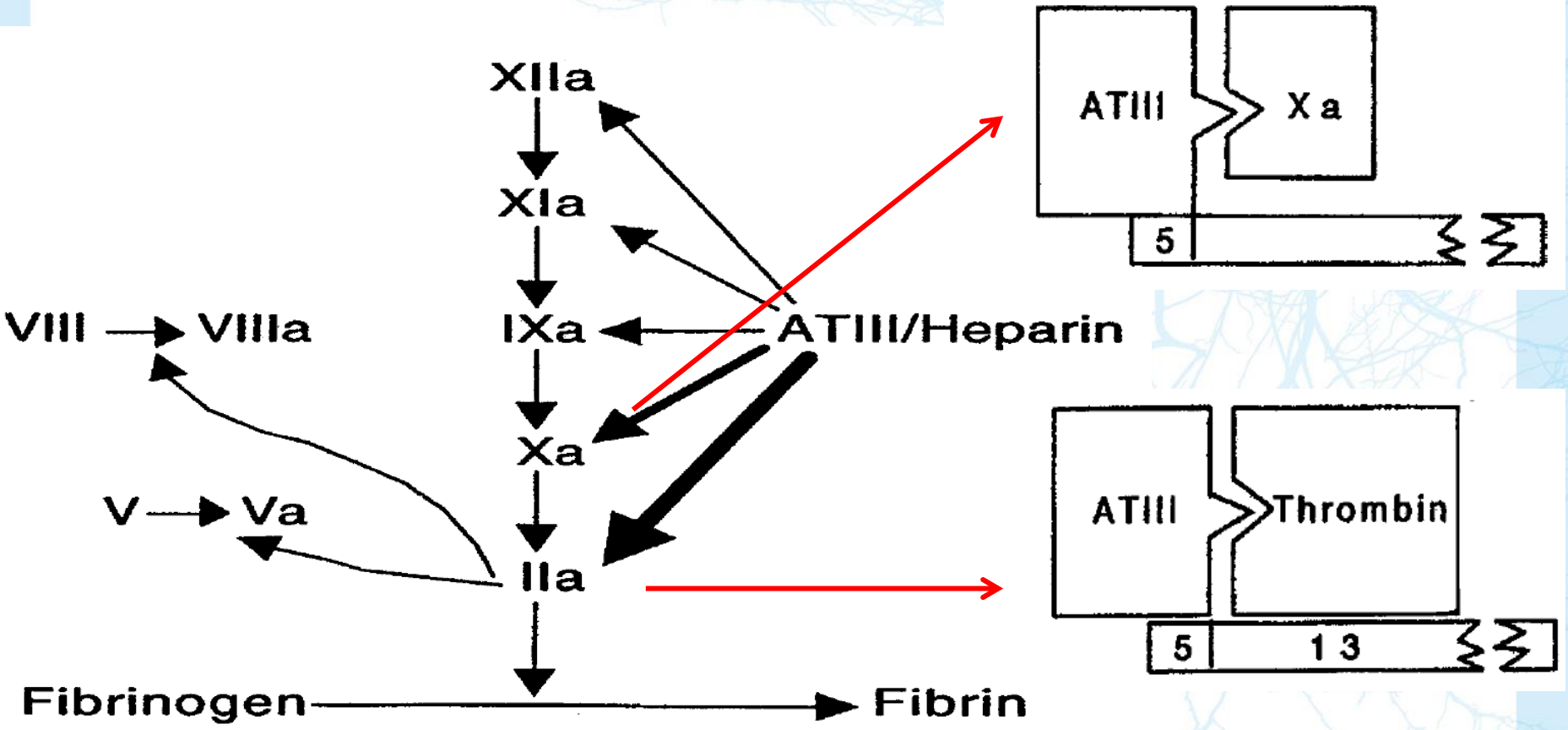
Without Heparin



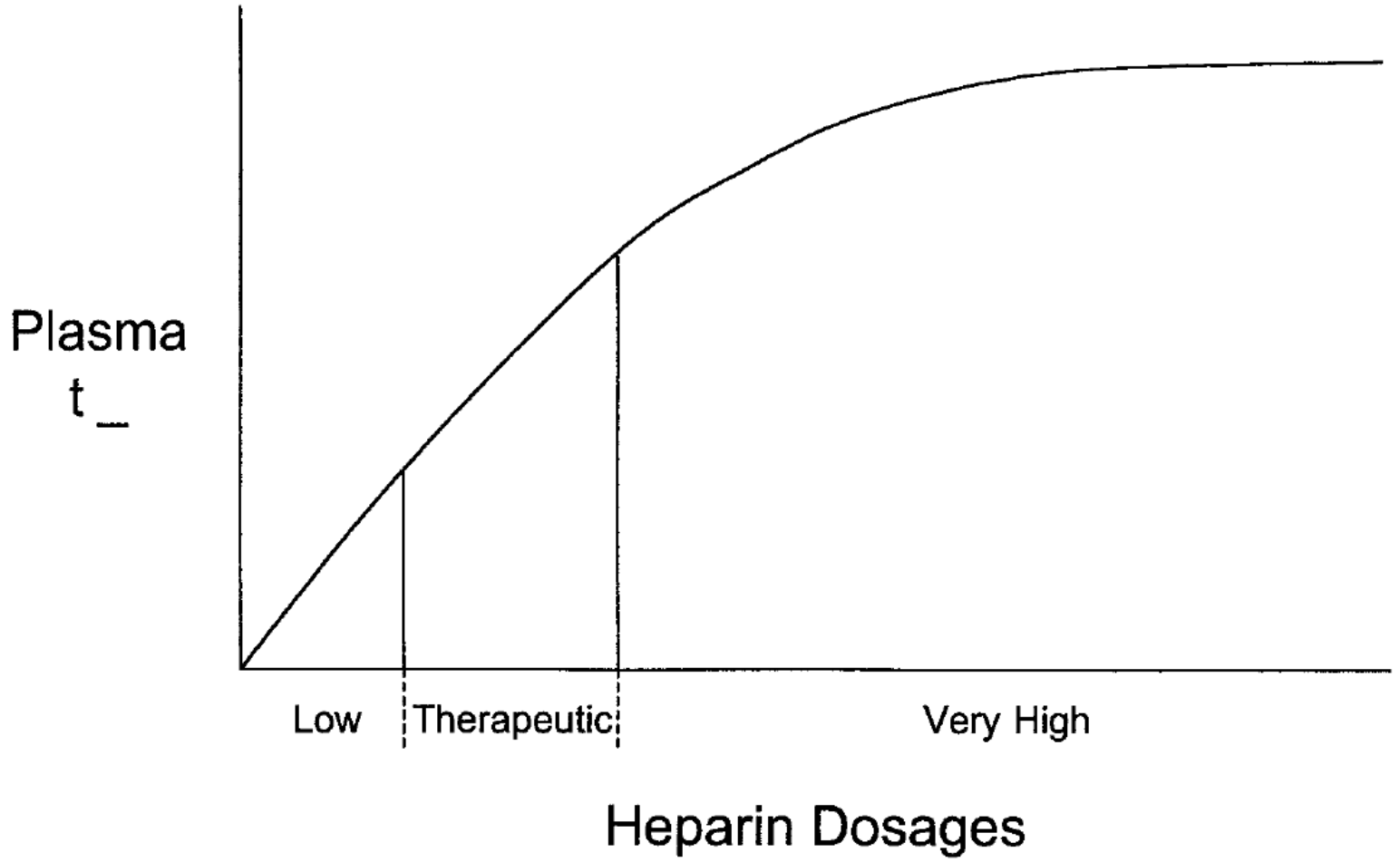
Ternary Complex Formation



Dissociation of Heparin


XIIa
XIa
IXa
Xa
IIa
Fibrinogen
Fibrin
VIII
VIIIa
V
Va
ATIII/Heparin
ATIII
X a
5
ATIII
Thrombin
5
1 3

Απομάκρυνση ηπαρίνης από την κυκλοφορία:
1. γρήγορος, πεπερασμένων δυνατοτήτων **κυτταρικός** μηχανισμός
2. αργή, απεριόριστη απομάκρυνση από τους **νεφρούς**



ΧΡΟΝΟΣ ΗΜΙΣΕΙΑΣ ΖΩΗΣ

- IV bolus of 25 U/kg → 30 min
- IV bolus of 100 U/kg → 60 min
- IV bolus of 400 U/kg → 150 min

