

HAEMODYNAMIC DISORDERS, THROMBOEMBOLIC DISEASE, and SHOCK

TOPIC 8 DISSEMINATED INTRAVASCULAR COAGULATION (DIC)



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References:

- **Robbins & Cotran Pathologic Basis of Disease- 9th edition**
- **Davidson's Principles and Practice of Medicine-23rd edition**
- **IMAGES- Above mentioned books & internet**



DISSEMINATED INTRAVASCULAR COAGULATION (DIC)

An acute, subacute or chronic **‘thrombo-haemorrhagic’** disorder characterized by the excessive activation of coagulation and the formation of thrombi in the microvasculature of the body



DIC

- It is not a primary disease
- It occurs secondary to many disorders



Characterized by

**Activation of
coagulation
sequence -
microthrombi
formation**

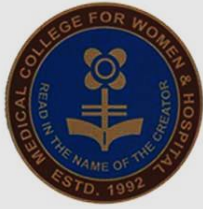
**Consumption of
platelets, fibrin &
coagulation factor**

**Secondary activation
of fibrinolytic
mechanism**



Hence the name **Consumption Coagulopathy**





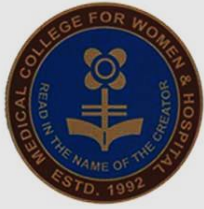


Presentation of DIC

Can cause vascular occlusion, bleeding, tissue hypoxemia or both

Sign / Symptoms of :

-  Tissue ischaemia (due to thrombosis)
-  Haemorrhagic disorders (due to consumption of clotting factors/activation of fibrinolytic pathway)



MAJOR DISORDERS ASSOCIATED WITH DIC

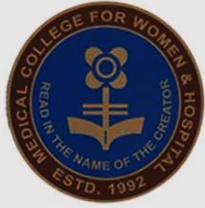
Obstetretic complications

Infections

Neoplasms

Massive tissue injury

Miscellaneous



MAJOR DISORDERS ASSOCIATED WITH DIC

OBSTETRIC COMPLICATIONS

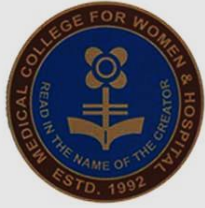
Abruptio placentae

Retained dead fetus

Septic abortion

Amniotic fluid embolism

Toxemia



MAJOR DISORDERS ASSOCIATED WITH DIC

INFECTIONS

Gram-negative sepsis

Meningococchemia

Rocky Mountain spotted fever

Histoplasmosis

Aspergillosis

Malaria



MAJOR DISORDERS ASSOCIATED WITH DIC

NEOPLASMS

- Carcinomas of pancreas, prostate, lung and stomach
- Acute promyelocytic leukemia



MAJOR DISORDERS ASSOCIATED WITH DIC

MASSIVE TISSUE INJURY

- Traumatic
- Burns
- Extensive surgery



MAJOR DISORDERS ASSOCIATED WITH DIC

MISCELLANEOUS

- Acute intravascular hemolysis
- Snakebite
- Giant hemangioma
- Shock, heat stroke
- Vasculitis
- Aortic aneurysm
- Liver disease

