



INFLAMMATION INFLAMMATORY RESPONSE



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(Immunity)

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Lecture 1.

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Immunity

□ Immunity

The state of protection from infectious disease has both a less specific and more specific component

□ Immune response

Innate (non-specific)

Adaptive (specific)

Primary

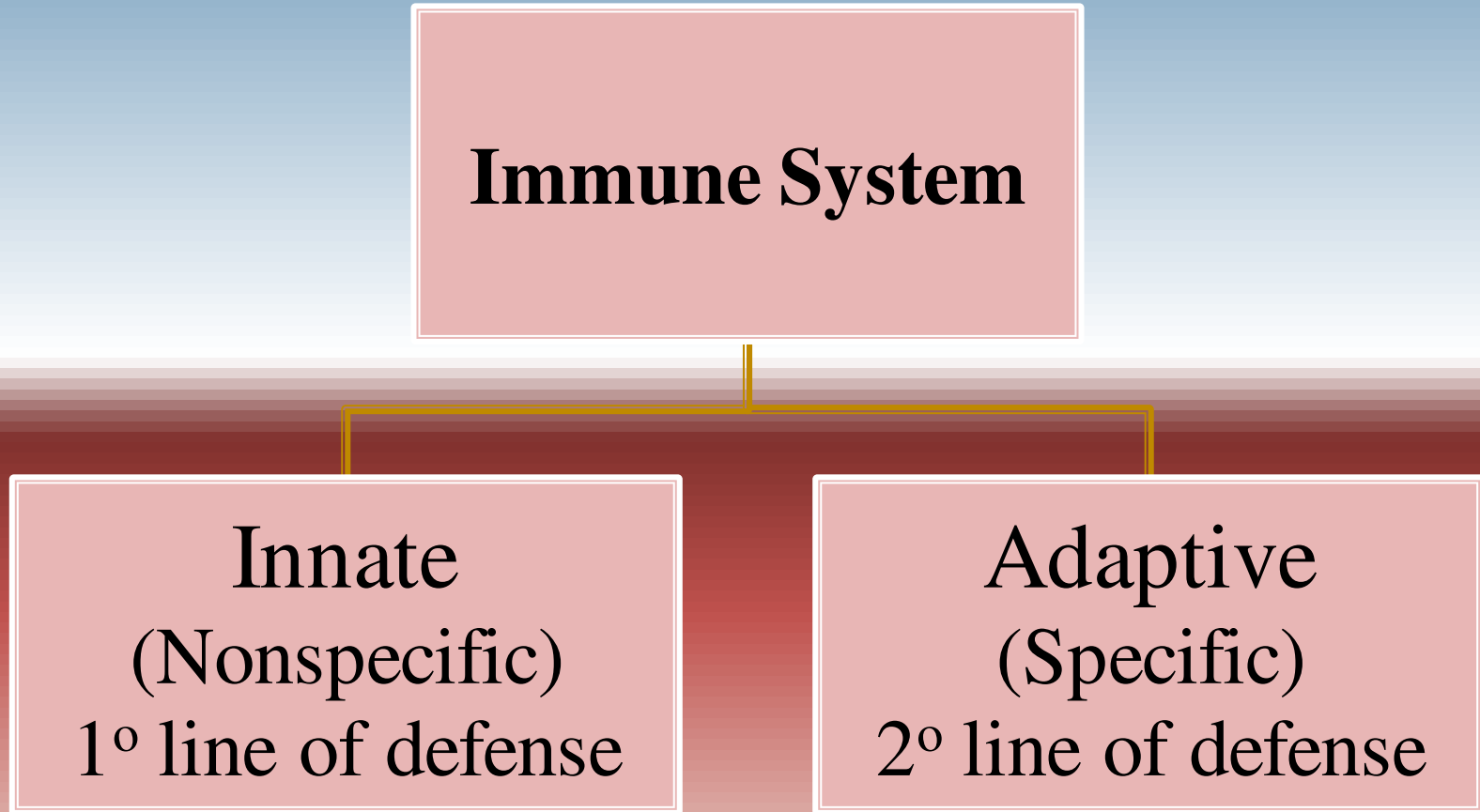
Secondary

□ Acquisition of Immunity

Natural

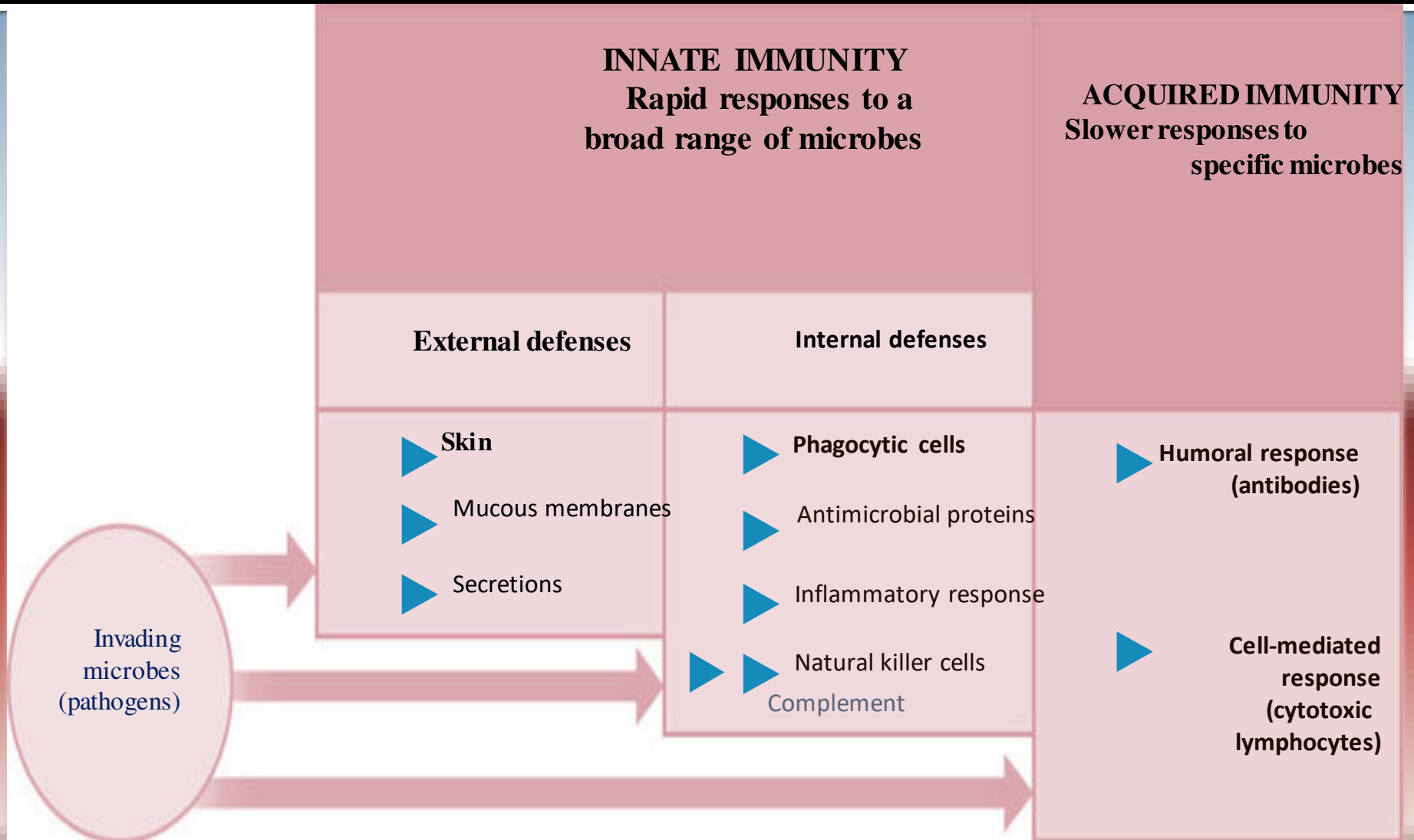
Artificial

Overview of the Immune System



Interactions between the two systems

Body Defenses



Innate Immunity

Anatomical

1. Mechanical
2. Chemical
3. Biological

External D.