ΔΟΣΟΛΟΓΙΑ

5.000 U bolus IV → 30.000-35.000 U/24h με παρακολούθηση του **APTT** (1,5-2,5 φορές > μάρτυρα)

ΑΝΕΠΙΘΥΝΗΤΕΣ ΕΝΕΡΓΕΙΕΣ

- Αιμορραγία
- Οστεοπόρωση
- HIT

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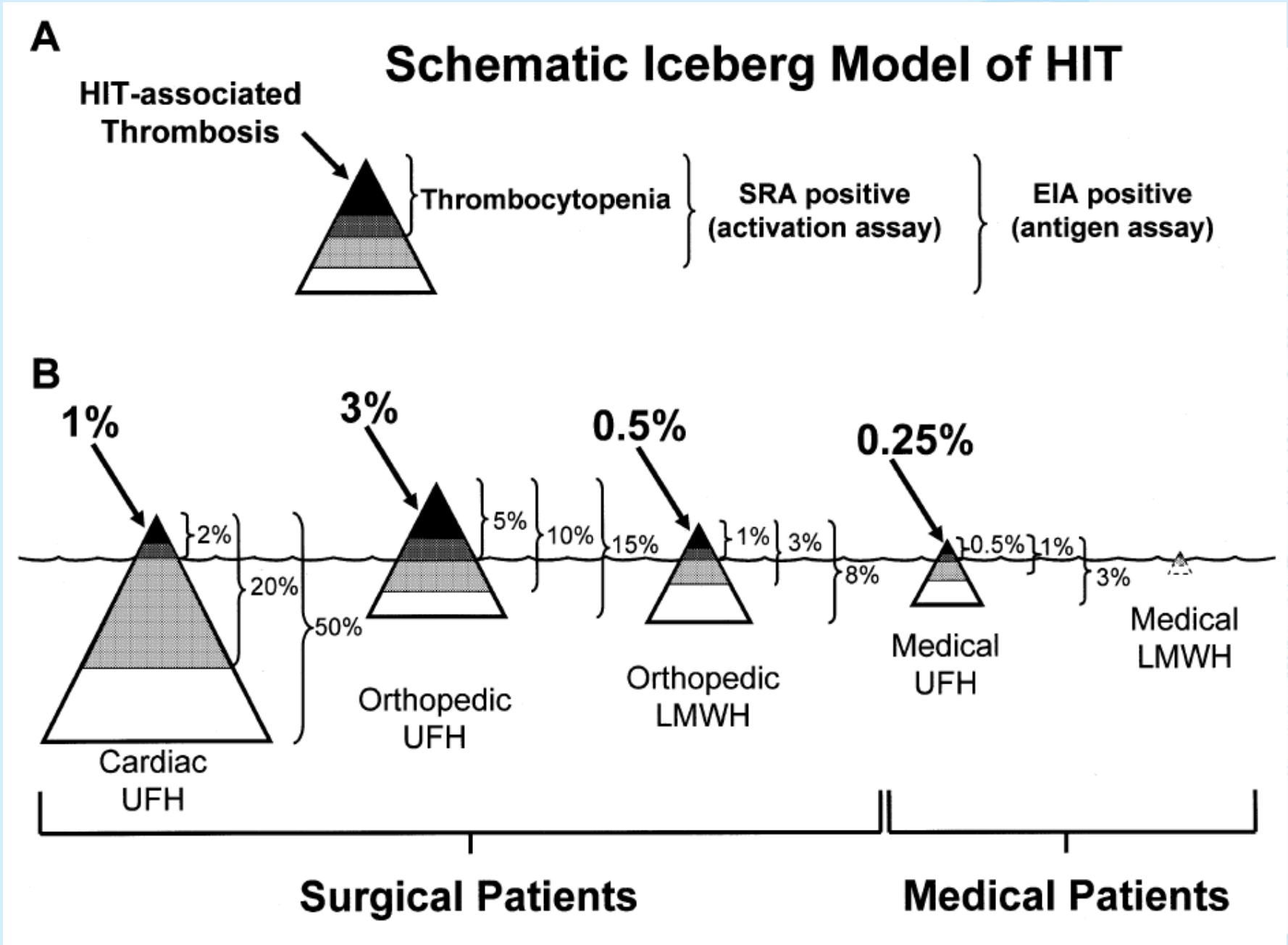
ΑΙΜΟΡΡΑΓΙΑ

- Προσωρινή διακοπή ηπαρίνης
- Θειική πρωταμίνη

- Φίλτρο κάτω κοίλης φλέβας



Warkentin TE. Br J Haemat 2003;121:535–555

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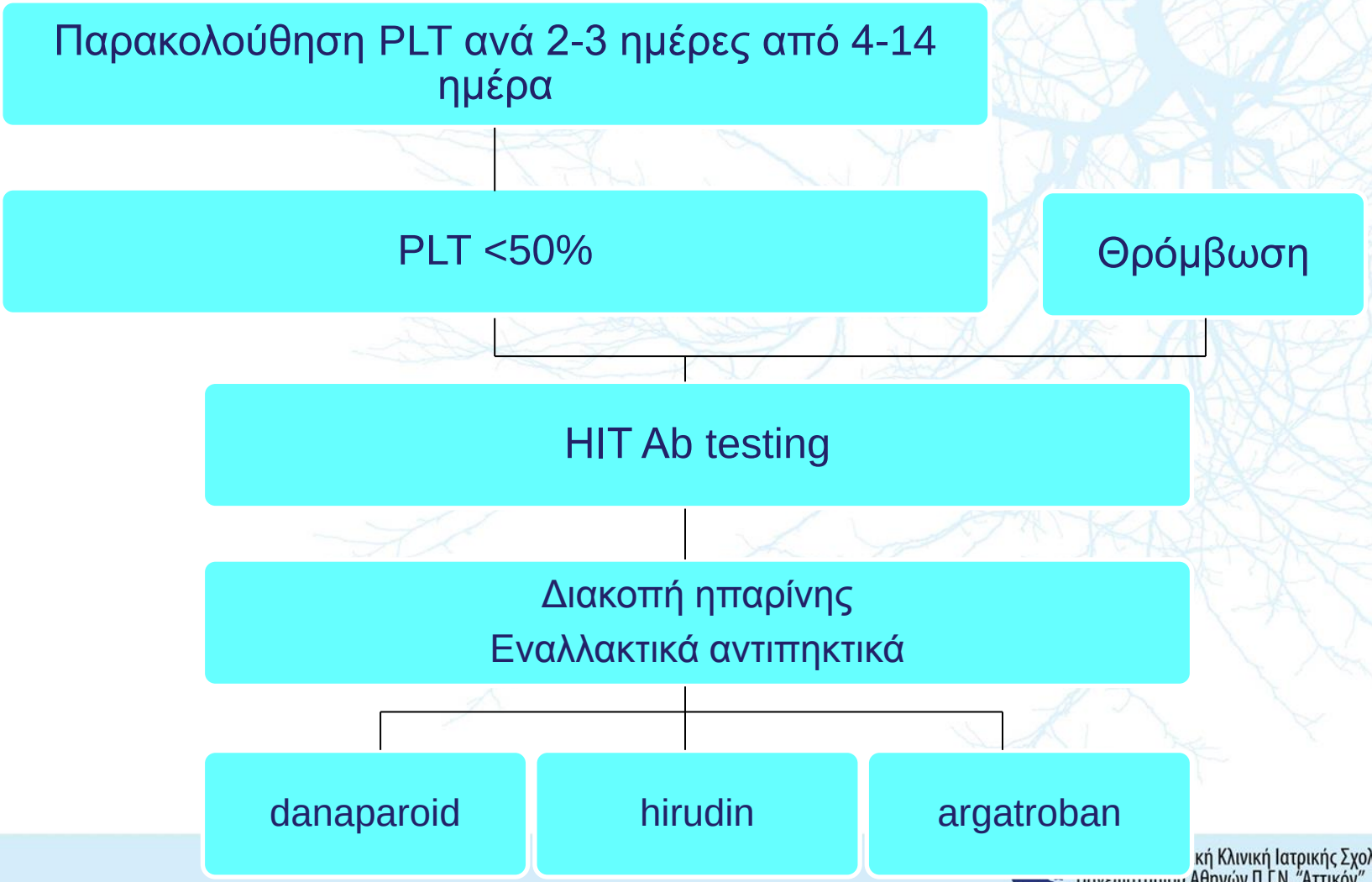
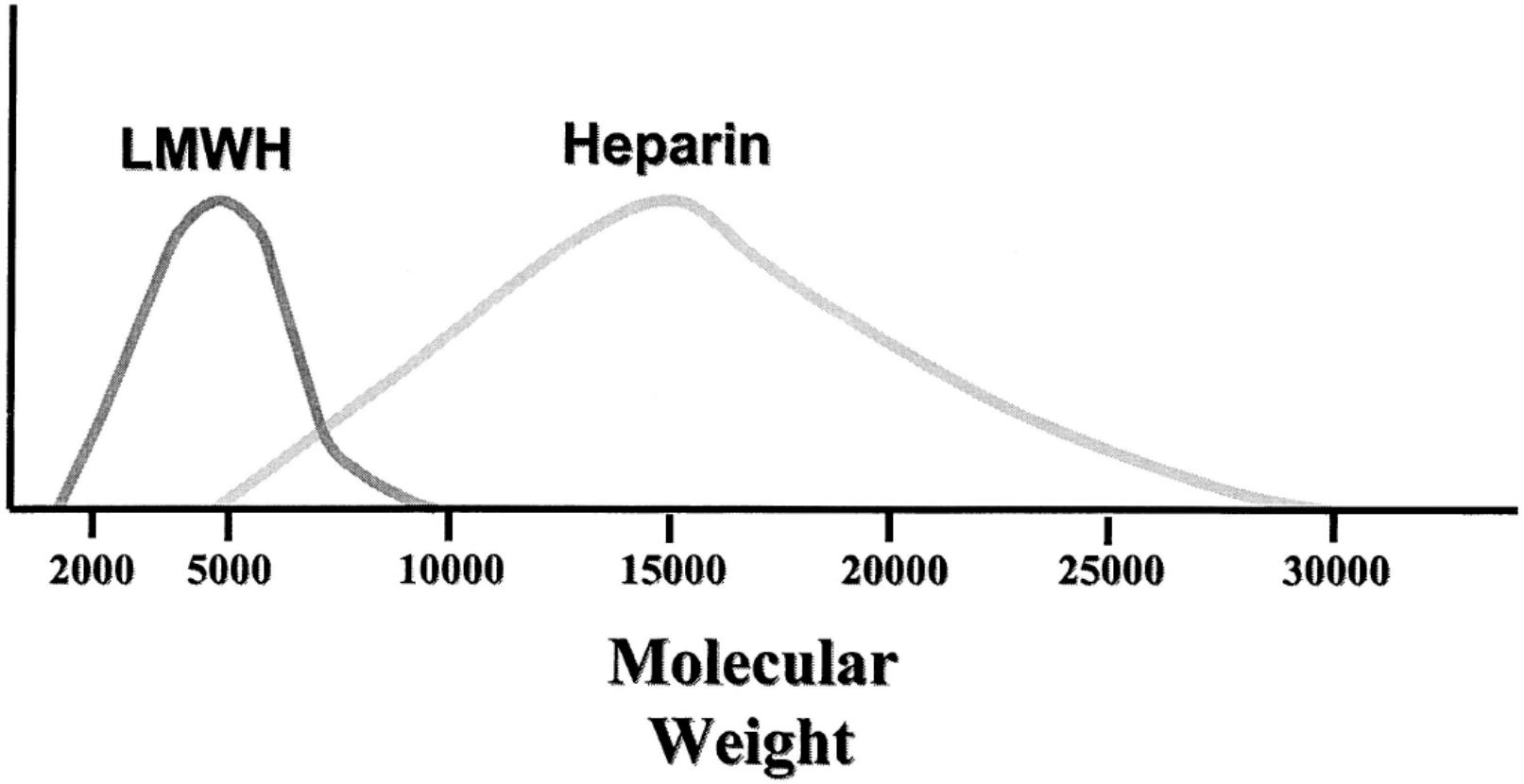
HEPARIN-INDUCED THROMBOCYTOPENIA (HIT)