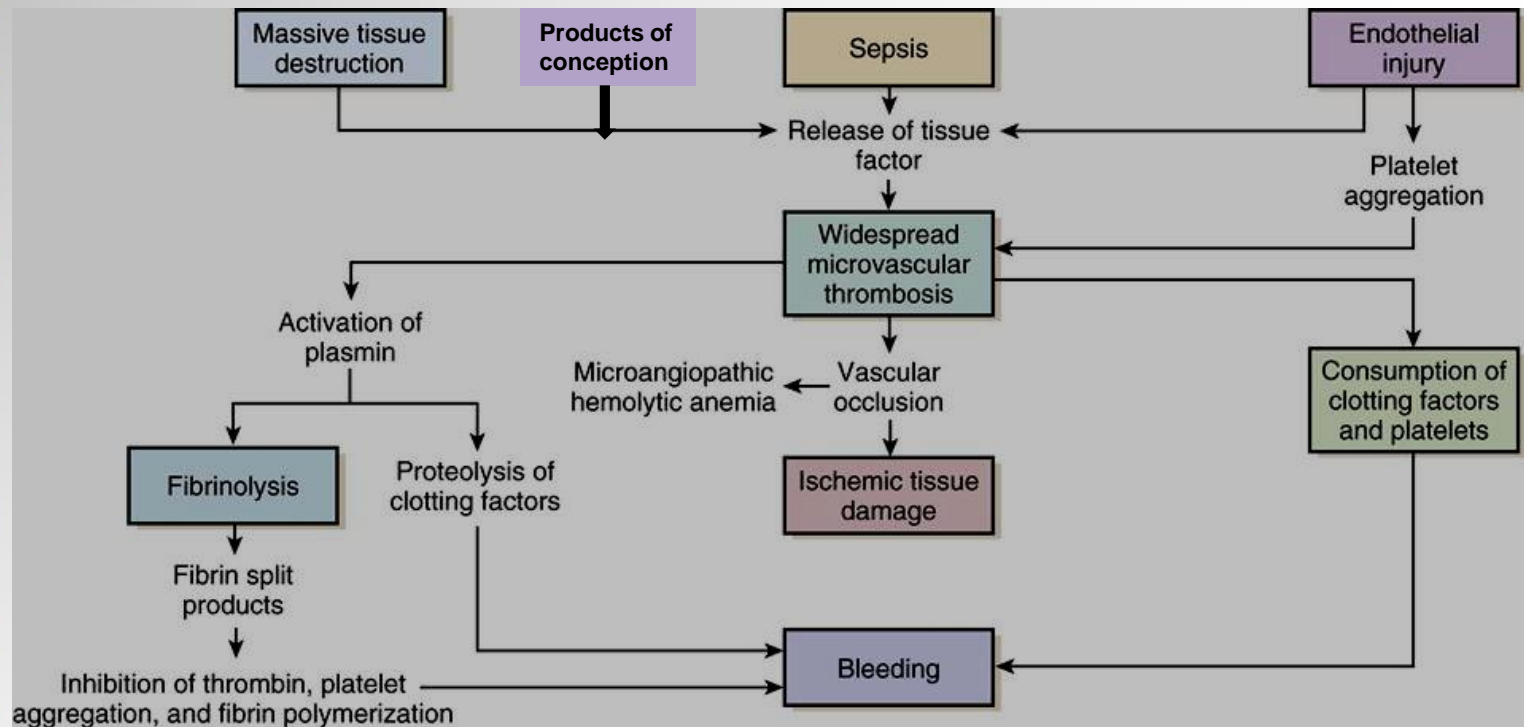


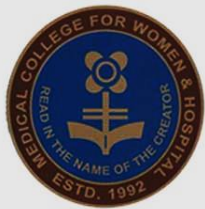
Mechanism of DIC

- (1) Release of tissue factor or thromboplastic substances into circulation**
- (2) Wide spread injury to the endothelial cells**



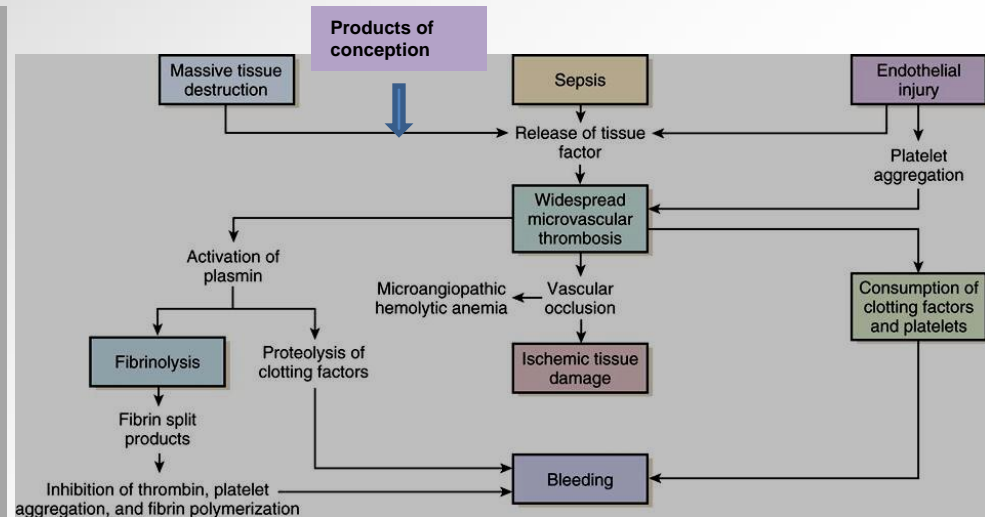
Mechanism of DIC





Mechanism of DIC

- First, there is **widespread deposition of fibrin** within the microcirculation.
- This leads to **ischemia** and to a **hemolytic anemia** resulting from fragmentation of red cells as they squeeze through the narrowed microvasculature (**microangiopathic hemolytic anemia**)
- Second, a **hemorrhagic diathesis** can dominate the clinical picture