Humoral

1. Complement
 1. Acute phase protein
 2. Cytokines

Internal Def.

Cellular

1. Cell of Innate
 2. Macrophage
 3. Neutrophile
 4. NK

Innate (non-specific) Immunity

4 barriers to infection:

- ✓ **Anatomic**
- ✓ **Physiologic**
- ✓ **Phagocytic**
- ✓ **Inflammatory**

Innate (non-specific) Immunity

1) Anatomic

skin -> epidermis w/ keratin
mucus memb. -> inner surfaces

2) Physiological

temperature, pH, soluble subst.

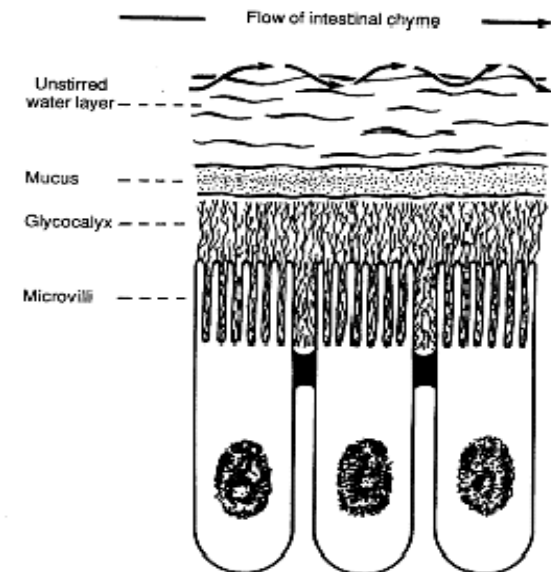
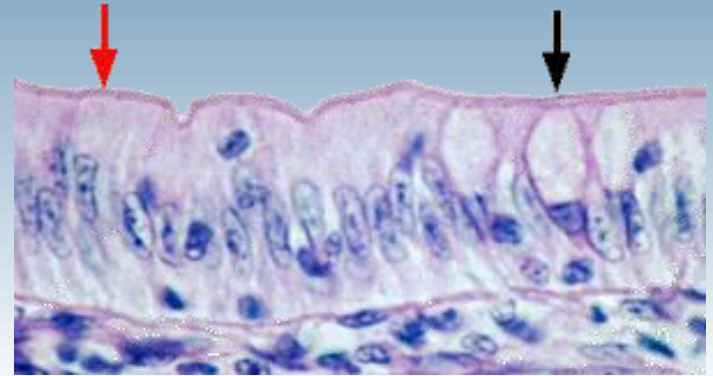
3) Phagocytes

blood monocytes, tissue MØ, and neutrophils

4) Inflammatory response

triggered by wound/foreign particle
5 Cardinal signs reflect 3 major events of inflam response:

- vasodilation
- >capillary permeability
- influx of phagocytes





**What happens if a pathogen DOES
get past the physical barrier?**

The body's inflammatory response kicks in!

The inflammatory response

What's going on?