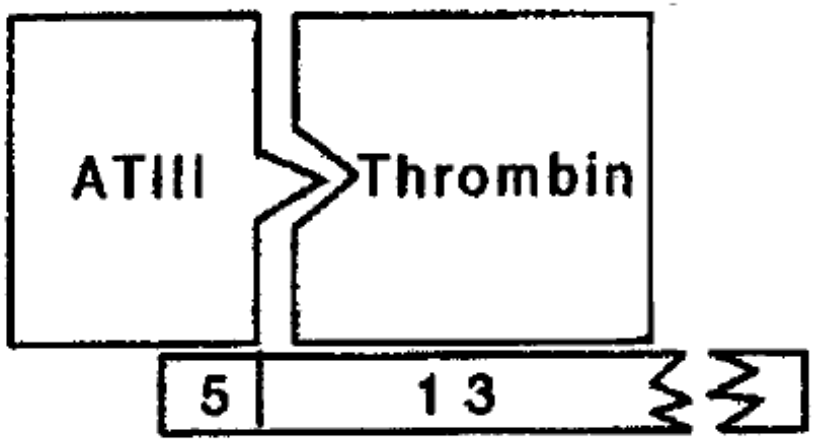
ΗΠΑΡΙΝΕΣ ΧΑΜΗΛΟΥ ΜΟΡΙΑΚΟΥ ΒΑΡΟΥΣ

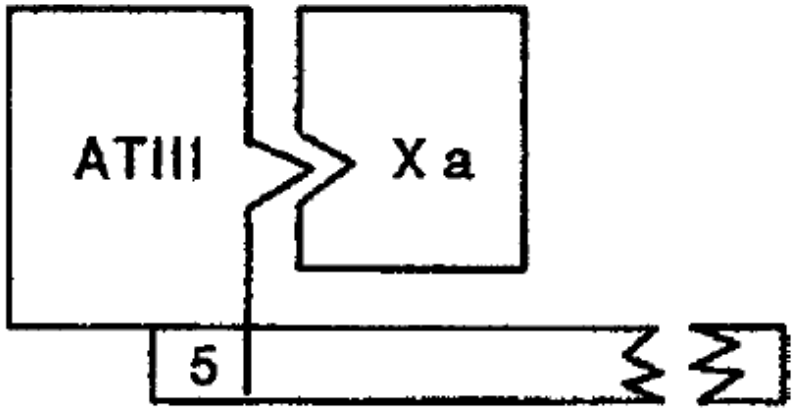


Παραγωγή με ενζυμικό αποπολυμερισμό

UFH

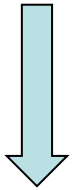
LMWH





ΧΜΒΗ - ΠΛΕΟΝΕΚΤΗΜΑΤΑ

- Καλύτερη βιοδιαθεσιμότητα (>90% μετά υποδόρια έγχυση)
- Παρατεταμένος $t_{1/2}$
- Προβλέψιμη κάθαρση



- 1-2 φορές/ημέρα
- Όχι ανάγκη για εργαστηριακό έλεγχο της δόσης

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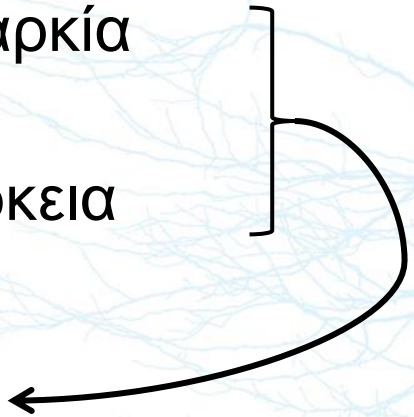
ΕΛΕΓΧΟΣ ΔΟΣΗΣ

- Νοσηρά παχυσαρκία
- Νεφρική ανεπάρκεια



- Επίπεδα **anti-Xa** 4h μετά τη χορήγηση

  0,6-1,0 IU/mL για χορήγηση δις ημερησίως

  1,0-2,0 IU/mL για χορήγηση άπαξ ημερησίως

TREATMENT OF VENOUS THROMBOSIS WITH INTRAVENOUS UNFRACTIONATED HEPARIN ADMINISTERED IN THE HOSPITAL AS COMPARED WITH SUBCUTANEOUS LOW-MOLECULAR-WEIGHT HEPARIN ADMINISTERED AT HOME

MARIA M.W. KOOPMAN, M.D., PAOLO PRANDONI, M.D., FRANCO PIOVELLA, M.D., PAUL A. OCKELFORD, M.D., DESIDERIUS P.M. BRANDJES, M.D., JAN VAN DER MEER, M.D., ALEXANDER S. GALLUS, M.D., GÉRALD SIMONNEAU, M.D., COLIN H. CHESTERMAN, M.D., MARTIN H. PRINS, M.D., PATRICK M.M. BOSSUYT, PH.D., HANNEKE DE HAES, PH.D., ANGELIQUE G.M. VAN DEN BELT, M.D., LUC SAGNARD, M.D., PASCAL D'AZEMAR, M.D., AND HARRY R. BÜLLER, M.D., FOR THE TASMAN STUDY GROUP*

Abstract *Background.* An intravenous course of standard (unfractionated) heparin with the dose adjusted to prolong the activated partial-thromboplastin time to a desired length is the standard initial in-hospital treatment for patients with deep-vein thrombosis, but fixed-dose subcutaneous low-molecular-weight heparin appears to be as effective and safe. Because the latter treatment can be given on an outpatient basis, we compared the two treatments in symptomatic outpatients with proximal-vein thrombosis but no signs of pulmonary embolism.

