

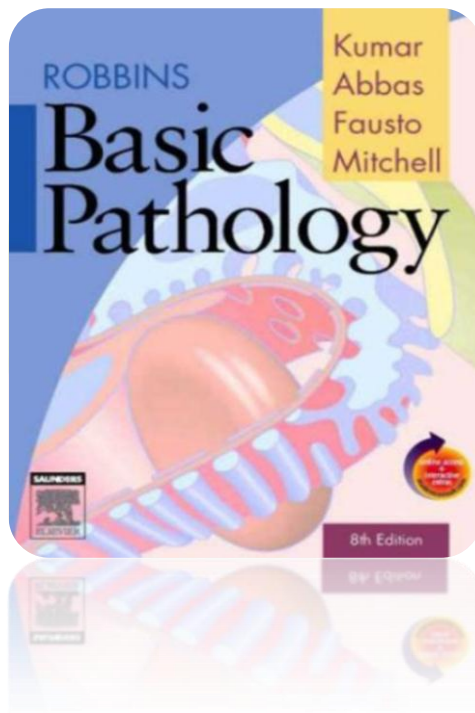
NFLAMMATION

Lecture 1

Definition of inflammation; acute inflammation

Vascular Events in Inflammation

Notes on Dr. Ammar C. Al-Rikabi's handout,
Dr. Maha Arafah



First year Medicine-Foundation Block
Pathology Team
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**Please note: This paper does not replace the main sources, it's
only a facilitator**

Acknowledgement

Dear colleague, this paper was a result of hours and days of hard work
from both female & male pathology teams...
All what they want from you is "Dua'a"

Learning Objectives:

Upon completion of these lectures, the student should:

1. Define inflammation.
2. Recognize the cardinal signs of inflammation.
3. List cells & molecules that play important roles in inflammation
4. Compare between acute and chronic inflammation
5. Describe the sequence of vascular changes in acute inflammation (vasodilation, increased permeability) and their purpose.
6. Know the mechanisms of increased vascular permeability.
7. Compare normal capillary exchanges with exchange during inflammatory response.
8. Define the terms edema, transudate, and exudate.

What is Inflammation?

Inflammation, the local response of the vascularized living tissue to injury or the reaction of the body toward injury

(inflammation is a good process happens in a living tissue*)

Two factors in inflammation:

- 1- Vasculized
- 2- Living tissue

Inflammation is part of a broader protective response (*innate immunity*)

Immunity is divided into:

- 1) General immunity.
- 2) Specific immunity e.g. lymphocyte towards certain virus through cell mediator or antibodies.

Inflammation can induce harm, WHY?

Because inflammation produces mediators “chemical substances could lead to injury to the tissue”

e.g. Anaphylactic reaction > could lead to shock or death حساسية مفرطة

Rheumatoid arthritis > antibodies against the cells

Atherosclerosis > accumulation of lipids in blood vessels

↑ Inflammatory mechanism >> excessive tissue damage

Cardinal signs of inflammation = Local clinical signs: ييجي يااختبار ركزت عليها الدكتور هـ

- Heat
- Redness
- Swelling
- Pain
- Loss of function

FEVER is systemic sign NOT local

TYPES OF Inflammation

| Feature | Acute | Chronic |
|-------------------------|--------------------------|-------------------------------|
| Onset | Fast : minutes or hours | Slow : days weeks |
| Cellular infiltrate | neutrophils | lymphocytes and macrophages |
| Tissue injury, fibrosis | Mild بسيط , self-limited | Often sever & progressive |
| Local & systemic signs | Prominent | Less prominent, may be subtle |

