

New anticoagulants and treatment of severe bleeding



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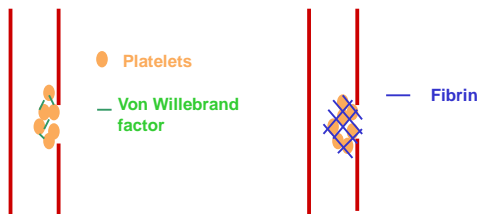
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Agenda

- Hemostasis – blood clotting
- Treatment of severe bleeding
- NOAC – new oral anticoagulants
- Antiplatelet drugs

Normal hemostasis

1. Vasoconstriction
2. Clot of platelets = primary hemostasis
3. Coagulation = production of fibrin



Coagulation

Damaged cells

TF VII IX

1. Initiation
2. Acceleration

X + V + XI + VIII

Prothrombin → Thrombin

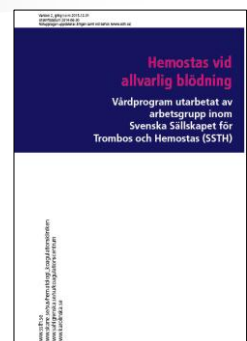
Fibrinogen → Fibrin

Treatment of severe bleeding



Swedish national guidelines

- Updated 2016
- www.ssth.se



Actions in severe bleeding

- Stop bleeding source!
- Start treatment promptly!
- Do not wait for lab results...
- Replace blood loss
- Treatment goal Hb >90 g/l
- Reverse anticoagulants
- Keep the patient warm (> 36,5°)
- Reduce pain and stress

Reverse anticoagulants...



How?

Anticoagulants

Drug	Antidote
Heparin	Protamine
LMW heparin	Protamine?
Citrate	Calcium
Warfarin	PCC (Ocplex), K-vitamin
Other oral anticoagulants	?

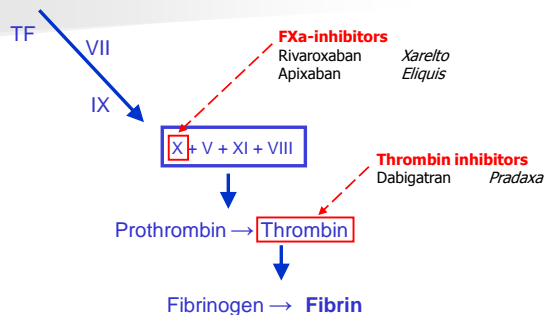
Oral anticoagulants

- Vitamin K antagonists ("old") *warfarin*
- Direct-acting oral anticoagulants ("new")
- Antiplatelet drugs

NOAC – new oral anticoagulants

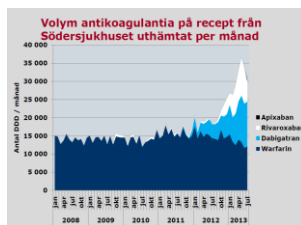


NOAC – new oral anticoagulants



Everyone talks about NOAC...

- Increasing use
- Indications:
 - stroke prevention in atrial fibrillation
 - prophylaxis and treatment of deep vein thrombosis
 - acute coronary syndrome
- Advantages:
 - short onset
 - can be prescribed without regular blood samples



Risks with NOAC

- Increases the risk of bleeding complications and aggravates an ongoing bleeding
- Risk of bleeding increases if multiple drugs are combined
- Specific antidotes available only for Pradaxa – others are underway
- Dependent on renal function for clearance
- At uncontrollable bleeding, hemodialysis may be needed (*Pradaxa*)

Antiplatelet drugs

No antidotes – must wait out drug effect

- | | | |
|---------------|-----------------|--------------|
| ■ ASA | | irreversible |
| ■ NSAID | | reversible |
| ■ Clopidogrel | <i>Plavix</i> | irreversible |
| ■ Tikagrelor | <i>Brilique</i> | irreversible |
| ■ Prasugrel | <i>Efient</i> | irreversible |



What do we do if it bleeds?

- Follow the guidelines!



- Antidote for reversal of *Pradaxa*:

Praxbind 5 g (23 600 SEK/dose)

- life-threatening or uncontrolled bleeding



Severe bleeding or emergency surgery

- NOAC:
 - antidote if available
 - acute testing of the drug's plasma concentration
 - Activated Charcoal (when intake within 4 hrs)
 - Prothrombin Complex Concentrate PCC (Confidex, Ocxplex)

When are the new antidotes coming...?

- Antidote for reversal of Xarelto and Eliquis
 - promising pilot studies
 - FDA denied approval August 2016



Severe bleeding and emergency surgery

■ Antiplatelets:

- platelet function tests (e.g. Multiplate)
- consider desmopressin (Octostim)
- consider platelet transfusion



Summary

- Updated guidelines on treatment of severe bleeding
- New oral anticoagulants and antiplatelets can lead to intractable bleedings
- Specific antidotes available only for Pradaxa – others are underway

