SNS COLLEGE OF ALLIED HEALTH SCIENCE

Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai

DEPARTMENT OF CARDIAC TECHNOLOGY

COURSE NAME : PATHOLOGY

UNIT : GENERAL PATHOLOGY

TOPICS : INFLAMMATION - ACUTE

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Introduction to Inflammation

Inflammation is a **protective response** by the body to eliminate the initial cause of cell injury, clear out necrotic cells/tissues, and initiate tissue repair.

It involves:

Vascular responses

Migration and activation of leukocytes

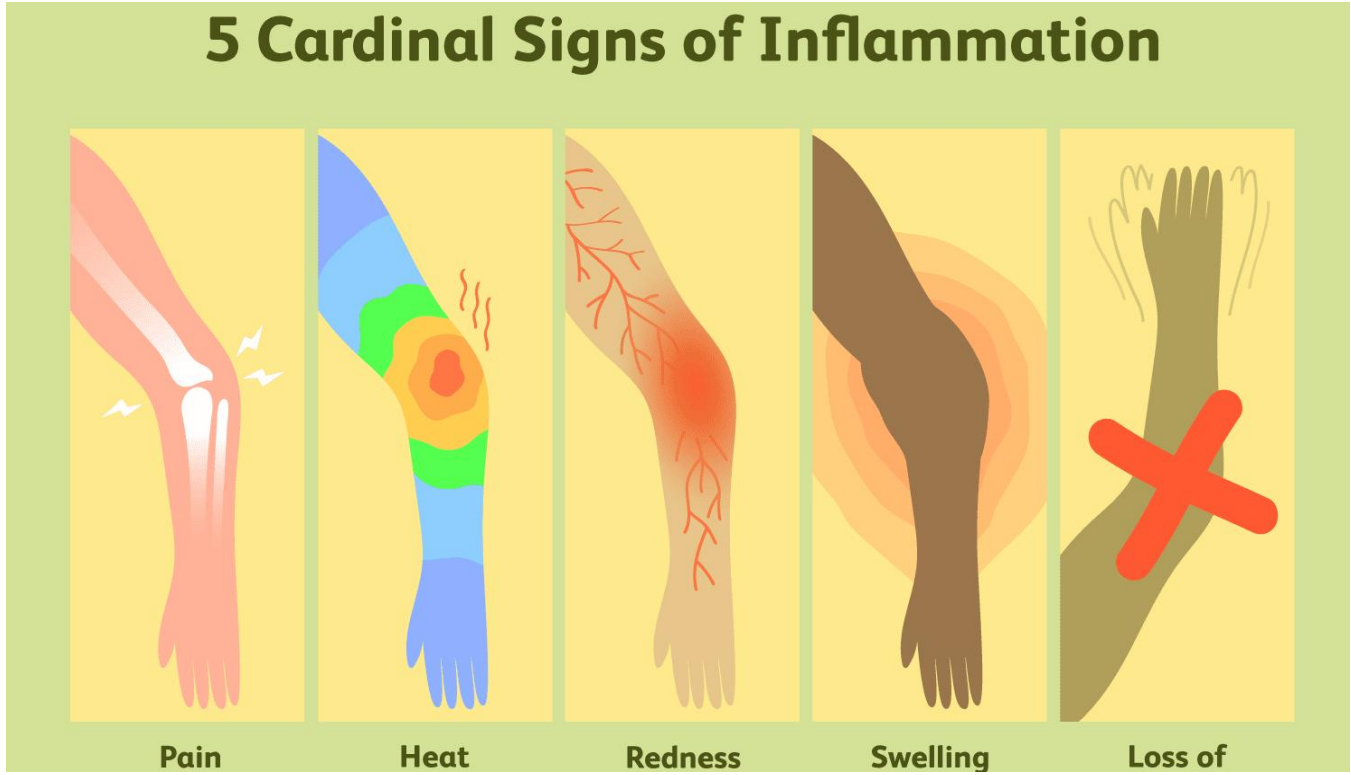
Release of inflammatory mediators

🔍Goal: Remove the injurious agent and initiate healing.