Methods. We randomly assigned patients to adjusted-dose intravenous standard heparin administered in the hospital (198 patients) or fixed-dose subcutaneous low-molecular-weight heparin administered at home, when feasible (202 patients). We compared the treatments with respect to recurrent venous thromboembolism, major bleeding, quality of life, and costs.

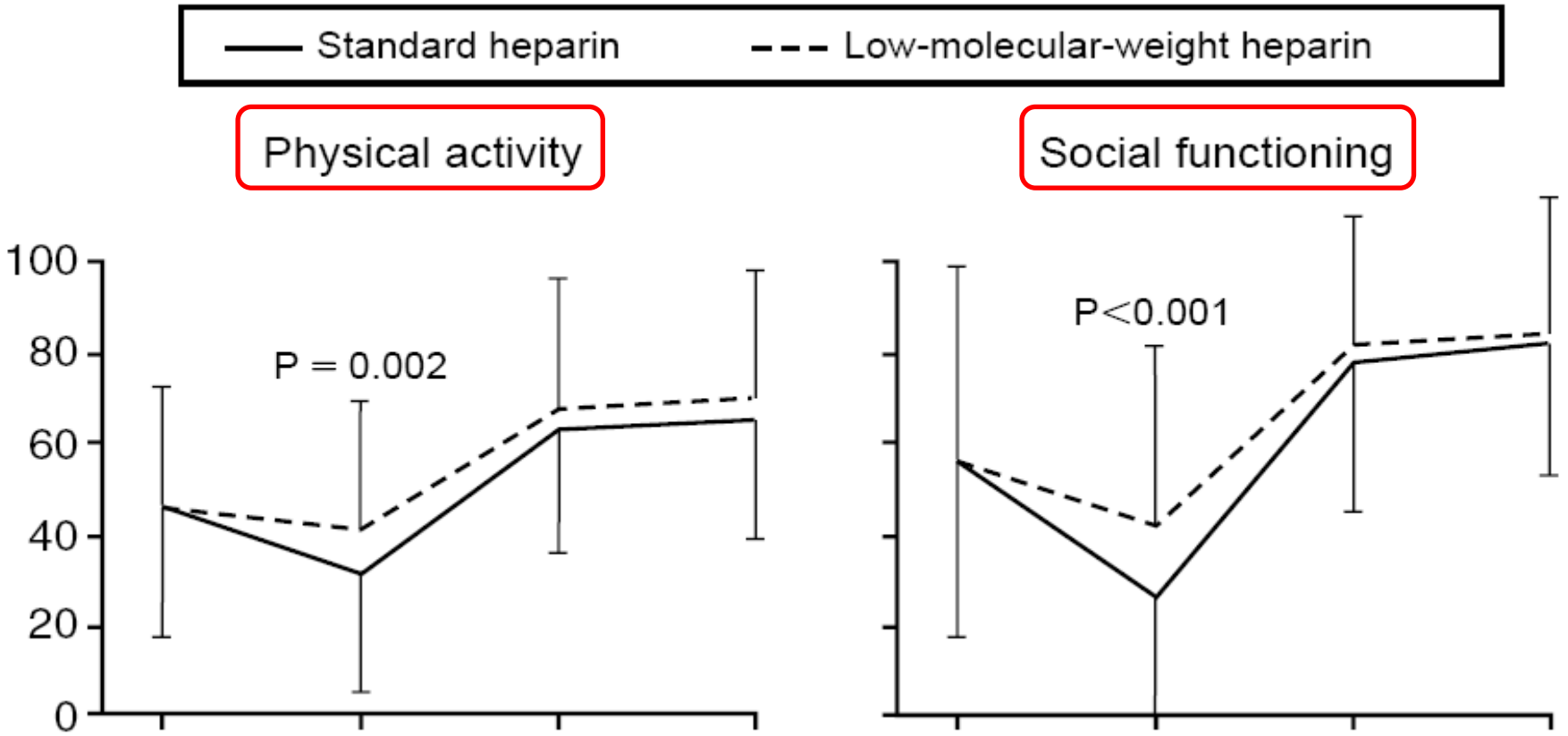
Results. Seventeen of the 198 patients who received standard heparin (8.6 percent) and 14 of the 202 patients who received low-molecular-weight heparin (6.9 percent) had recurrent thromboembolism (difference, 1.7 percentage points; 95 percent confidence interval, −3.6 to 6.9). Major bleeding occurred in four patients assigned to standard heparin (2.0 percent) and one patient assigned to low-molecular-weight heparin (0.5 percent; difference, 1.5 percentage points; 95 percent confidence interval, −0.7 to 2.7). Quality of life improved in both groups. Physical activity and social functioning were better in the patients assigned to low-molecular-weight heparin. Among the patients in that group, 36 percent were never admitted to the hospital at all, and 40 percent were discharged early. This treatment was associated with a mean reduction in hospital days of 67 percent, ranging from 29 percent to 86 percent in the various study centers.

Conclusions. In patients with proximal-vein thrombosis, treatment with low-molecular-weight heparin at home is feasible, effective, and safe. (N Engl J Med 1996;334: 682-7.)

ΗΧΜΒ
ΑΣΦΑΛΕΙΑ - ΑΠΟΤΕΛΕΣΜΑΤΙΚΟΤΗΤΑ

Event and Time of Occurrence	Standard Heparin (N = 198)	Low-Molecular-Weight Heparin (N = 202)
Recurrent venous thromboembolism — no. of patients (%)		
Days 0–14	5	4
Days 15–84	5	4
Day 85 to end of follow-up	7	6
All	17 (8.6)	14 (6.9)
	Difference, 1.7 percentage points (95% CI, −3.6 to 6.9)	
Major bleeding — no. of patients (%)		
Days 0–14	2	1
Days 15–84	2	0
All	4 (2.0)	1 (0.5)
	Difference, 1.5 percentage points (95% CI, −0.7 to 2.7)	
Death — no. of patients (%)		
Days 0–14	0	0
Days 15–84	7	4
Day 85 to end of follow-up	9	10
All	16 (8.1)	14 (6.9)
	Difference, 1.2 percentage points (95% CI, −4.0 to 6.3)	

ΗΧΜΒ
ΠΟΙΟΤΗΤΑ ΖΩΗΣ



A COMPARISON OF LOW-MOLECULAR-WEIGHT HEPARIN WITH UNFRACTIONATED HEPARIN FOR ACUTE PULMONARY EMBOLISM

GÉRALD SIMONNEAU, M.D., HERVÉ SORS, M.D., BERNARD CHARBONNIER, M.D., YVES PAGE, M.D., JEAN-PIERRE LAABAN, M.D., RÉZA AZARIAN, M.D., MARCEL LAURENT, M.D., JEAN-LOU HIRSCH, M.D., EMILE FERRARI, M.D., JEAN-LUC BOSSON, M.D., DOMINIQUE MOTTIER, M.D., AND BERTRAND BEAU, M.D., FOR THE THÉSÉE STUDY GROUP*

ABSTRACT

Background Low-molecular-weight heparin appears to be at least as effective and safe as standard, unfractionated heparin for the treatment of deep-vein thrombosis, but only limited data are available on the use of low-molecular-weight heparin to treat acute symptomatic pulmonary embolism.

Methods We randomly assigned 612 patients with symptomatic pulmonary embolism who did not require thrombolytic therapy or embolectomy to either subcutaneous low-molecular-weight heparin (tinzaparin) given once daily in a fixed dose or adjusted-dose, intravenous unfractionated heparin. Oral anticoagulant therapy was begun between the first and the third day and was given for at least three months. We compared the treatments at day 8 and day 90 with respect to a combined end point of recurrent thromboembolism, major bleeding, and death.