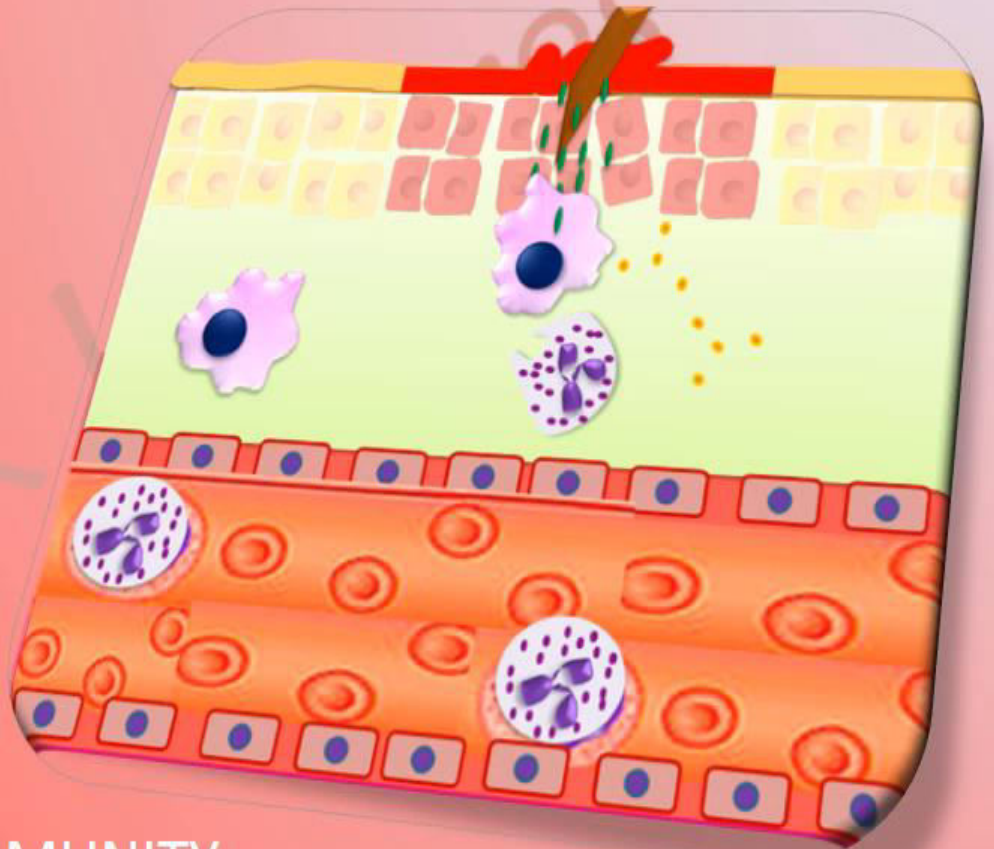
SCIENCEPHOTOLIBRARY

Chilblains – inflammation of the toes (or other extremities) caused by prolonged exposure to moisture and cold.

Inflammation

and

Fever



INNATE IMMUNITY

DEFINITION

Inflammation:

