

What is the Inflammation Response?

Worksheet

The inflammation response is a nonspecific defense reaction - triggered by injury or infection - in which blood vessels dilate, capillaries become more permeable, and phagocytes migrate to the site to destroy pathogens and clear debris.

Questions

1. Which chemical mediator causes vasodilation in early inflammation?

- A) Insulin
- B) Histamine
- C) Hemoglobin
- D) Melanin

2. Which is NOT a cardinal sign of inflammation?

- A) Redness
- B) Heat
- C) Paralysis
- D) Swelling

3. What causes swelling (edema) during inflammation?

- A) Decreased blood flow
- B) Increased capillary permeability letting fluid leak out
- C) Muscle contraction
- D) Reduced white blood cell count

4. Which cell type typically arrives first at an inflammation site?

- A) Neutrophils
- B) Red blood cells
- C) Osteoblasts
- D) Neurons

5. You step on a splinter and the area becomes red, warm, and swollen within an hour. Explain the process.

6. A cut becomes infected with bacteria and produces pus. What does the pus contain and why does it form?

7. Why does a sprained ankle stay swollen for days even after the initial injury has stopped?

8. Define: What triggers the inflammation response?

9. Define: What are the cardinal signs of inflammation?

10. Define: What does vasodilation cause?

Answer Key

1. B) Histamine - Mast cells release histamine, which dilates blood vessels.
2. C) Paralysis - The five cardinal signs are redness, heat, swelling, pain, and loss of function - paralysis isn't one of them.
3. B) Increased capillary permeability letting fluid leak out - Leaky capillaries let fluid and proteins move into tissue, causing swelling.
4. A) Neutrophils - Neutrophils are fast-responding phagocytes that arrive early via chemotaxis.
5. Tissue damage releases histamine from mast cells Histamine causes nearby blood vessels to dilate (vasodilation) redness and warmth Capillaries become more permeable, fluid leaks into tissue swelling Pain receptors are stimulated by chemical mediators and pressure from swelling
6. Neutrophils migrate to the site by chemotaxis to fight the bacteria They engulf and destroy bacteria via phagocytosis Dead neutrophils, dead bacteria, and tissue debris accumulate This accumulation of dead cells and fluid is what forms pus
7. Increased capillary permeability continues as long as inflammatory mediators are present Fluid and proteins keep leaking into the tissue space (edema) Swelling persists until the vascular response subsides and healing/resolution begins Rest, ice, compression, and elevation reduce blood flow and permeability, speeding resolution
8. Tissue injury or infection, which causes cells like mast cells to release histamine and other chemical mediators.
9. Redness (rubor), heat (calor), swelling (tumor), pain (dolor), and loss of function (functio laesa).
10. Increased blood flow to the area, producing redness and heat.

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