Results In the first eight days of treatment, 9 of 308 patients assigned to receive unfractionated heparin (2.9 percent) reached at least one of the end points, as compared with 9 of 304 patients assigned to low-molecular-weight heparin (3.0 percent; absolute difference, 0.1 percentage point; 95 percent confidence interval, −2.7 to 2.6). By day 90, 22 patients assigned to unfractionated heparin (7.1 percent) and 18 patients assigned to low-molecular-weight heparin (5.9 percent) had reached at least one end point ($P=0.54$; absolute difference, 1.2 percentage points; 95 percent confidence interval, −2.7 to 5.1). The risk of major bleeding was similar in the two treatment groups throughout the study.

Conclusions Under the conditions of this study, initial subcutaneous therapy with the low-molecular-weight heparin tinzaparin appeared to be as effective and safe as intravenous unfractionated heparin in patients with acute pulmonary embolism. (N Engl J Med 1997;337:663-9.)

heparin for the initial treatment of deep-vein thrombosis are well established.[3-5] However, in most clinical trials comparing low-molecular-weight heparin with unfractionated heparin to treat acute deep-vein thrombosis, associated symptomatic pulmonary embolism either was a criterion for exclusion from the study or occurred in only a minority of the patients. Consequently, although deep-vein thrombosis and pulmonary embolism are generally considered to be different expressions of the same disease, there is limited information on the efficacy and safety of low-molecular-weight heparin for the initial treatment of symptomatic pulmonary embolism.[6,7] Therefore, the role of low-molecular-weight heparin in patients with acute pulmonary embolism must be determined before this therapeutic approach is extended to the overall spectrum of venous thromboembolism.

Because the low-molecular-weight heparins are distinct compounds with different pharmacologic profiles and different dose regimens, it is uncertain whether the results obtained with one preparation can be extended to another. In 1992, Hull et al. reported that a once-daily subcutaneous injection of tinzaparin was at least as effective and safe as continuous intravenous heparin in patients with proximal-vein thrombosis.[8]

We therefore conducted a randomized trial in which patients with symptomatic pulmonary embolism who did not require thrombolytic therapy or pulmonary embolectomy were given either continuous, intravenous unfractionated heparin or a single daily subcutaneous injection of tinzaparin. Considering the trend toward better efficacy and safety

Event and Time of Occurrence	Unfractionated Heparin (N=308)	Low-Molecular-Weight Heparin (N=304)
	no. of patients (%)	
Death		
Days 1–8	3	4
Days 9–90	11	8
Total	14 (4.5) →	12 (3.9)
	Difference, 0.6 percentage point (95% confidence interval, −2.6 to 3.8)	
Recurrent venous thrombo-embolism		
Days 1–8	2	3
Days 9–90	4	2
Total	6 (1.9) →	5 (1.6)
	Difference, 0.3 percentage point (95% confidence interval, −1.8 to 2.4)	
Major bleeding		
Days 1–8	5	3
Days 9–90	6	4
Total*	8 (2.6) →	6 (2.0)
	Difference, 0.6 percentage point (95% confidence interval, −1.8 to 3.0)	
At least one outcome event		
Days 1–8	9	9
Days 9–90	16	12
Total*	22 (7.1) →	18 (5.9)
	Difference, 1.2 percentage points (95% confidence interval, −2.7 to 5.1)	

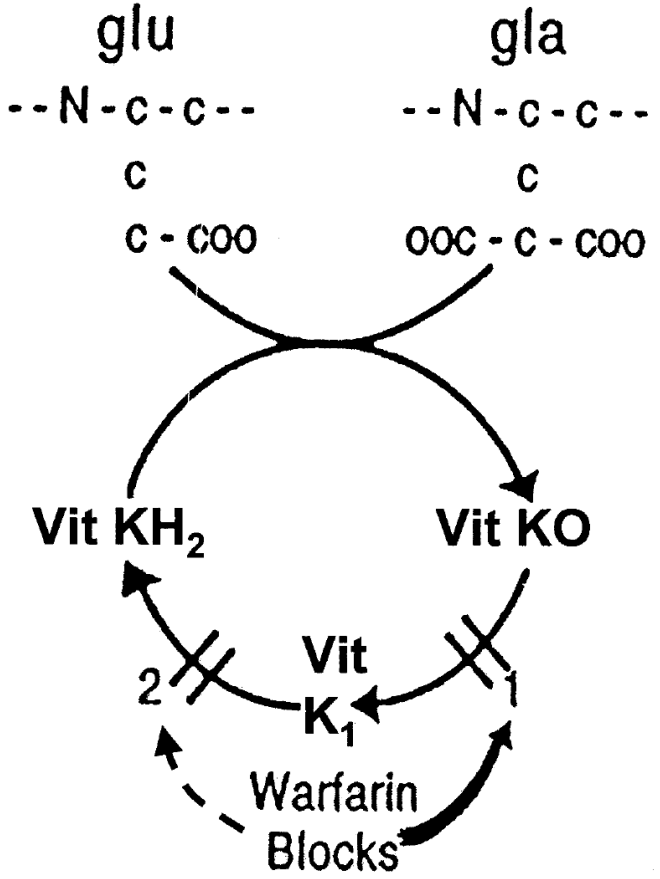
ΚΟΥΜΑΡΙΝΙΚΑ ΠΑΡΑΓΩΓΑ

αναστολή της

βιταμίνης Κ-εξαρτώμενης

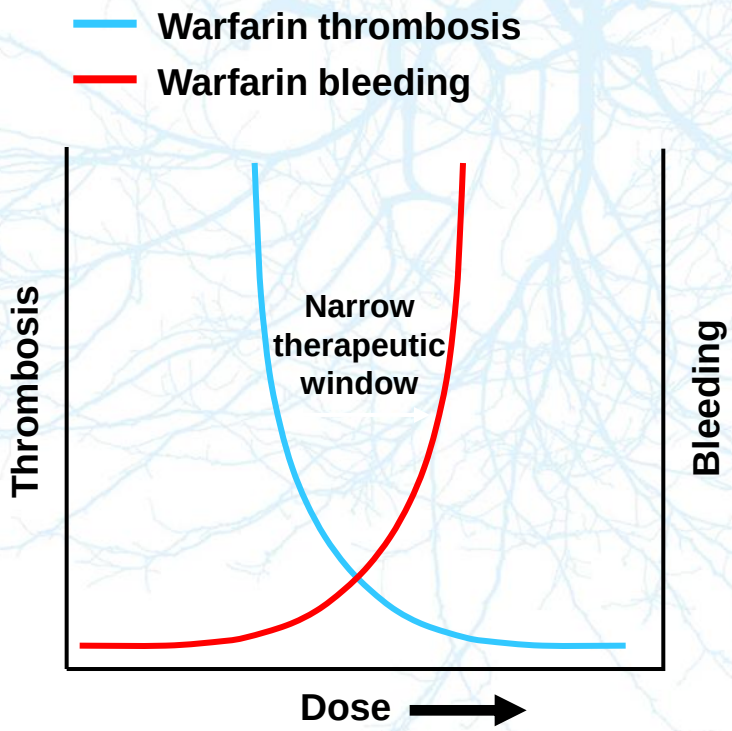
γ-καρβοξυλίωσης των

παραγόντων II, VII, IX και X



ΠΡΟΒΛΗΜΑΤΑ ΜΕ ΤΗ ΧΡΗΣΗ ΤΩΝ ΚΟΥΜΑΡΙΝΙΚΩΝ

- Στενό θεραπευτικό παράθυρο
  - Δυσκολία παραμονής εντός θεραπευτικών ορίων
- Συχνή παρακολούθηση INR /ρύθμιση δόσης
- Πολλές αλληλεπιδράσεις με άλλα φάρμακα και τροφές
- Αργή έναρξη και διακοπή δράσης
- Αυξημένος κίνδυνος αιμορραγίας



Ansell J *et al*. *Chest* 2004;126:204S–233S

ΚΟΥΜΑΡΙΝΙΚΑ ΠΑΡΑΓΩΓΑ

ΑΝΕΠΙΘΥΜΗΤΕΣ ΕΝΕΡΓΕΙΕΣ

Αιμορραγία → διακοπή κουμαρινικών

βιταμίνη Κ

FFP

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Πανεπιστημίου Αθηνών Π.Γ.Ν. "Αττικόν"
Dept. of Vascular Surgery - University of Athens

