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M1 - Cardiovascular / Respiratory, Fall 2007

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Circulatory Derangements
II
HEMORRHAGE
HEMORRHAGE

Escape of blood from the C-V system

- onto the floor

- into the tissues / body cavities
Clinical Patterns of Hemorrhage

- Petechiae – 1-2 mm. hemorrhages
- Ecchymoses- blotches / bruises
- Hematoma – a mass or lump of blood
- Hemothorax – blood in the pleural cavity
- Hemarthrosis – blood in a joint
- Hemopericardium, hematosalpinx, etc.
- Purpura – a condition of widespread cutaneous and mucosal hemorrhages
Petechiae

Source: The Journal of Young Investigators, 2008 (jyi.org)
Ecchymosis
Hematoma
Purpura

Source: Undetermined
Hemostasis involves three components

• Blood vessels
• Platelets
• Coagulation system
Platelets
Bone Marrow

Megakaryocytes
Contact activation (intrinsic) pathway

Damaged surface

XII \rightarrow XIIa

XI \rightarrow XIa

IX \rightarrow IXa VIIIa

X \rightarrow V\rightarrow Xa

Prothrombin (II) \rightarrow Thrombin (IIa)

Active Protein C

Protein S

Protein C + thrombomodulin

Tissue factor (extrinsic) pathway

Trauma

VIIa \rightarrow VII

Tissue factor

Antithrombin

Common pathway

Fibrinogen (I) \rightarrow Fibrin (Ia)

XIIIa \rightarrow XIII

Cross-linked fibrin clot
Ecchymosis - Fresh
Ecchymosis - Resolving
Ecchymosis - Resolving
Erythrophagocytosis
Hemosiderin
Hematoidin
Hemosiderin & Hematoidin
Hemosiderin & Hematoidin
Iron Stain
Pontine Hemorrhage
Cerebral Hemorrhage
Mycotic Aneurysm
Cerebral Hemorrhage
Hypertensive
Cerebral Hemorrhage
Thrombocytopenic
Subdural Hematoma
Hemopericardium
Hemopericardium
Systemic Effects of Hemorrhage

• Exsanguination

• Shock

• Anemia of Chronic Blood Loss
Cecal Carcinoma