Platelets

by Sophia

WHAT'S COVERED

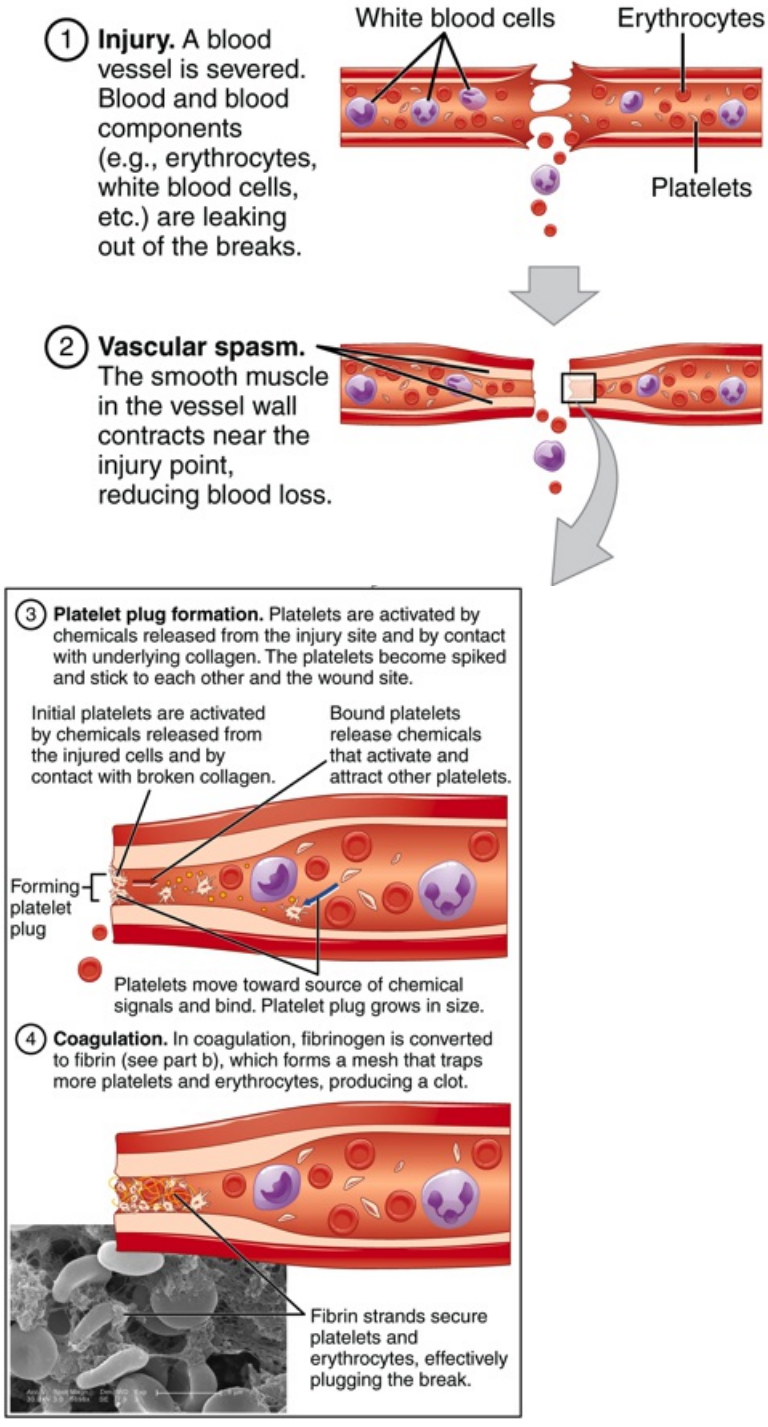
In this lesson, you will learn to identify how blood clots work and disorders associated with blood clotting. Specifically, this lesson will cover:

1. Hemostasis

Platelets are a component of blood that are involved in clotting and play an important role in**hemostasis**, or the process that slows or stops bleeding.

STEP BY STEP

1. Some sort of injury or tear in a vessel occurs, and blood begins to flow out. If this isn't fixed and too much blood flows out of the vessels, we're going to have an imbalance; homeostasis will not be able to be maintained. Hemostasis will begin.
2. After the tear occurs, the vessel will actually contract or constrict. This restricts the flow of blood through that vessel, resulting in less blood flow out of the tear.
3. Next, platelets will stick to the wall of the vessel. These platelets will essentially help to clog up that tear.
4. Blood will coagulate, which means that it becomes a thicker, almost a gel-like substance. Also, a more permanent blood clot will form:
    - Within your plasma, you have a protein called factor X that will be activated, and then, an enzyme called **thrombin** will be produced.
    - This enzyme will cause fibrous threads to form, almost like a net. As those fibrous threads form, they trap red blood cells and platelets, helping to clot the tear that's in that vessel.
    - That will start to pull that vessel back together until it can permanently heal



TERMS TO KNOW

Platelets

Platelets (also known as thrombocytes) are actually cell fragments of bone marrow cells called megakaryocytes; platelets are used to form blood clots to control hemostasis.

Hemostasis

The process of controlling/stopping bleeding from a broken vessel; platelets are the main component of hemostasis by working with the plasma protein fibrinogen to form a blood clot.

Thrombin

An enzyme in the blood that plays a critical role in hemostasis by converting the plasma protein fibrinogen into fibrin; fibrin secures platelets as they plug a damaged vessel (platelet plug) and the end result is a clot.

2. Blood Clotting Disorders

There are several different disorders associated with the blood not clotting properly:

- **Thrombosis**: A disorder when a clot forms in an undamaged vessel but then that clot stays there and affects blood flow through the vessel.
- **Embolism**: Related to thrombosis, it occurs when a clot forms in a damaged vessel, but, instead of staying in that vessel, it will actually start roaming throughout the body. This can be very dangerous because it can become stuck in other vessels and affect blood flow to tissues and organs.
- **Stroke**: A clot that blocks blood flow to the brain. This can cause the brain not to receive enough oxygen to be able to function properly.
- **Hemophilia**: A genetic clotting disorder that is inherited. With this disorder, blood doesn't clot properly. If a person were to get a cut or tear in their vessel, clots don't form as quickly as they would normally, which can lead to more serious problems. This is especially true if the person is in a severe accident where they're losing a lot of blood.

TERMS TO KNOW

Thrombosis
The formation of a blood clot within a vessel which obstructs blood flow through the vessel.

Embolism
A circulating mass in the blood. Examples: fatty embolus or an air embolus.

Stroke
When blood flow is obstructed to an area of the brain causing brain tissue to become ischemic; if blood flow is not immediately restored brain damage will ensue.

Hemophilia
A group of hereditary disorders that prevent clots from being formed.

SUMMARY

Hemostasis is the process that occurs to stop blood from flowing out from a damaged blood vessel. When a vessel is damaged, it will constrict. Platelets will then stick to the wall of the vessel. Blood will coagulate, and a more permanent blood clot will form. A protein called factor X will cause thrombin to be produced. Thrombin will cause fibrous threads to form like a net, trapping red blood cells and platelets. Then the vessel will start to pull back together and begin to heal.

There are several **clotting disorders** which can be dangerous to a person. Thrombosis is the formation of a clot in an undamaged vessel that obstructs blood flow. An embolism is a clot that forms at a damaged site but then begins to circulate. A stroke is a clot in the brain, and hemophilia is a genetic disorder that prevents blood from clotting correctly.

Keep up the learning and have a great day!

Source: THIS WORK IS ADAPTED FROM SOPHIA AUTHOR AMANDA SODERLIND

ATTRIBUTIONS

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