Morphology

- Thrombi are found in the following sites in decreasing order of frequency:
brain, heart, lungs, kidneys, adrenals, spleen and liver
- However no tissue is spared

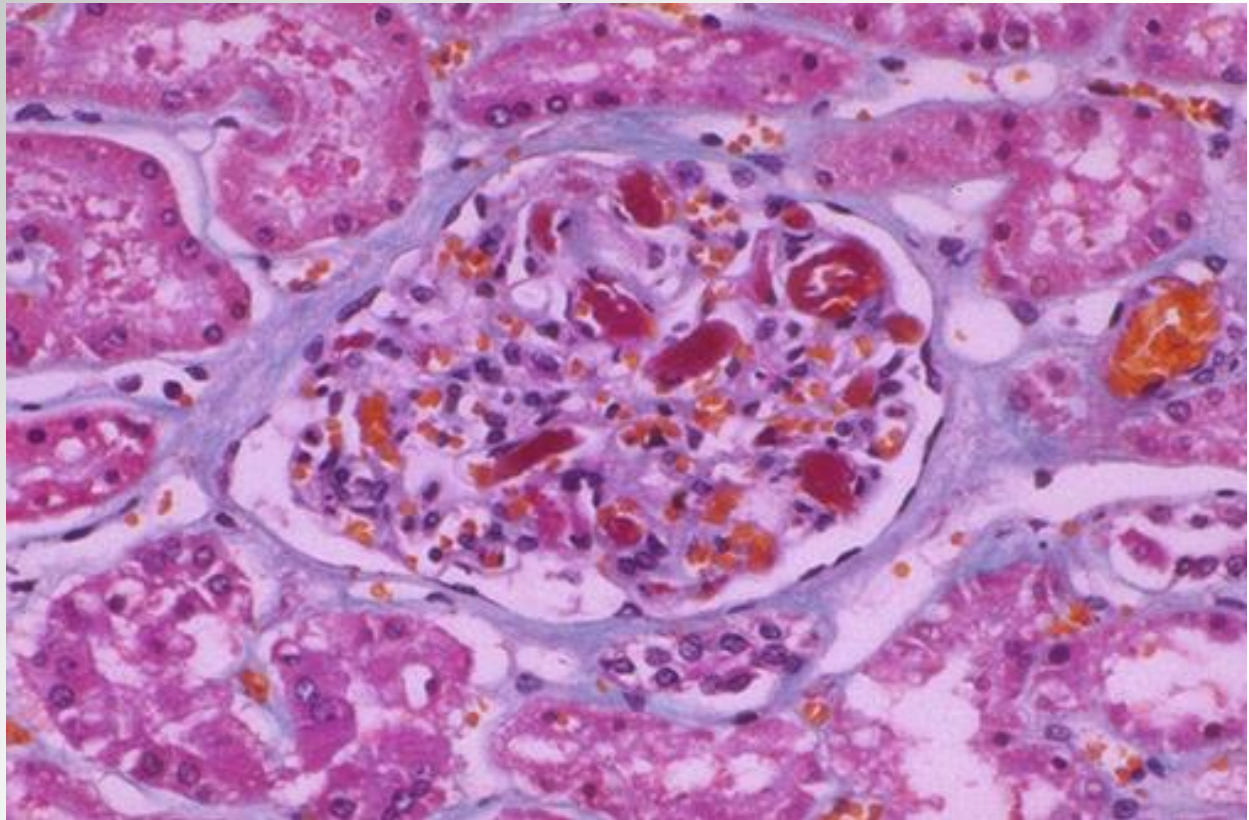


Morphology DIC, Fibrin thrombus in lung





Small fibrin thrombi in capillary loops of glomerular capillaries





The consequences of DIC

- 50% of DIC patients - pregnancy complications
- 33% have carcinomatosis
- **Acute DIC** (Obs/ trauma) - bleeding diathesis
- **Chronic DIC** (Cancer) - thrombotic complication



Diagnosis

- Clinical observation & laboratory findings
- **Thrombocytopenia**
- **P T** (due to deficiency of factor V & fibrinogen)- prolonged
- **Fibrinogen** concentration ↓
- **F D P** ↑



Prognosis

- **Variable**
- **Depends on underlying disorders**

Thank You

