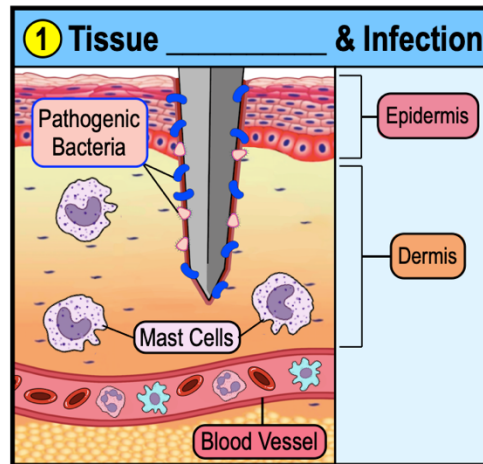


CONCEPT: STEPS OF THE INFLAMMATORY RESPONSE

- A series of _____ events occur in the inflammatory response during tissue damage & infection.

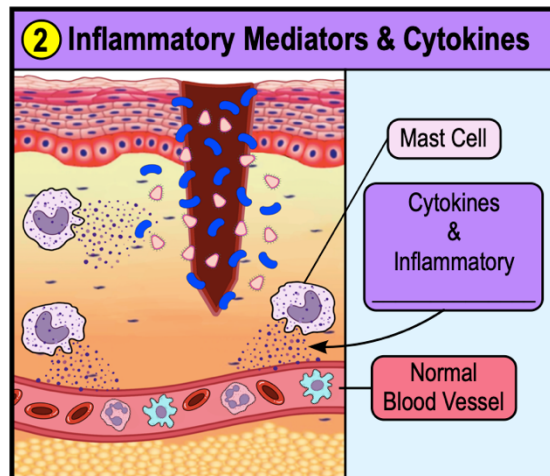
1) Tissue Damage & Infection

- Damage to tissue allows microbes to bypass the _____-line defenses & enter surrounding tissue cells.
 - Immediately after injury, blood vessels *briefly* _____ via **vasoconstriction**, to prevent blood loss.



2) Release of Inflammatory Mediators & Other Cytokines

- In response to microbe invasion, local _____ cells release *cytokines & inflammatory mediators*.
 - **Inflammatory Mediators:** _____ molecules involved in the inflammatory response (Ex. *Histamine*).
 - Regulate changes in local blood vessels & signal immune cells from the blood to the infected site.



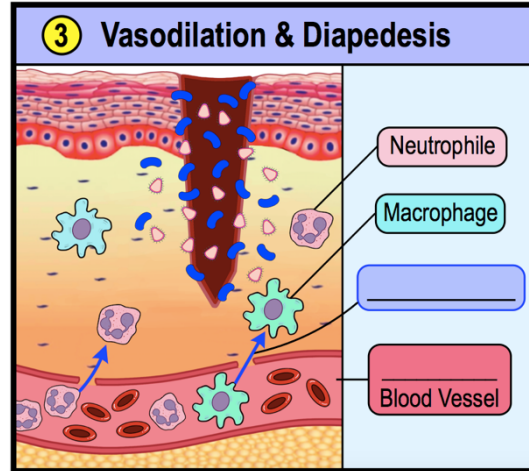
PRACTICE: In the inflammatory response, which immune cells are the first to begin the immune response to an injury?

- The neutrophil cells are the first to respond to the injury and begin removing invading microbes.
- The mast cells release inflammatory mediators to recruit other immune cells to the injury site.
- The macrophages release histamine to dilate the blood vessels allowing immune cells to enter the injury site.

CONCEPT: STEPS OF THE INFLAMMATORY RESPONSE

3) Vasodilation

- **Vasodilation:** dilation of blood vessels that _____ their permeability in response to *inflammatory mediators*.
- **Diapedesis:** *migration* of immune cells through the intact walls of blood vessels into the infected tissue.
- _____: fluid mix of blood plasma, proteins, & immune cells that exit bloodstream to infected site.
- *Recall:* Neutrophils are the _____ type of phagocytes recruited.

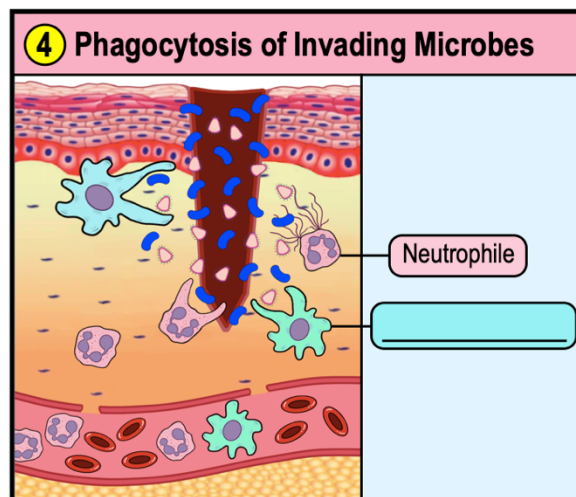


PRACTICE: Which of the following is needed for vasodilation and diapedesis to occur at an infection site?

