

Al-Mustaqbal University



Pathophysiology 3rd stage

Lab (Pathophysiological Antagonism)

Dr. Widad Abd AL-Jabbar & Dr. Hasanain Owadh

Pathophysiological Antagonism

Pathophysiological antagonism refers to the opposing actions of two agents in a physiological process, which help to balance or moderate the overall effect. This concept is essential in understanding how the body maintains homeostasis in response to various stimuli

1: Bronchoconstriction and Bronchodilation

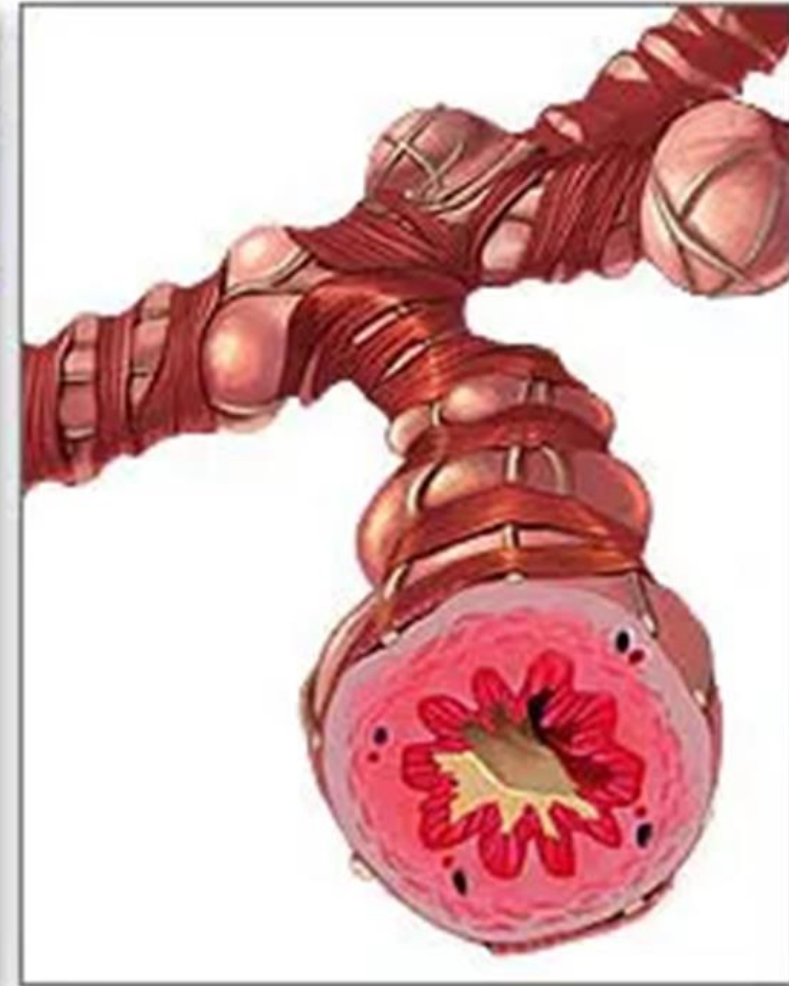
In respiratory physiology, histamine causes bronchoconstriction by narrowing the airways.

This effect can be countered by bronchodilators, which relax the bronchial muscles, leading to airway expansion. These opposing actions help manage conditions like asthma, where bronchoconstriction is excessive.