Signs of Inflammation

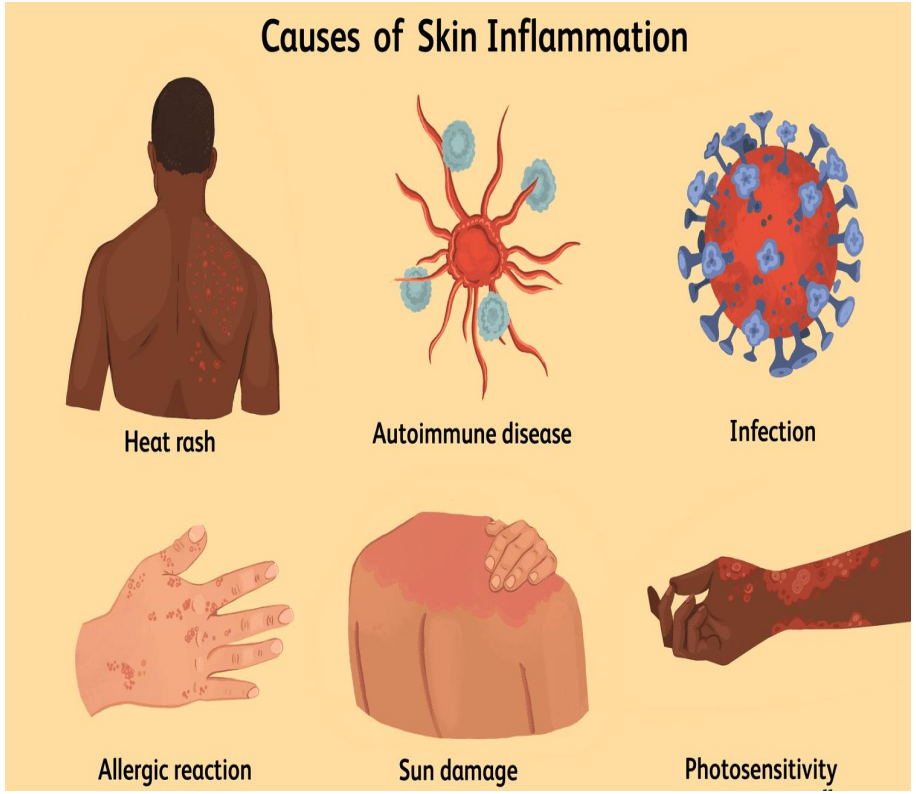
Latin	Meaning	Explanation
Rubor	Redness	Due to vasodilation
Calor	Heat	Increased blood flow
Tumor	Swelling	Due to exudation of fluid
Dolor	Pain	Due to prostaglandins & bradykinin
Functio laesa	Loss of function	Due to swelling or tissue destruction