ΔΙΑΡΚΕΙΑ ΑΝΤΙΠΗΚΤΙΚΗΣ ΑΓΩΓΗΣ

- Τα αντιπηκτικά από το στόμα θα πρέπει να συνεχίζονται για τουλάχιστον 3 μήνες (INR: 2-3)
- Οι ασθενείς με **αναστρέψιμους** παράγοντες κινδύνου μπορούν να αντιμετωπίζονται για 3-6 μήνες
- Οι ασθενείς με **ιδιοπαθή ΕΒΦΘ** θα πρέπει να αντιμετωπίζονται για τουλάχιστον 6 μήνες
- Ασθενείς με **υποτροπιάζουσα** ΕΒΦΘ ή **συνεχιζόμενο** παράγοντα κινδύνου (καρκίνο, ανεπάρκεια ΑΤ ΙΙΙ) θα πρέπει να αντιμετωπίζονται για πάντα

Thrombosis Research 123 (2009) 837–844

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Regular Article

Efficacy of Low- molecular- weight- heparin versus Vitamin K antagonists for long term treatment of cancer-associated venous thromboembolism in adults: A systematic review of randomized controlled trials ☆

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Low molecular weight heparin
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ABSTRACT

Background: Patients with malignancy have a 4-fold increase in the risk of developing a venous thrombosis and a 3-fold increase in risk of bleeding. Both low-molecular-weight-heparin (LMWH) and vitamin K antagonists (VKA) have been used for treatment of cancer-associated thrombosis. However, the best anticoagulation approach remains a matter of debate.

Objective: In adult patients with cancer and an acute venous thromboembolic event we sought to determine the rates of recurrent venous thromboembolism (VTE) and major hemorrhage when treated with prolonged LMWH therapy compared to vitamin-K antagonists.

Patients/Methods: A systematic literature search strategy was used to identify potential trials on MEDLINE, EMBASE, the Cochrane Register of Controlled Trials and Medline in-process using an OVID interface. Risk assessment of bias of randomized controlled trials (RCTs) was performed according to the Cochrane Collaboration-Cochrane Handbook for Systematic Reviews of Interventions. The primary outcome measure was symptomatic VTE recurrence rate during the anticoagulation period. Relative risk (RR) was used as the primary measurement with 95% confidence intervals (CIs). Pooled measurements were calculated using random –effects and fixed-effects model.

Results: Five articles met our inclusion criteria. All compared LMWH and VKA for secondary prevention of VTE. The pooled RR of VTE recurrence was 0.53 (95% CI: 0.36-0.76; p = 0.007). The pooled RR of major bleeding was 0.98 (95% CI: 0.49-1.93, p = 0.95). Minor bleeding events and all cause mortality were similar between the 2 intervention arms.

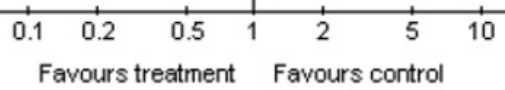
Conclusions: The results of our review suggest that the long term use of LMWH after the acute first week of treatment is superior to VKAs for secondary prevention of venous thromboembolism in adult patients with cancer.

ΥΠΟΤΡΟΠΗ ΘΡΟΜΒΩΣΗΣ/ΕΜΒΟΛΗΣ

Review: Epi 6188
Comparison: 02 LMWH versus VKA
Outcome: 01 VTE recurrence- random-effects model

Study or sub-category	LMWH n/N	VKA n/N	RR (random) 95% CI	Weight %	RR (random) 95% CI
Lopez-Beret	1/17	4/18		3.14	0.26 [0.03, 2.14]
Meyer	2/71	3/75		4.43	0.70 [0.12, 4.09]
Lee	27/338	53/338		71.36	0.51 [0.33, 0.79]
Deitcher	4/67	3/34		6.62	0.68 [0.16, 2.85]
Hull	6/100	10/100		14.46	0.60 [0.23, 1.59]
Total (95% CI)	593	565		100.00	0.53 [0.36, 0.76]

Total events: 40 (LMWH), 73 (VKA)
Test for heterogeneity: Chi² = 0.73, df = 4 (P = 0.95), I² = 0%
Test for overall effect: Z = 3.38 (P = 0.0007)



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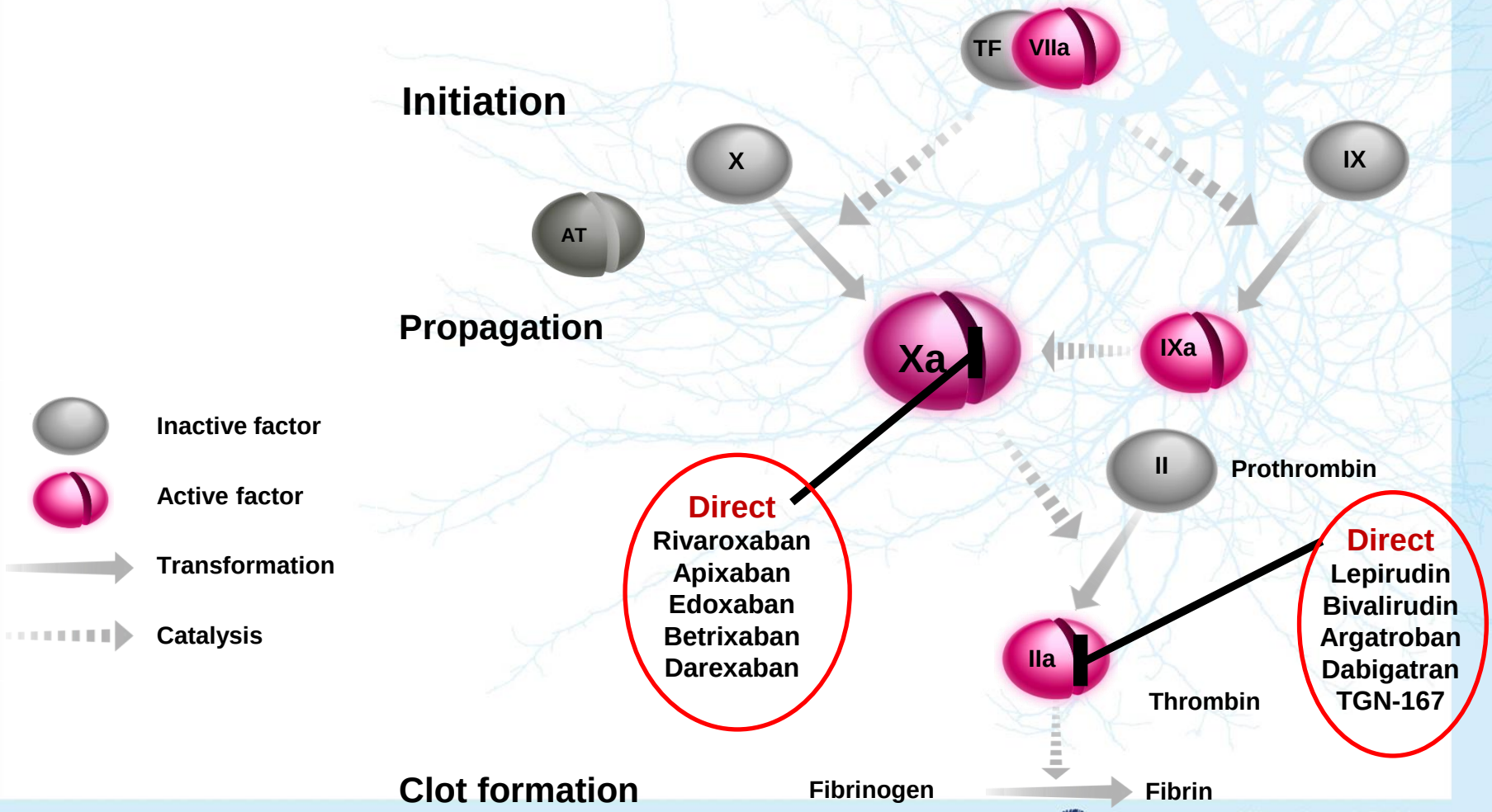
ΣΤΟΧΟΙ ΤΩΝ ΝΕΩΤΕΡΩΝ ΑΝΤΙΠΗΚΤΙΚΩΝ ΣΤΟΝ ΚΑΤΑΡΡΑΚΤΗ ΤΗΣ ΠΗΞΗΣ