Normal bronchiole

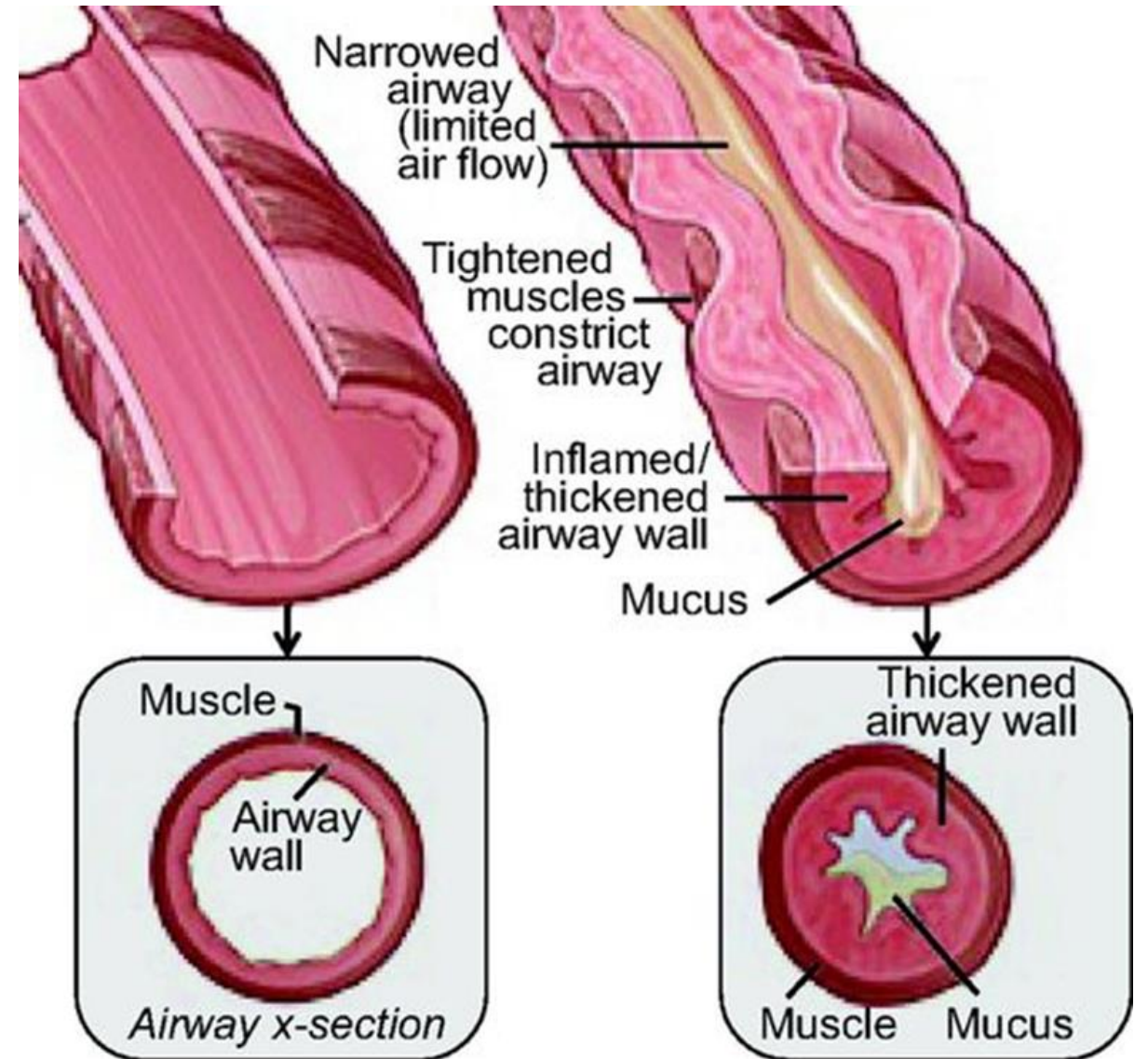


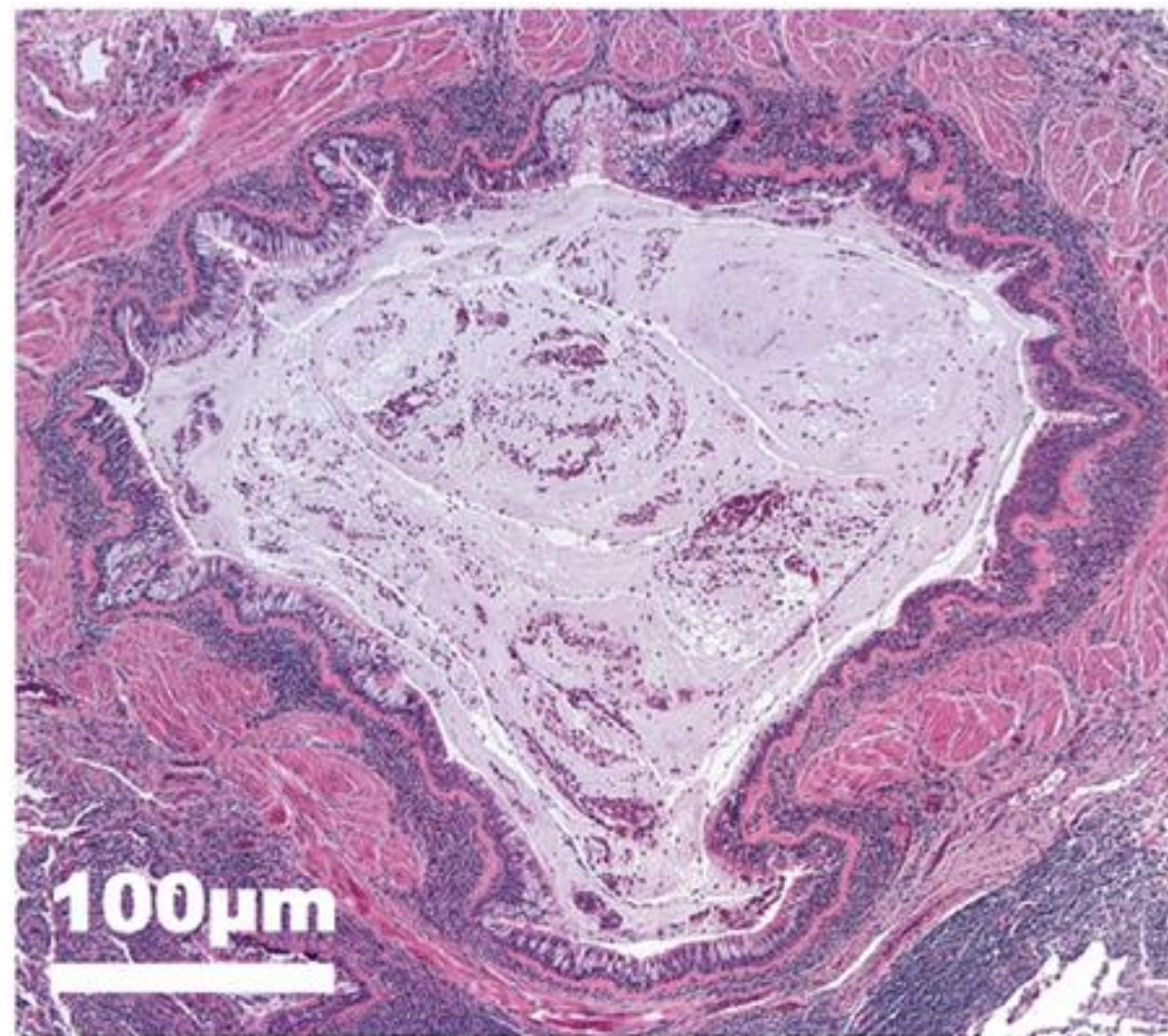
