Background

Intestinal ischemia-reperfusion is a common medical event associated with both clinical and experimental distant organ injury. In particular, the lung tissue appears to be susceptible to injury resulting from systemic inflammatory mediator activation. Drotrecogin α (activated) or recombinant human activated protein C has antithrombotic, anti-inflammatory, and profibrinolytic properties. We hypothesized that APC infusion would decrease lung inflammation and ameliorate lung injury resulting from intestinal ischemia-reperfusion (IIR). A rat model of intestinal ischemia-reperfusion was used to test this hypothesis, and several parameters of lung injury were measured in lung samples.

Material and Methods

Forty Wistar albino rats were divided into four groups: a sham-operated group (Sham), an ischemic control group (IIR), an APC-infusion group (IIR'APC), and a normal saline-infusion group (IIR'NS) (n = 10, each). A marker for lipid peroxidation, malondialdehyde (MDA), free radical scavenger glutathione peroxidase (GSH-Px), an index of polymorphonuclear neutrophils, myeloperoxidase (MPO) activity, and lung polymorphonuclear leukocytes (PMNL) were investigated in the lung tissue samples.

Results

MDA and MPO levels, and lung PMNL sequestration were decreased, but GSH-Px levels were increased in APC treated group versus IIR group. MDA levels were decreased and GSH-Px levels were increased in NS treated group versus IIR group. MPO levels and lung PMNL counts were similar across the IIR and IIR'NS groups.

Conclusions

This study documents that APC attenuates acute lung injury in intestinal ischemia-reperfusion. NS infusion had also some favorable effects regarding MDA and MPO.

Key Words

intestinal ischemia-reperfusion; acute lung injury; activated protein C; normal saline; malondialdehyde; myeloperoxidase activity; glutathione peroxidase activity; lung polymorphonuclear leukocyte sequestration; lung edema