

## 14. Engadiner Fortbildungstage

7.09.2008 - Vulpera

### Diagnose und Therapie thromboembolischer Krankheiten: Zwei Fälle aus der Praxis

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### La storia di effedibi.25

25-year-old woman

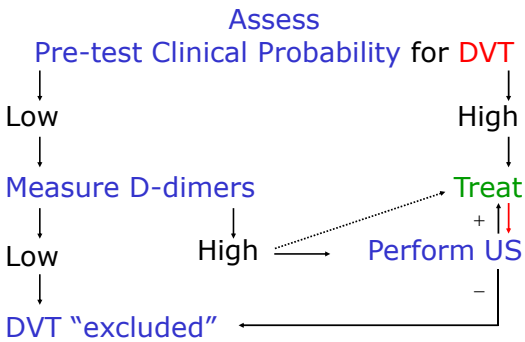
Schwellung und Schmerzen des rechten  
Beines bis in den OS reichend

### La storia di ellejota.88

88-year-old woman

Schwellung und Schmerzen der linken Wade

## Diagnosing DVT



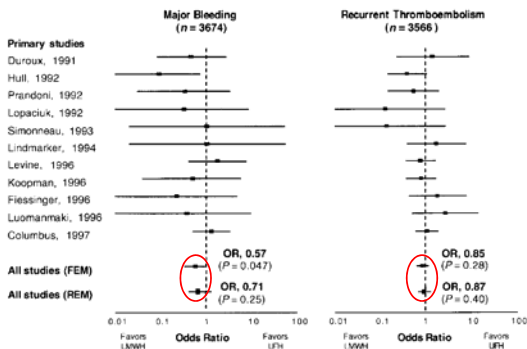
## Pre-test Clinical Probability

Clinical Characteristic	Score
Active cancer (patient receiving treatment for cancer within the previous 6 mo or currently receiving palliative treatment)	1
Paralysis, paresis, or recent plaster immobilization of the lower extremities	1
Recently bedridden for 3 days or more, or major surgery within the previous 12 wk requiring general or regional anesthesia	1
Localized tenderness along the distribution of the deep venous system	1
Entire leg swollen	1
Calf swelling at least 3 cm larger than that on the asymptomatic side (measured 10 cm below tibial tuberosity)	1
Pitting edema confined to the symptomatic leg	1
Collateral superficial veins (nonvaricose)	1
Previously documented deep-vein thrombosis	1
Alternative diagnosis at least as likely as deep-vein thrombosis	-2

N Engl J Med 2003;349:1227

0-1 = low ≥2 = high

## Treating acute DVT: LMWH vs UFH



## Prescribing LMWH / UFH

4 questions:

Body weight ?

Renal function ?

Platelet count ?

Coagulation ?

## Heparins: Therapeutic dosing

<b>LMWH</b>	once daily	twice daily
dalteparin	1x 200 U anti-Xa/kg	2x 100 U anti-Xa/kg
enoxaparin	1x 150 U anti-Xa/kg	2x 100 U anti-Xa/kg
nadroparin	1x 170 U anti-Xa/kg	2x 85 U anti-Xa/kg

CAVE: **renal function !**

Chest 2004;126:188S

## Heparins: Therapeutic dosing

<b>UFH</b>	loading	80 IU/kg
	maintenance	18 IU/kg/h

LMWH/UFH should be continued for **at least 5d**

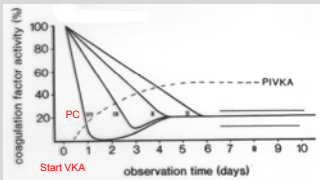
Start Vitamin K-antagonists on day 1

Stop Heparin after day 5, when the INR has been **therapeutic for 2 consecutive days**

Chest 2004;126:188S

## Starting Vit.K Antagonists

Faktor II	60–72
Faktor VII	2–6
Faktor IX	18–24
Faktor X	24–40
Protein C	5–7
Protein S	40–70



Ther Umsch 2003;60:5

## Starting Vit.K Antagonists

Faktor II	Early:	60–72
<b>Faktor VII</b>	<i>in vitro</i>	<b>2–6</b>
Faktor IX	"anticoagulant" effect	18–24
Faktor X		24–40
Protein C		5–7
Protein S		40–70

Ther Umsch 2003;60:5

## Starting Vit.K Antagonists

<b>Faktor II</b>	<b>60–72</b>
Faktor VII	2–6
<b>Faktor IX</b>	<b>18–24</b>
<b>Faktor X</b>	<b>24–40</b>
Protein C	5–7
Protein S	40–70

Ther Umsch 2003;60:5

<b>Faktor II</b>	Later:	<b>60–72</b>
Faktor VII	<i>in vivo</i>	2–6
<b>Faktor IX</b>	"antithrombotic" effect	<b>18–24</b>
<b>Faktor X</b>		<b>24–40</b>
Protein C		5–7
Protein S		40–70

Ther Umsch 2003;60:5

## Starting Vit.K Antagonists

CAVE: Coumarin necrosis

Faktor II	Risk factors	60–72
Faktor VII	Large VKA loading	2–6
Faktor IX	PC deficiency	18–24
Faktor X	congenital	24–40
<b>Protein C</b>	HIT	<b>5–7</b>
Protein S	No "Heparin-Schutz"	40–70

Ther Umsch 2003;60:5

## Thrombosis under Anticoagulation

DD?

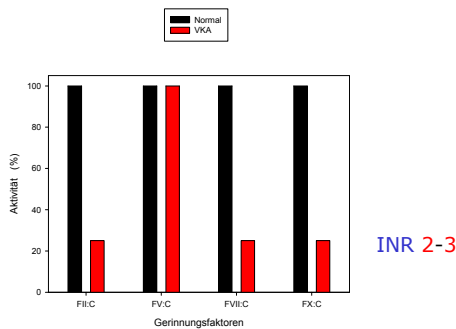
Anticoagulation (Dose? Intensity?)

Cancer (Trousseau)

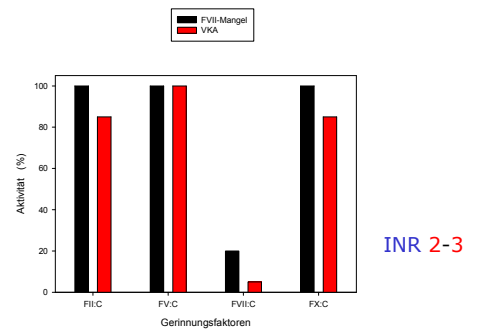
Anti-Phospholipid Syndrome (APS)

Heparin-Induced Thrombocytopenia (HIT)

## Normaler FVII und VKA



## FVII-Mangel und VKA



## Heparin-induced Thrombocytopenia

Pre-test Clinical Probability Score (4T):

Thrombocytopenia > (30)–50% drop

Timing 5-15 d after start

Thrombosis under LMWH/UFH

Other causes excluded ?

Br J Haematol 2003;121:535

## Heparin-induced Thrombocytopenia

4T

Laboratory confirmation

Do NOT stop alternative non-heparin anticoagulation

Do NOT start Vit.K-antagonists in the acute phase