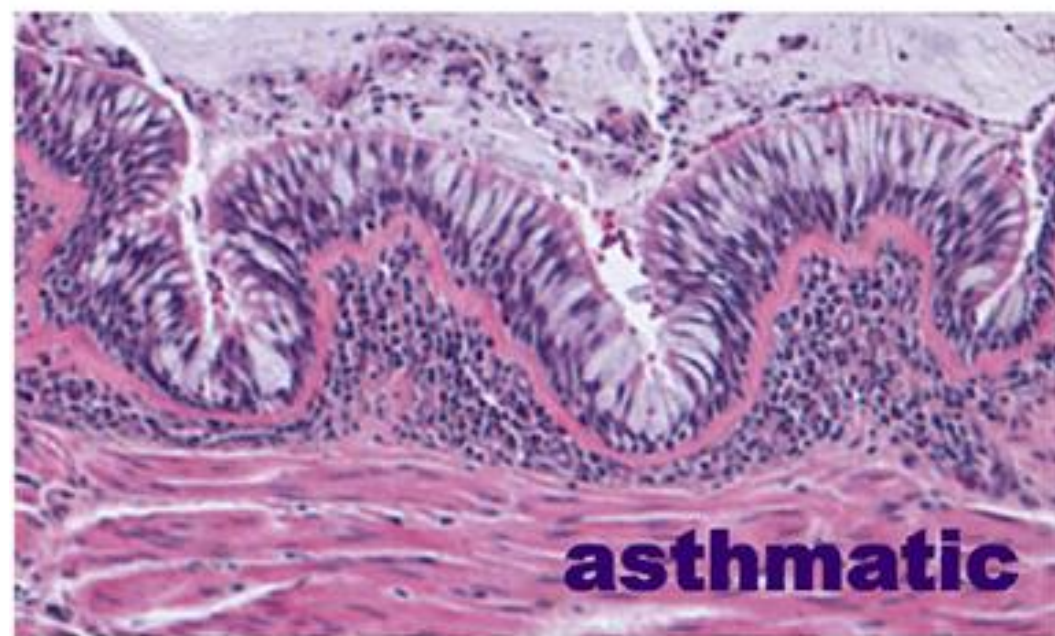
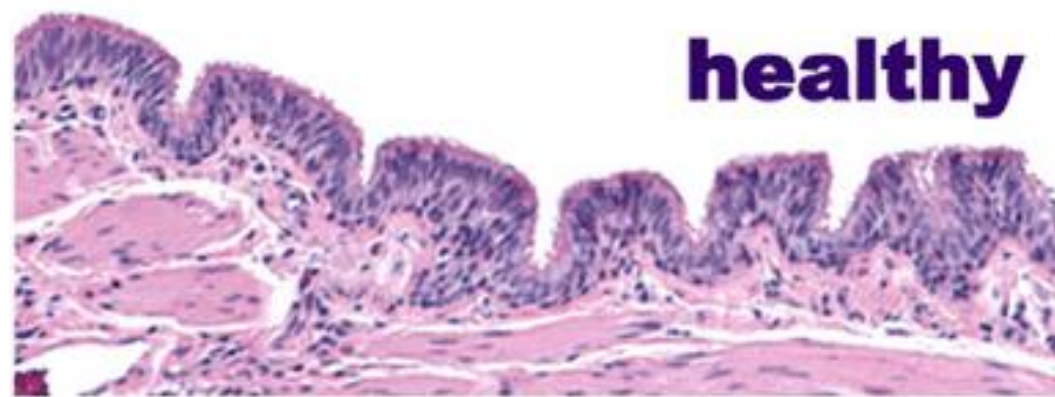
Asthmatic bronchiole