Signs of Inflammation



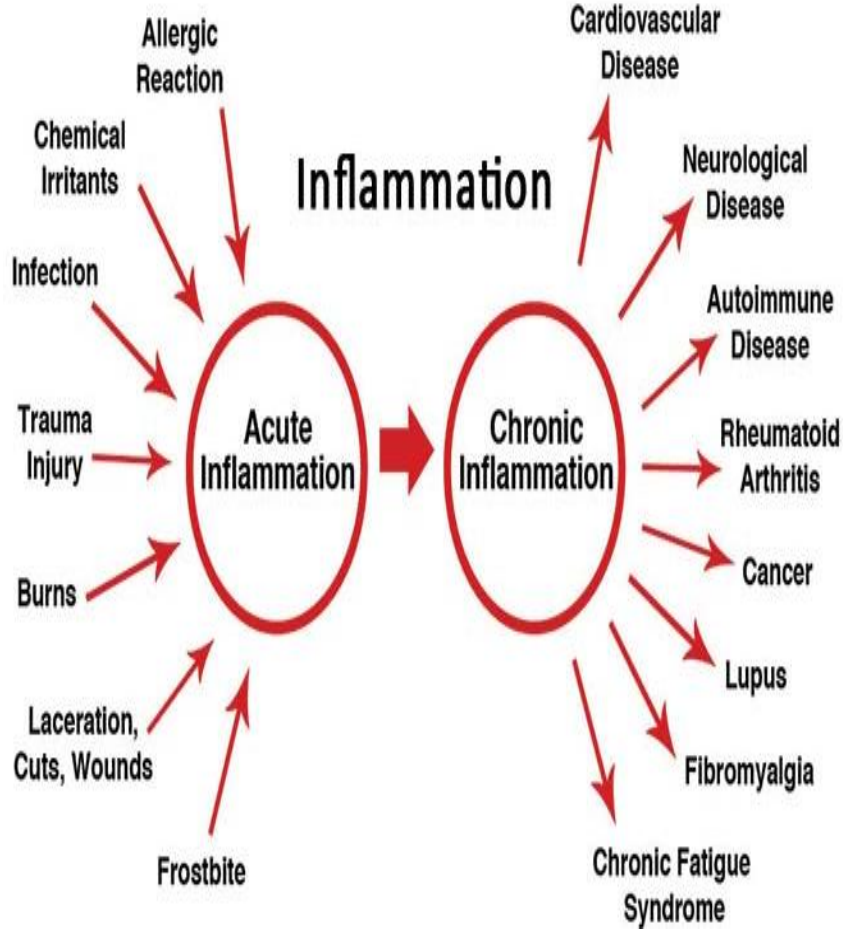
Causes of Inflammation

- **Infections** – bacterial, viral, fungal, parasitic
- **Tissue necrosis** – ischemia, trauma
- **Foreign bodies** – splinters, sutures
- **Immune reactions** – autoimmune diseases, hypersensitivity
- **Physical agents** – burns, radiation, cold/heat
- **Chemical agents** – acids, alkalis, toxins



Types of Inflammation

Type	Characteristics	Duration
Acute	Rapid onset, short duration, neutrophil-dominated	Hours to days
Chronic	Slow progression, lymphocyte & macrophage-dominated	Weeks to years

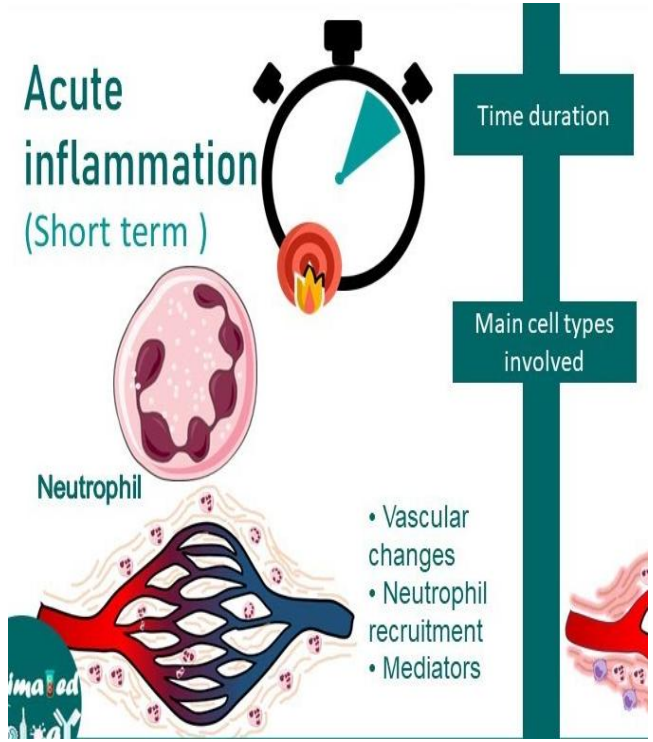


Introduction to Acute Inflammation

Introduction to Acute Inflammation

Definition: Rapid, short-term response to injury/infection characterized by exudation of fluid and plasma proteins and emigration of leukocytes (mainly neutrophils).

Purpose: Eliminate pathogens, remove necrotic tissue, initiate repair



Cellular Events in Acute Inflammation

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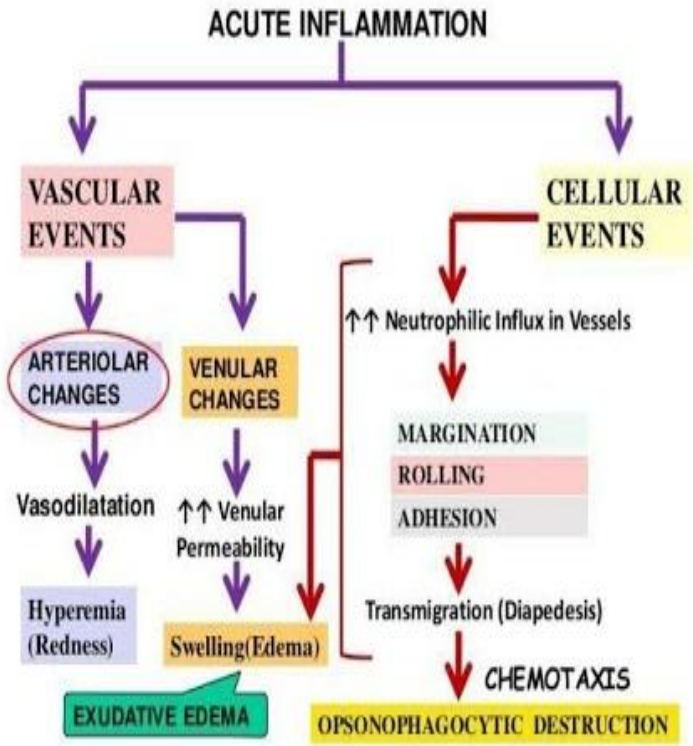
1. **Margination and Rolling**
   - Leukocytes accumulate along endothelial lining
   - Selectins mediate loose adhesion
2. **Adhesion**
   - Firm attachment of leukocytes to endothelium via integrins
3. **Transmigration (Diapedesis)**
   - Leukocytes move between endothelial cells into tissues
4. **Chemotaxis**
   - Migration of leukocytes towards site of injury (guided by chemokin
5. **Phagocytosis**
   - Recognition → Engulfment → Destruction of pathogens