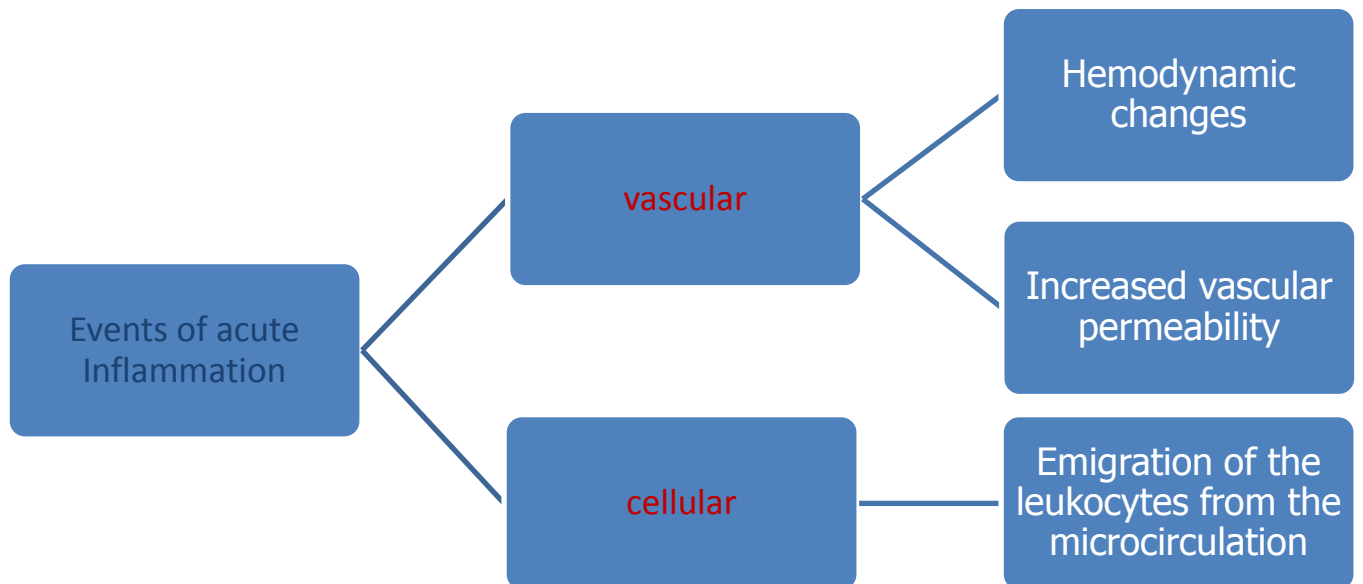
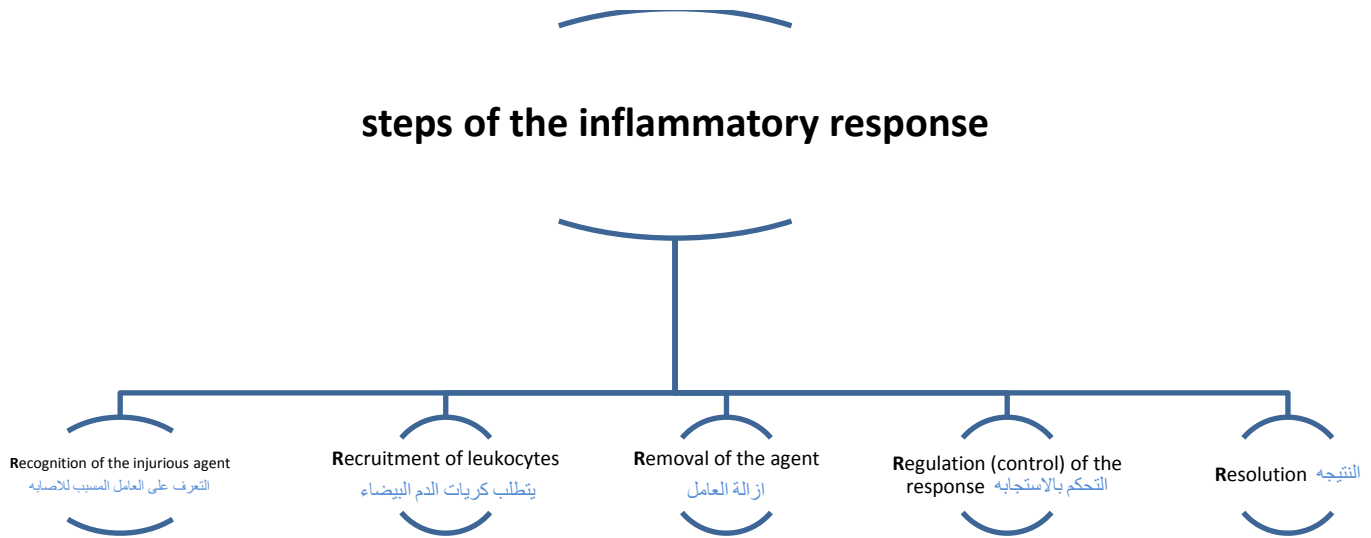
Inflammation is similar to the war