Overview of asthma

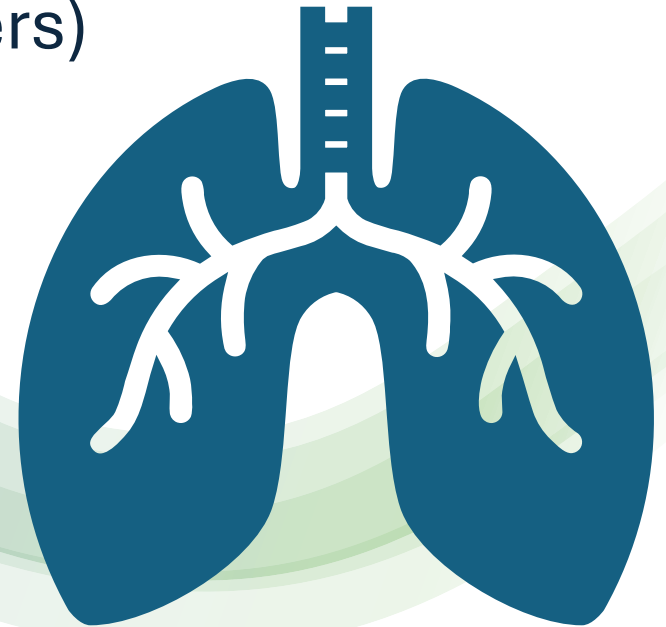
- Asthma occurs because the airways in the lungs overreact to various stimuli, resulting in narrowing with obstruction to air flow.