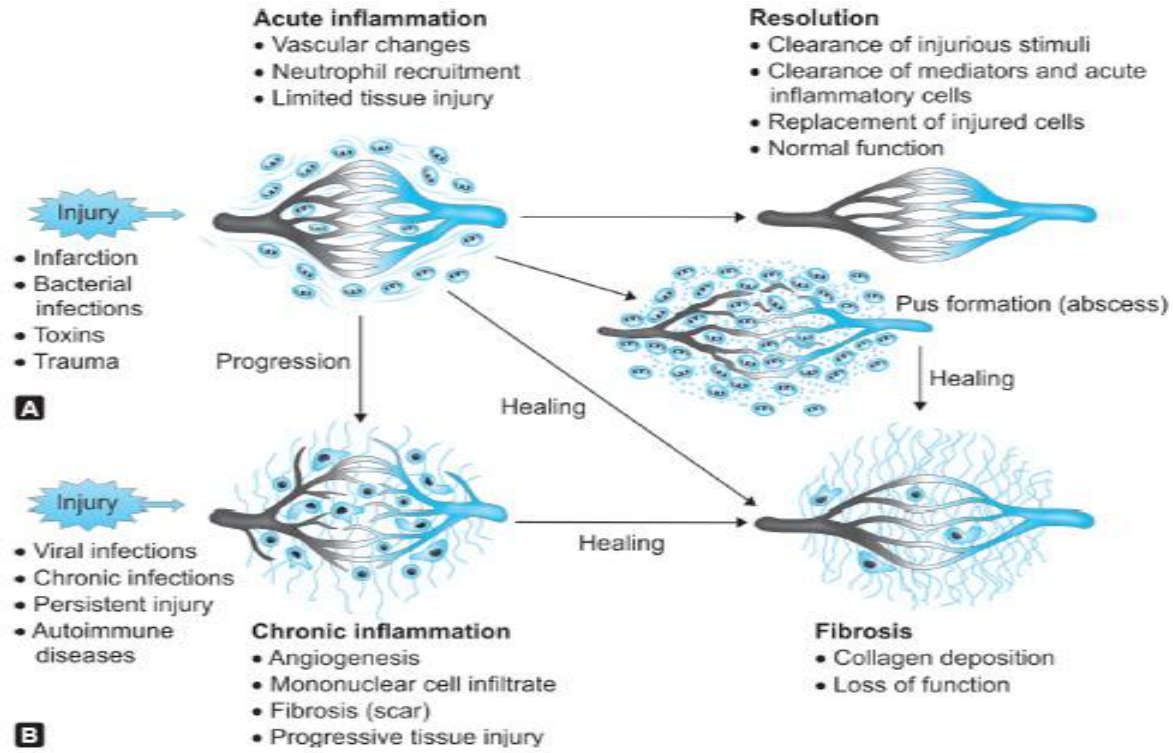
Outcomes of Acute Inflammation

Resolution – Complete healing with restoration of normal structure

Suppuration – Pus formation (abscess)

Chronic inflammation – If the stimulus persists

Fibrosis – Scar formation in severe tissue damage



Summary & Key Points

- ✓ Inflammation is a protective, yet potentially harmful response.
- ✓ **Acute inflammation** is short-lived and dominated by **neutrophils**.
- ✓ **5 cardinal signs** define the clinical picture.
- ✓ The process involves **vascular** and **cellular events**.
- ✓ Outcomes depend on the type, severity, and duration of the injurious stimulus.

References

- https://www.slideserve.com/johnfields/inflammation-powerpoint-ppt-presentation
- https://www.scribd.com/doc/39052175/Pathology-Chapter-3-Inflammation-slides