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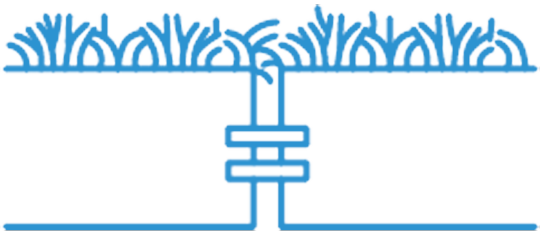

Endothelial Glycocalyx

micro drip study guide

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It is the gatekeeper to the endothelial system. It has other important roles as well, like being a mechanotransducer. What do I mean by that? There's a lot of shear forces going on in the body. And the endothelial glycocalyx helps the blood vessel, the reticuloendothelial system, to accommodate those shear forces.

It also is a control center for the microenvironment there. And the classic example is the endothelial glycocalyx helps maintain a state of hypocoagulability. Hypocoagulability. And the classic example from the human medicine world is a diabetic patient. We all know that diabetic patients, humans, are at risk for strokes. And it's because of their propensity to form clots.

And one of the main reasons that they form clots more than a nondiabetic person is because of hyperglycemia. Hyperglycemia directly damages the endothelial glycocalyx. And it inhibits the body's ability to create that local hypocoagulable microenvironment. Setting up the stage for them to form microclots that can lead to increased morbidity and mortality, including death.

Endothelial Gatekeeper

It is, again, the most important determinant of vascular permeability. It keeps certain substances from gaining access to the interstitium, and it's got a lot of characteristics, like a negative net charge, like a hydroxyethyl starch has a negative net charge, and we talked about the Gibbs-Donnan equilibrium. The endothelial glycocalyx has a net negative charge. It prevents certain things of certain sizes from getting in or out, it repels like-substances so they flow on by. It really does help protect the interstitial space.