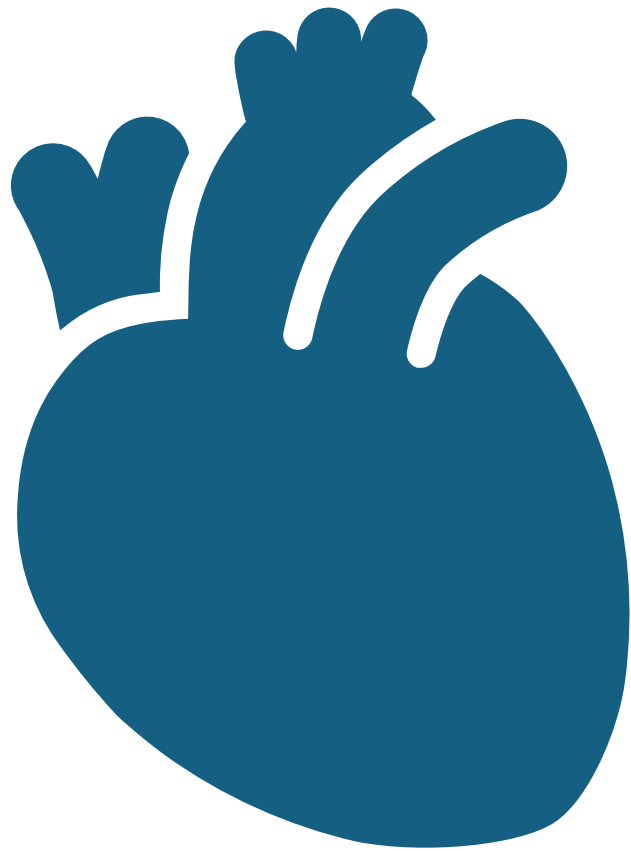




- The airway hyper-responsiveness leading to obstruction of the airways occurs from one or more of various stimuli that vary with the individual patient. These include:

- Viral (but not bacterial) respiratory infections (common colds)
- Inhaled irritants (cigarette smoke, wood burning stoves and fireplaces, strong odors, chemical fumes)
- Inhaled allergens (pollens, dusts, molds, animal danders)
- Cold air
- Exercise
- Occasional ingested substances (aspirin, sulfite preservatives, specific foods).





- 2: Blood Pressure Regulation
- In blood pressure regulation, the sympathetic nervous system raises blood pressure by constricting blood vessels and increasing heart rate.
- In contrast, the parasympathetic nervous system lowers blood pressure by promoting vasodilation and reducing heart rate.
- This balance helps maintain stable blood pressure.

Vasoconstriction and Vasodilation

- Noradrenaline induces vasoconstriction by causing the blood vessel walls to contract, reducing
- blood flow. This can be antagonized by vasodilators, which expand the blood vessels, increasing
- blood flow. Such antagonism is key in regulating tissue perfusion and blood pressure.