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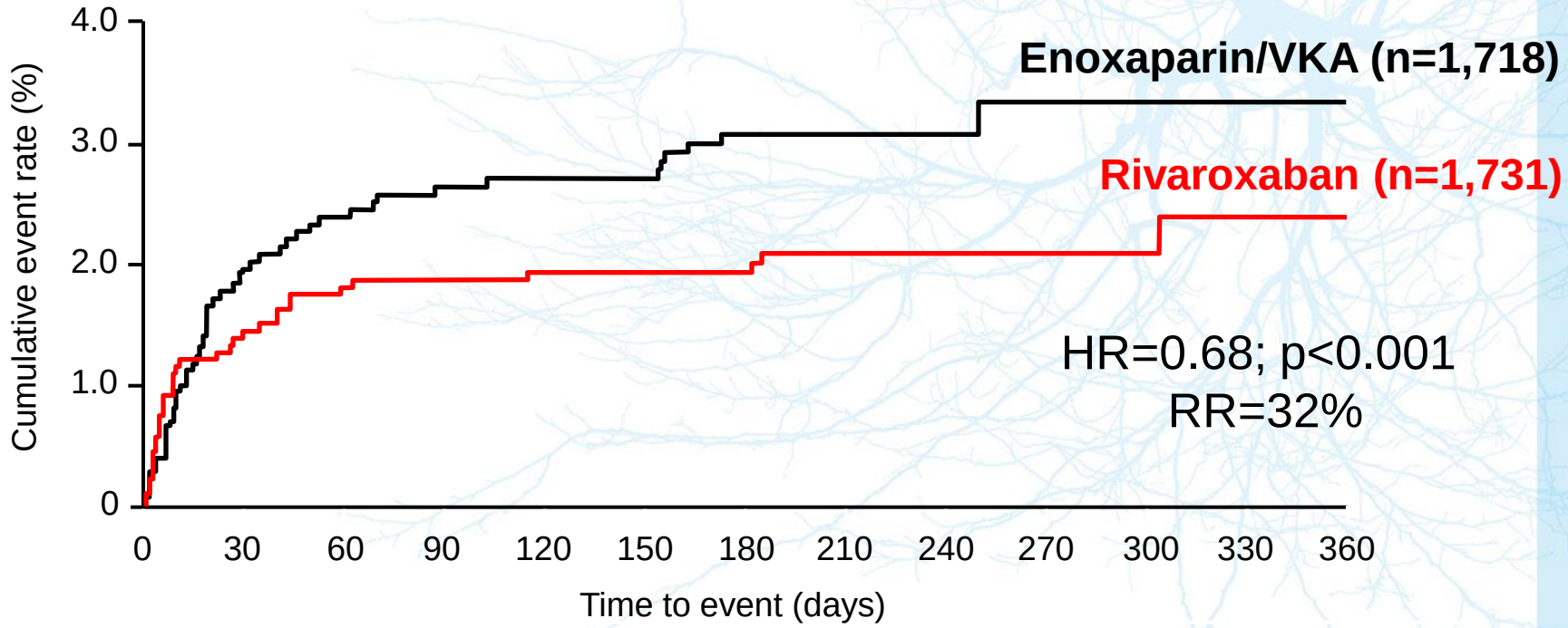
ΙΔΙΟΤΗΤΕΣ ΙΔΑΝΙΚΟΥ ΑΝΤΙΠΗΚΤΙΚΟΥ

Χορήγηση από το στόμα	Εύκολη χορήγηση εντός και εκτός νοσοκομείου
Ευρύ θεραπευτικό παράθυρο	Ασφαλές για μεγάλο εύρος αποτελεσματικών δόσεων
Μικρός κίνδυνος αλληλεπιδράσεων με φάρμακα και τροφές	Εύκολη χορήγηση ανεξαρτήτως άλλων φαρμάκων και διατροφής
Προβλέψιμο αποτέλεσμα	Ασφαλής και αποτελεσματική ρύθμιση της πήξης από την πρώτη δόση και καθ' όλη τη διάρκεια της θεραπείας
Χωρίς ανάγκη εργαστηριακού ελέγχου	Εξοικονόμηση χρημάτων και χρόνου
Συγκεκριμένη δόση	Συγκεκριμένη δόση για την πλειοψηφία των ασθενών: χωρίς ανάγκη για ρύθμιση της δόσης

Μελέτες φάσης ΙΙΙ για τη θεραπεία της ΕΒΦΘ

Trial name	Design	Initial treatment with LMWH/ fondaparinux	Treatment duration (months)	Long-term treatment regimen	Active comparator
Rivaroxaban					
EINSTEIN DVT	Open label	No	3, 6 or 12	od	LMWH/VKA
EINSTEIN PE	Open label	No	3, 6 or 12	od	LMWH/VKA
EINSTEIN EXT	Double blind	No	6 or 12	od	Placebo
Dabigatran					
RE-COVER	Double blind	Yes*	6	bid	Warfarin
RE-COVER II	Double blind	Yes	6	bid	Warfarin
RE-MEDY	Double blind	No	18	bid	Warfarin
RE-SONATE	Double blind	No	6	bid	Placebo
Apixaban					
AMPLIFY	Double blind	No	6	bid	LMWH/warfarin
AMPLIFY-EXT	Double blind	No	12	bid	Placebo
Edoxaban					
Hokusai-VTE	Double blind	Yes	12	od#	Heparin/warfarin

EINSTEIN DVT: αποτελεσματικότητα σε σχέση με το χρόνο



Number of subjects at risk

Rivaroxaban	1,731	1,668	1,648	1,621	1,424	1,412	1,220	400	369	363	345	309	266
Enoxaparin/ VKA	1,718	1,616	1,581	1,553	1,368	1,358	1,186	380	362	337	325	297	264

The EINSTEIN Investigators. N Engl J Med 2010;363:2499–2510

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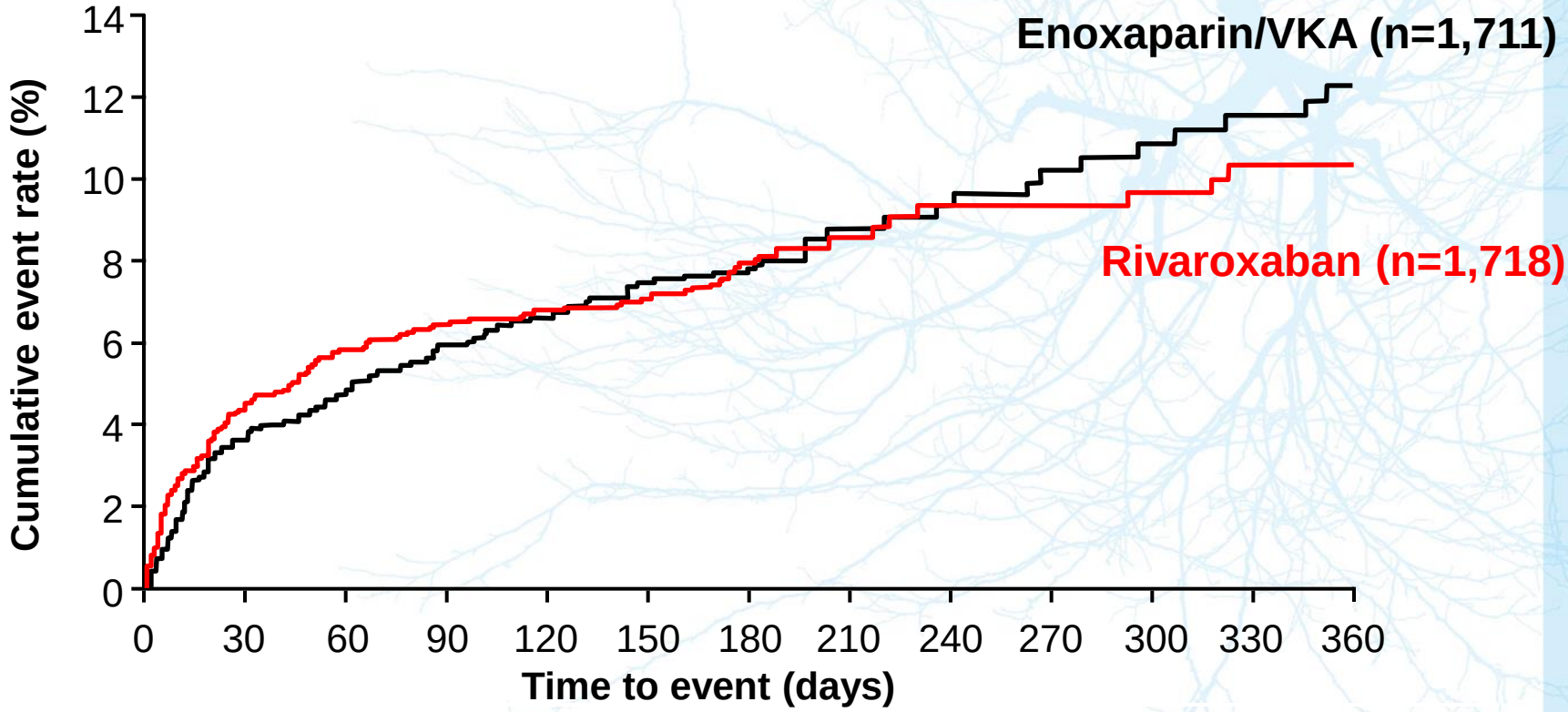
EINSTEIN DVT
ασφάλεια σε σχέση με το χρόνο