- a) Mast cells releasing histamines and cytokines to dilate the blood vessels & recruit immune cells.
- b) Adhesion proteins on the endothelial cells of the blood vessels allowing the immune cells to leave the blood stream.
- c) Exudate full of blood, plasma, proteins and immune cells exiting the blood stream to the infection site.
- d) All are needed for vasodilation and diapedesis to occur at the site of an infection.

4) Removal of Invading Microbes

- Phagocytic cells from the blood destroy/_____ invading microbes.
- Neutrophils remove microbes & macrophages _____ dead cells in the area.



CONCEPT: STEPS OF THE INFLAMMATORY RESPONSE

PRACTICE: Which immune cells are responsible for removing dead or damaged host material at an injury site?

- a) Macrophages.
- b) Mast cells.
- c) Neutrophils.
- d) Platelets.

PRACTICE: Match the scenario to the step of the inflammatory response it belongs in.

1. Tissue Damage & Infection.
2. Release of Inflammatory Mediators & Cytokines.
3. Vasodilation and Diapedesis.
4. Removal of Invading Microbes and Damaged Tissue.

_____ Local mast cells release histamines and cytokines when encountering an invading microbe.

_____ Neutrophils destroy the invading microbes found in the injury site.

_____ Peter accidentally cuts his finger with a kitchen knife.

_____ Fluid full of plasma, proteins and immune cells exits the blood stream at injury site.

_____ Macrophages remove the epidermis and dermis cells damaged by the injury.

_____ The blood vessels in the region of the injury dilate releasing immune cells and proteins.

_____ Pathogenic bacteria enter the host's body.

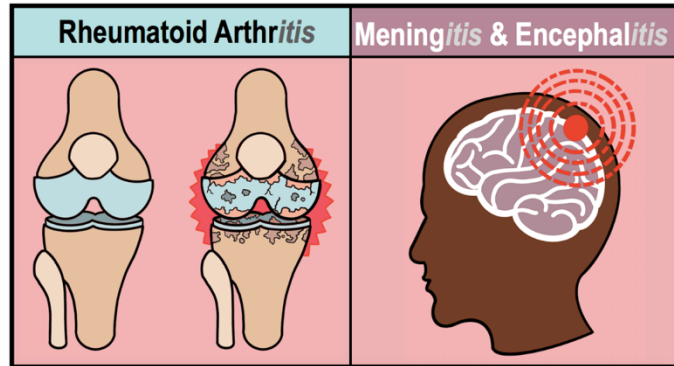
PRACTICE: The attraction of leukocytes to the area on inflammation is referred to as

- a) Parasitism.
- b) Infection.
- c) Phototaxis.
- d) Chemotaxis.

CONCEPT: STEPS OF THE INFLAMMATORY RESPONSE

Damaging Effects of the Inflammatory Response

- Although inflammation is designed to eliminate microbes, sometimes it can result in significant damage to the _____.
- Depending on the location in the host, inflammation can be life threatening.
- The suffix - _____ in many disease names means inflammation (Ex. *meningitis* or *encephalitis*).



PRACTICE: Which of the following statements about the inflammatory response is *false*?

- a) It includes vasodilation of the blood vessels and the release of immune cells from the blood stream.
- b) Neutrophils are the first cells to exit the blood stream during the inflammatory response.
- c) Apoptosis of infected cells triggers the inflammatory response.
- d) Chronic triggering of the inflammatory response can damage the host.
- e) Major signs of inflammation include: redness, swelling, heat, pain, and loss of function.

PRACTICE: Rheumatoid arthritis is an autoimmune disease, meaning that the body's immune system attacks the body's joint tissues. Why are many autoimmune diseases associated with chronic inflammation?

- a) The tissues the immune system is "fighting" are always present, so the inflammatory response does not shut off.
- b) The invading microbes are not easily killed and keep reforming causing chronic inflammation.
- c) The invading virus goes dormant in the body and later reemerges causing prolonged periods of inflammation.

PRACTICE: Which of the following is FALSE in regards to inflammation?

- a) It is a component of the second line of defense.
- b) It is caused by antibody-antigen complexes.
- c) It is a component of the first line of defense.
- d) It can be caused by endotoxins.