VASODILATATION and VASOCONSTRICTION



Normal
artery



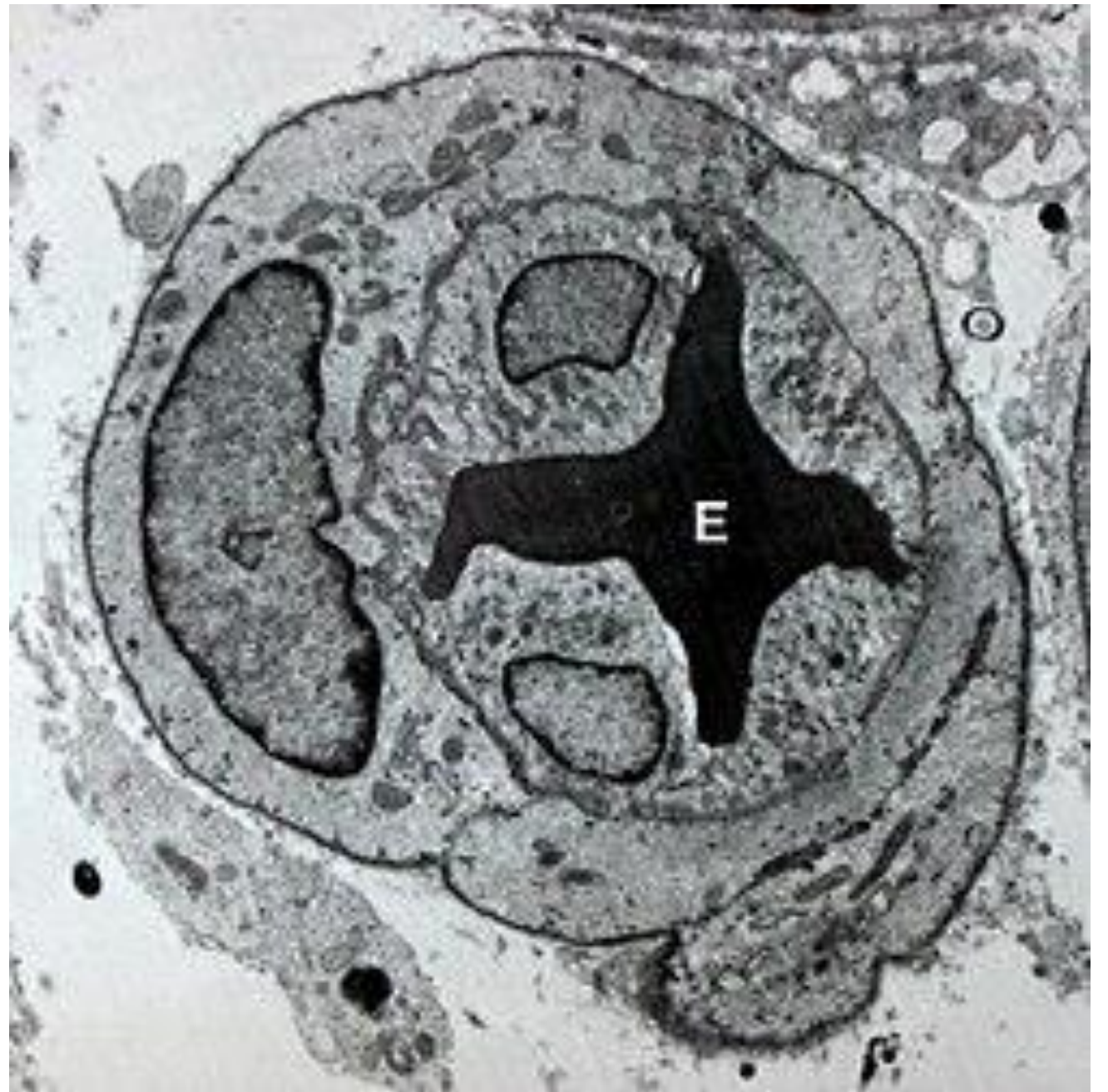
Vasodilatation
artery



Vasoconstriction
artery



Transmission electron micrograph showing vasoconstriction of a microvessel by pericytes and endothelial cells resulting in the deformation of an erythrocyte (E)



Conclusion

Pathophysiological antagonism is a critical concept in physiology, allowing the body to modulate and balance responses to internal and external stimuli.

Understanding these opposing interactions aids in the management and treatment of various medical conditions.

thank
you