لما يصير فيه حرب لازم تجي الجنود الليوكوسايت وهي عبارة عن خلايا صغيرة متواجدة في كل أنحاء الجسم وجاهزة للدفاع المباشر عنه عادة اول يومين تكون نيوتروفيلز وبعدها تجي الجنود المدججة اللي هي الماكروفاج

Acute inflammation:

A rapid response to an injurious agent that serves to deliver mediators of host defense-leukocytes and plasma proteins-to the site of injury.

Acute inflammation takes minutes, while the chronic inflammation takes days&hours.



Vascular:



Hemodynamic:

The study of the forces involved in the circulation of blood

1-Hemodynamic changes

(alterations in vascular caliber that lead to an increase in blood flow)

Vasodilatation

* vasodilation causes the redness (due to increase blood flow in hemodynamic)

1. Transient(عابر) vasoconstriction of arterioles

It disappears within 3-5 seconds in mild(خفيف) injuries

2. Vasodilatation:


It involves the arterioles results in opening of new microvasculature beds in the area leading to increasing blood flow

3. Slowing of the circulation

due to increased permeability of the microvasculature, this leads to outpouring of protein-rich fluid in the extravascular tissues.

4. stasis * a stoppage or diminution of flow

slow circulation due to dilated small vessels packed with red cells



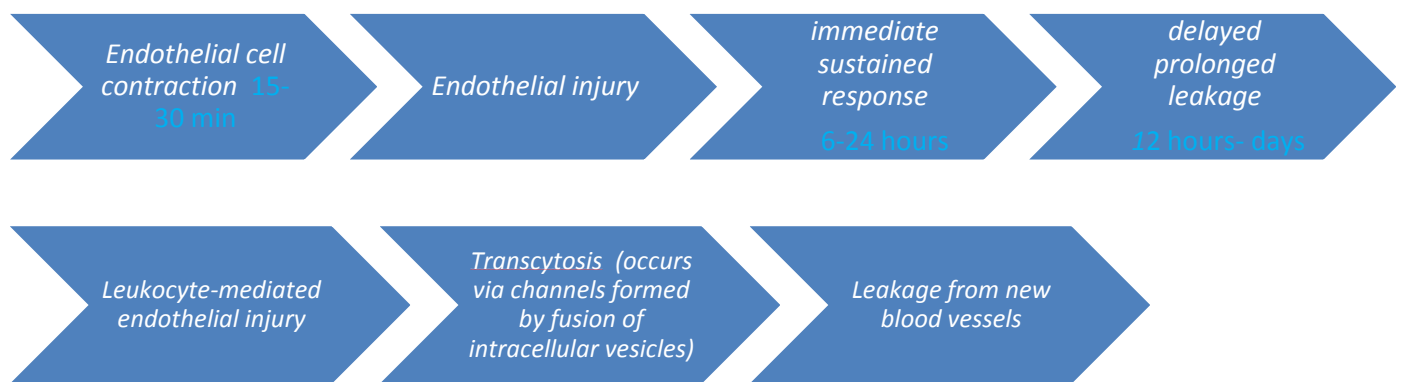
Dilation occurs in the arterioles

2-Increased vascular permeability

(structural changes in the microvasculature that permit plasma proteins and leukocytes to leave the circulation)

It affects small & medium size venules, through gaps between endothelial cells

Mechanisms lead to increased vascular permeability



*Edema occurs in cavities or interstitial
*we call it edema if it is in the tissue

Edema:

denotes an excess of fluid in the interstitial or serous cavities

can be either :

Transudate

1-is a fluid with **low protein** content
2-essentially an ultrafiltrate of blood plasma that results from osmotic or hydrostatic imbalance across the vessel wall without an increase in vascular permeability

Transudate escape of fluid but LOW OR NO PROTEIN *

Exudate

1-An inflammatory extravascular fluid that has a **high protein** concentration, cellular debris.
2-It implies significant alteration in the normal permeability of small blood vessels in the area of injury

Exudative is seen in inflammatory*

Exudative allow escape of fluid and protein because if the increased in vascular permability