Bleeding and Thrombotic Disorders
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Bleeding disorders
• von Willebrand disease
• Hemophilia
• DIC
• TTP/HUS

Thrombotic disorders
• Factor V Leiden

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Bleeding symptoms depend (somewhat) on underlying cause!

“Platelet” bleeding
• Superficial (skin)
• Petechiae
• Spontaneous

“Factor” bleeding
• Deep (joints)
• Big bleeds
• History of trauma *

* Includes prolonged bleeding after dental work

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Petechiae vs. purpura

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Bleeding and Thrombotic Disorders

Bleeding disorders
• von Willebrand disease

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Von Willebrand Disease

Things you must know

• Most common hereditary bleeding disorder
• Autosomal dominant
• vW factor decreased (or abnormal)
• Variable severity

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What's von Willebrand Factor?

- Huge multimeric protein
- Made by megakaryocytes and endothelial cells
- Two functions:
  - Glues platelets to subendothelium
  - Carries factor VIII (prevents its degradation)

vWF is the "glue" that sticks platelets to subendothelial proteins

Symptoms of Von Willebrand Disease

- Mucosal bleeding in most patients (due to decreased platelet adhesion)
- Deep joint bleeding in severe cases (due to decreased fibrin formation)

Von Willebrand Disease

Diagnosis
- Bleeding time: prolonged
- PTT: prolonged (in severe cases)
- PT/INR: normal

Treatment
- Desmopressin (↑ release of vWF and VIII)
- Cryoprecipitate (contains vWF and VIII)

Bleeding and Thrombotic Disorders

Bleeding disorders
- von Willebrand disease
- Hemophilia
Hemophilia

Things you must know

- Most common factor deficiency
- X-linked recessive in most cases (30% are spontaneous mutations)
- Hemophilia A = ↓ VIII (more common)
  Hemophilia B = ↓ IX
- Variable amount of “factor” bleeding

Normal knee

Knee of patient with hemophilia

Hemophilic arthropathy of knee

Joint deformity in hemophilia

Hemophilia

Diagnosis

- PTT: prolonged
- PT/INR: normal
- Bleeding time: NORMAL!

Treatment of hemophilia A

- Desmopressin
- Recombinant Factor VIII

Treatment of hemophilia B

- Recombinant Factor IX

Bleeding and Thrombotic Disorders

Bleeding disorders

- von Willebrand disease
- Hemophilia
- DIC
Disseminated Intravascular Coagulation (DIC)

Things you must know

- Excessive clotting and bleeding
- Many potential causes
- Blood: MAHA and thrombocytopenia
- PT/INR, PTT, and bleeding time prolonged

What’s going on in DIC?

Remember these causes of DIC:

- Malignancy
- OB complications
- Sepsis
- Trauma

Symptoms of DIC

Thrombosis
Hemorrhage

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Thrombotic Thrombocytopenic Purpura/ Hemolytic-Uremic Syndrome

Things you must know

- Both have widespread clotting (± bleeding)
- Cause: ADAMTS13 deficiency (TTP) or E. coli (HUS)
- Symptoms: renal failure, neurologic symptoms
- Coagulation factors (and tests) are normal!
Deficiency of ADAMTS 13 in TTP

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Thrombotic disorders
- Factor V Leiden

When should you worry about a hereditary disorder?
- no obvious cause
- family history
- weird location
- recurrent
- patient is young
- miscarriages

Thrombosis Risk Factors

Endothelial damage
- Atherosclerosis

Stasis
- Immobilization
- Varicose veins
- Cardiac dysfunction

Hypercoagulability
- Surgery
- Carcinoma
- Estrogen/postpartum
- Thrombotic disorders

Factor V Leiden

Things you must know
- Most common cause of unexplained thromboses
- Inherited point mutation in factor V gene
- Mutated factor V can’t be turned off!
- Diagnosis requires genetic testing
Factor V Leiden

Diagnosis
• PT/INR and PTT: normal!
• Need genetic testing

Treatment
• Don’t! Unless there is a thrombosis.
• Then give oral anticoagulants