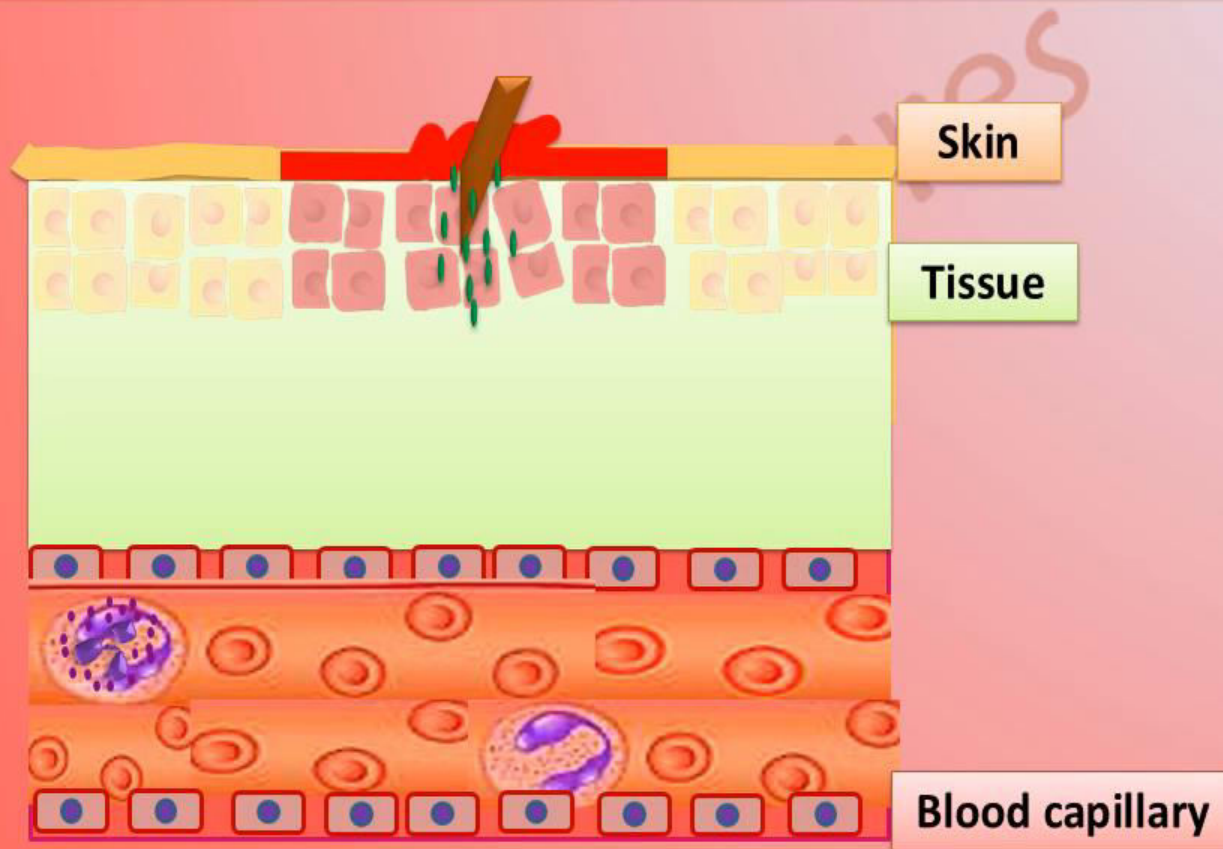
Inflammation is the response of living tissue to injury.

- **It involves a well-organized cascade of fluid and cellular changes within living tissue.**
- **is the reaction of blood vessels, leading to the accumulation of fluid (Serum) and leukocytes in extra vascular tissue.**

