Lec 2

In **Acute inflammation**, **histamine** and **cytokines** like **TNF-alpha** and **IL-1** are released. Histamine induces vasodilation and increases the permeability of endothelial cells (**transudate** folowed by **exudate** state including purulent exudate if infection) resulting in **stasis** (congestion, and erythema) in the affected area. Cytokines activate selectins and integrins on endothelial cells, facilitating the accumulation of white blood cells (WBCs) (**neutrophils** folowed by macrophages) on the endothelium (**margination**,**rolling**(selectin decr.velocity),**adhering**(selectin(weak) folowed by integrin (firmly))). Also, CD31 will promotes WBC **transmigration** across the endothelium (activate enzymes that digest basment membrane)and directs them to the site of inflammation. Excess fluid and microbes can drain into the lymphatic vessels, causing **lymphangitis** which may result in **reactive lymphadenitis** or **inflammatory lymphadenitis** or sever (**resistence lymphadentis**) when processed by lymph nodes.

Exudate: Caused by inflammation due to histamine release and vasodilation, leading to high vascular permeability. Contains high protein, white blood cells, and high specific gravity -> (***Purulent exudate*** indicates infection, with accumulated white blood cells, debris, and microbes(pus)).

Transudate: Results from imbalances in hydrostatic or colloidal osmotic pressure (e.g., in heart failure or liver disease). Contains low protein, few white blood cells, and low specific gravity.