

National University – Sudan

Faculty of Medical Lab. Sciences

Advanced haematology

MLS- HEMA-324

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Disseminated Intravascular Coagulation (DIC)

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Disseminated Intravascular Coagulation (DIC)

Objectives

- By the end of this lecture you will be able to:
- 1- Define DIC.
- 2- List the causes of DIC.
- 3- Mention the clinical manifestations of DIC.
- 4- Classify DIC.
- 5- Diagnose DIC.

Definition

- DIC is an acquired disorder characterised by generalized activation of the haemostatic system .
- (consumption coagulopathy)
- “ increased consumption of coagulation factors& platelets”
- It involves:
- Blood vessel wall, platelets, leukocytes, coagulation, Inhibitory mechanism and ...
- fibrinolysis

Clinical Manifestations

- DIC is divided into:
- *Acute (uncompensated) and ...*
- *Chronic (compensated)*

Acute DIC

- In acute (uncompensated) DIC, there is activation of both the coagulation cascade and the fibrinolytic system.
- The liver is unable to compensate for consumption of coagulation, anticoagulation, and fibrinolytic factors.

- Platelets are consumed, with resulting thrombocytopenia.
- Disseminated fibrin thrombi occur in the microvasculature all over the body.

- Plasmin digestion of fibrin results in the **accumulation of FDPs**, which interfere with both fibrin polymerization and platelet aggregation.

Causes of Acute DIC

- **Pathogenesis:** The primary event in most cases of acute DIC is endothelial injury and/or tissue necrosis, with release of TF into the circulation.
- Inflammatory cytokines, particularly interleukin-6, also appear to be critical.

Causes of Acute DIC (contin.)

- - **Bacteremia**: gram-negative and gram-positive bacteria.
- - **Sepsis** with other organisms: fungi, mycobacteria, some **viruses**.
- - Severe falciparum malaria.

- - **Obstetric** complications: septic abortion, amniotic fluid embolism.
- - Severe **trauma**, especially head trauma
- - Burns
- - Surgery
- - Acute hemolytic transfusion reaction
- - **Malignancies**: acute leukemia (especially acute promyelocytic leukemia – type M3)
- - Some snake bites.

Chronic DIC

- In chronic (compensated) DIC, there is low-grade activation of the coagulation and fibrinolytic systems.
- The liver is able to compensate for the degradation of clotting factors.

Causes of Chronic DIC

- Malignancies:
- carcinomas, particularly gastric and pancreatic.

Diagnosis of acute DIC

- 1- The **platelet** count is **low**.
- 2- The **PT** and **APTT** are **prolonged**.
- 3- The thrombin time is prolonged.
- 4- **Fibrinogen** concentration **low**.
- 5- **High** levels of fibrin degradation products (**FDP**).

- ***Blood film examination:***
- In many patients there is a haemolytic anaemia and the **red cells show prominent fragmentation** because of damage caused when passing through fibrin strands in small vessels

Diagnosis of Chronic DIC

- The basic assays for chronic DIC are:
- The **FDP** test.
- The **PT** and **PTT** tests are usually normal or may even be shortened.
- The **fibrinogen level** and **platelet count** are usually normal or increased.

THANK YOU