

# *Inflammatory Response*

---

Dr. Ahmed Hasan

# Inflammatory Response

---

- The complex cascade of events that resulting from innate responses to infection or tissue injury.



# Types of Inflammation

---

- Acute (short-term effects contributing to combating infection, followed by healing) for example, in response to local tissue damage.
- Chronic (long term, not resolved), contributing to conditions such as arthritis, inflammatory bowel disease, cardiovascular disease, and Type 2 diabetes.

# Inflammation Hallmarks

---

- The hallmarks of a localized inflammatory response are redness and swelling with heat and pain, these symptoms reflect an increase in vascular diameter (vasodilation), resulting in a rise of blood volume in the area. Higher blood volume heats the tissue and causes it to redden.
- Vascular permeability also increases, leading to leakage of fluid from the blood vessels, resulting in an accumulation of fluid (**edema**) that swells the tissue.



## Step ... Step

---

- leukocytes also enter the tissue from the local blood vessels.
- activation of resident tissue cells—macrophages, mast cells, and dendritic cells—by PAMPs and DAMPs to release chemokines, cytokines, and other soluble mediators into the vicinity of the infection or wound.
- Recruited leukocytes are activated to phagocytose bacteria and debris and to amplify the response by producing additional mediator.

# Resolution

---

- Resolution of this acute inflammatory response includes the clearance of invading pathogens, dead cells, and damaged tissue; the activation of the systemic acute phase response and additional physiological responses, including the initiation of wound healing; and the induction of adaptive immune responses.



Mediators  Increase Vascular Permeability

---

- Proinflammatory cytokines TNF- $\alpha$ , IL-1, and IL-6.
- Chemokines.
- Prostaglandins.
- Histamine.

# Fever





