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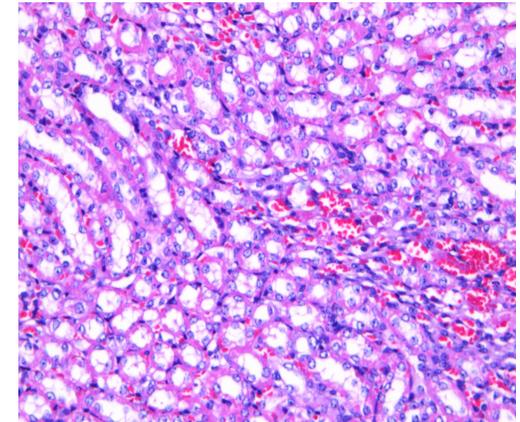
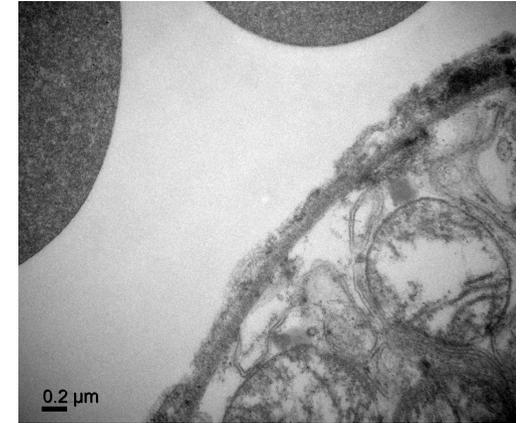
# **Dexamethasone protects the glycocalyx on the kidney microvascular endothelium during severe acute pancreatitis**

**Keywords:** Severe acute pancreatitis (SAP), Acute kidney injury (AKI), Glycocalyx, Dexamethasone, Tumor necrosis factor- $\alpha$ , (TNF- $\alpha$ , )

# Research Summary

This study mainly focused on the protective effect of dexamethasone on the glycocalyx on the microvascular endothelium during severe acute pancreatitis, which may lead to kidney microcirculation dysfunction and injury.

- **Degradation of the glycocalyx increases permeability of kidney capillary;**
- **Increased kidney capillary permeability leads to dysfunction of renal microcirculation and kidney injury;**
- **Dexamethasone reduced the degradation of the glycocalyx and improved perfusion of the kidney.**



# Innovation points

- **Introduction:** severe acute pancreatitis always leads to release of TNF- $\alpha$  and induces kidney microcirculation dysfunction. This study investigated whether the release of TNF- $\alpha$  causes shedding of endothelial glycocalyx and aimed to clarify the relationship between glycocalyx damage and kidney microcirculation dysfunction in the early stage of SAP. We then explored if this action can be prevented by dexamethasone pre-treatment.
- **Summary:** Degradation of the glycocalyx and malfunction of renal microcirculation were found during SAP, and dexamethasone protects the endothelial glycocalyx from inflammatory degradation possibly initiated by TNF- $\alpha$  during SAP and improves the kidney perfusion. This is might be a significant discovery that helps to prevent tissue edema and hypoperfusion in the future.
- **Emphasis:** corticosteroid may attenuate the inflammatory reaction and improve the organ microcirculation during SAP, which prevent kidney injury from SAP. However, corticosteroid has its side effects, such as increase the risk of hyperglycemia and gastrointestinal bleeding, which limit its clinical application.