Number of subjects at risk

Rivaroxaban	1,718	1,585	1,538	1,382	1,317	1,297	715	355	338	304	278	265	140
Enoxaparin/ VKA	1,711	1,554	1,503	1,340	1,263	1,238	619	338	321	287	268	249	118

The EINSTEIN Investigators. N Engl J Med 2010;363:2499–2510

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A meta-analysis of bed rest versus early ambulation in the management of pulmonary embolism, deep vein thrombosis, or both☆

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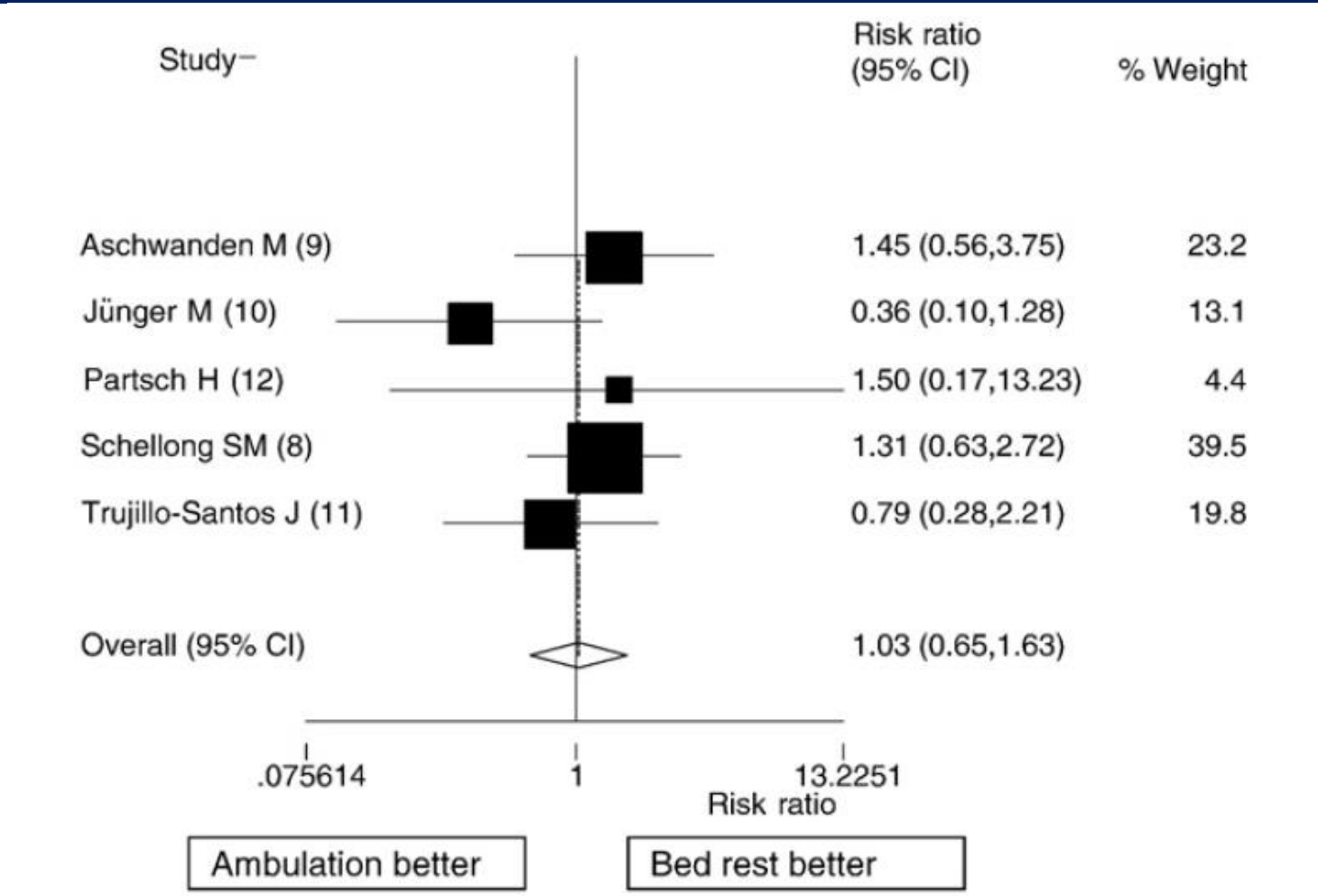
Available online 8 August 2008

Abstract

Background: Bed rest is often recommended as part of the management of deep vein thrombosis (DVT) and pulmonary embolism (PE), though this recommendation is not clearly evidence-based.
Methods: Using the Cochrane Central Register of Controlled Trials, Medline, and Embase, this meta-analysis considered all randomized studies and prospective registries that compared the outcomes of patients with DVT, PE, or both, managed with bed rest versus early ambulation, in addition to anticoagulation. For each study, data regarding the incidence of new PE, new or progression of DVT, and death from all causes, were used to calculate relative risks (RR) and 95% confidence intervals (CI).
Results: The 5 studies retained in this analysis included a total of 3048 patients. When compared to bed rest, early ambulation was not associated with a higher incidence of a new PE (RR 1.03; 95% CI 0.65–1.63; $p=0.90$). Furthermore, early ambulation was associated with a trend toward a lower incidence of new PE and new or progression of DVT than bed rest (RR 0.79; 95% CI 0.55–1.14; $p=0.21$) and lower incidence of new PE and overall mortality (RR 0.79; 95% CI 0.402–1.56; $p=0.50$).
Conclusions: Compared with bed rest, early ambulation of patients with DVT, PE or both, was not associated with a higher risk of progression of DVT, new PE or death. This meta-analysis does not support the systematic recommendation of bed rest as part of the early management of patients presenting with DVT, PE of both.

Keywords: Deep vein thrombosis; Pulmonary embolism; Bed rest; Early ambulation; Meta-analysis

ΠΝΕΥΜΟΝΙΚΗ ΕΜΒΟΛΗ



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J Thromb Thrombolysis (2007) 23:25–30
DOI 10.1007/s11239-006-9010-y

Does supervised exercise after deep venous thrombosis improve recanalization of occluded vein segments? A randomized study

Variable	Exercise group (n = 32)	Control group (n = 35)	P-value
Calf circumference affected leg—at inclusion (cm)	38(33.5–49)	37.5(32–45)	NS
Calf circumference affected leg—1 month (cm)	38(32–51.5)	36.5(32–44)	NS
Calf circumference affected leg—6 months (cm)	38(25.5–48)	36(32.5–44)	NS
VAS—at inclusion (0–100 mm)	42(1–88)	45.5(9–93)	NS
VAS—1 month (0–100 mm)	13.5(0–83)	12(0–71)	NS
VAS—6 months (0–100 mm)	4(0–74)	7.5(0–95)	NS
Phlebographic score—at inclusion (0–42)	6(1–30)	6.5(1–26)	NS
Phlebographic score—at 6 months (0–42)	0(0–19)	0(0–13)	NS

ΕΝΔΕΙΞΕΙΣ ΤΟΠΟΘΕΤΗΣΗΣ ΦΙΛΤΡΟΥ ΚΚΦ

ΑΠΟΛΥΤΕΣ

- Υποτροπιάζουσα πνευμονική εμβολή παρά την επαρκή αντιπηκτική αγωγή
- Αντένδειξη αντιπηκτικής αγωγής
- Επιπλοκές αντιπηκτικής αγωγής

ΣΧΕΤΙΚΕΣ

- Πνευμονική εμβολή >50%
- Επεκτεινόμενη λαγονομηριαία θρόμβωση
- Νηχόμενος θρόμβος

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