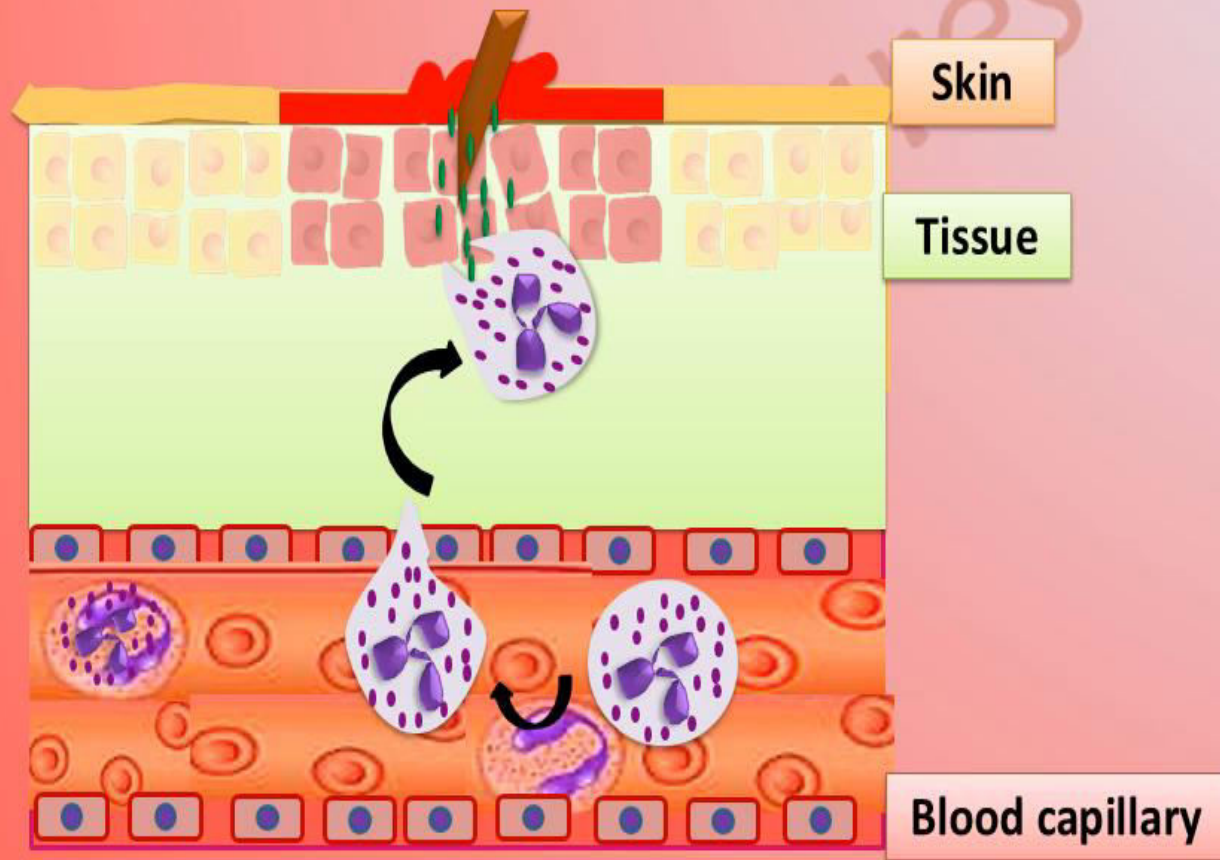
CAUSES Of INFLAMMATION

- Etiologic agents – viruses, bacteria, fungi, parasites
- Hypersensitivity – body reacts against itself, there are four types of reactions
- Physical and chemical agents - trauma, sunburn, acid
- Necrosis - anoxia, trauma

INFLAMMATION



INFLAMMATION



INFLAMMATORY RESPONSE

Represents a Complex Sequence of Events That Stimulates Immune Responses

Tissue damage caused by a wound or by an invading pathogenic microorganism induces a complex sequence of events collectively known as the **inflammatory response**.

The “four cardinal signs of inflammation” as:

Signs

and

Symptoms





Signs and Symptoms of Inflammation

1. Redness (**rubor**)
2. Localized heat (**calor**)
3. Pain (**dolor**)
4. Swelling (**edema**)
5. Altered function (**functio laesa**)



Inflammation

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graph TD; A[Inflammation] --> B[Based on duration of inflammation]; B --> C[Acute Inflammation]; B --> D[Chronic inflammation];
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Based on duration of inflammation

Acute
Inflammation

Chronic
inflammation

INFLAMMATION

- Inflammation has vascular & cellular events:
- 1. VASCULAR EVENTS
 - ✓ *Vasodilation*
 - ✓ *And then increased Vascular permeability*
- 2. CELLULAR EVENTS
 - Cells move out of the vessels into the area of inflammation using *chemotaxis*
 - Inflammatory cells become *activated and then can phagocytose offending materials*

Acute Inflammation

- Short- term inflammation
- Starts rapidly
- Quickly becomes severe
- Signs and symptoms are present for few days or in some cases for few weeks

Acute Inflammation

- The host's immune system is successful in defending the injury.
- It involves

✓ killing of invading microbes

✓ repair

✓ healing of the injured tissue

Chronic Inflammation

Infection is not eliminated

Tissue injury is prolonged

- Long-term inflammation
- Lasts for several months or even years
- Cause of inflammation is not destroyed

THANK YOU
FOR
ATTENTION