

# Morphometric and ultrastructural effect of drotrekogin alpha (active protein C) on spinal cord trauma model

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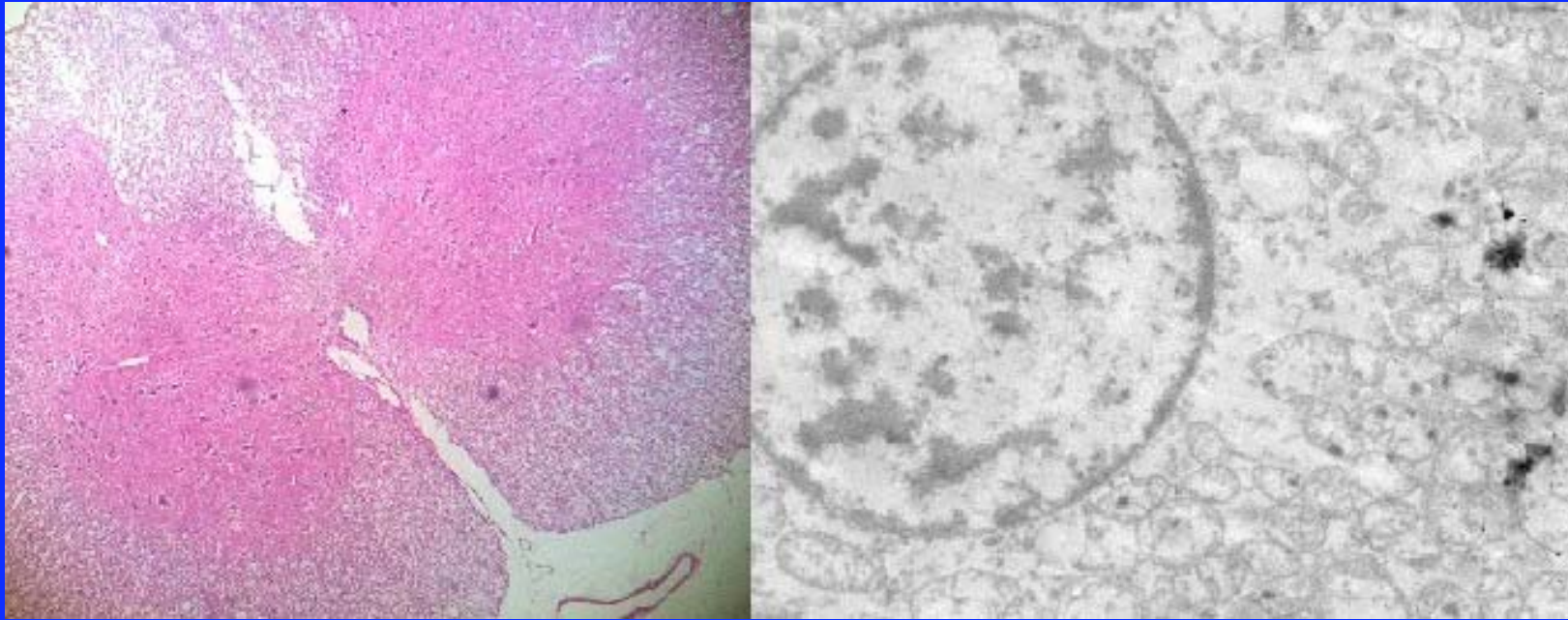
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## There are two mechanisms causing spinal cord damage in spinal cord injury:

- Primary (mechanical) injury: The damage occurring during trauma, the treatment of the damage is not possible
- Secondary injury: The damage that is started with the primary injury, includes the damages caused by metabolic and biochemical changes. Some of these changes trigger an inflammatory reaction that contributes the damage of neuronal tissue in spinal cord.

- Drotrekogin alpha (active protein C) (APC) is a drug, which has multiple effects including anti-inflammatory, antithrombotic and profibrinolytic effects on tissue
- The morphometric and ultrastructural effect of drotrekogin alpha (active protein C) (APC) on spinal cord trauma model was examined in this study

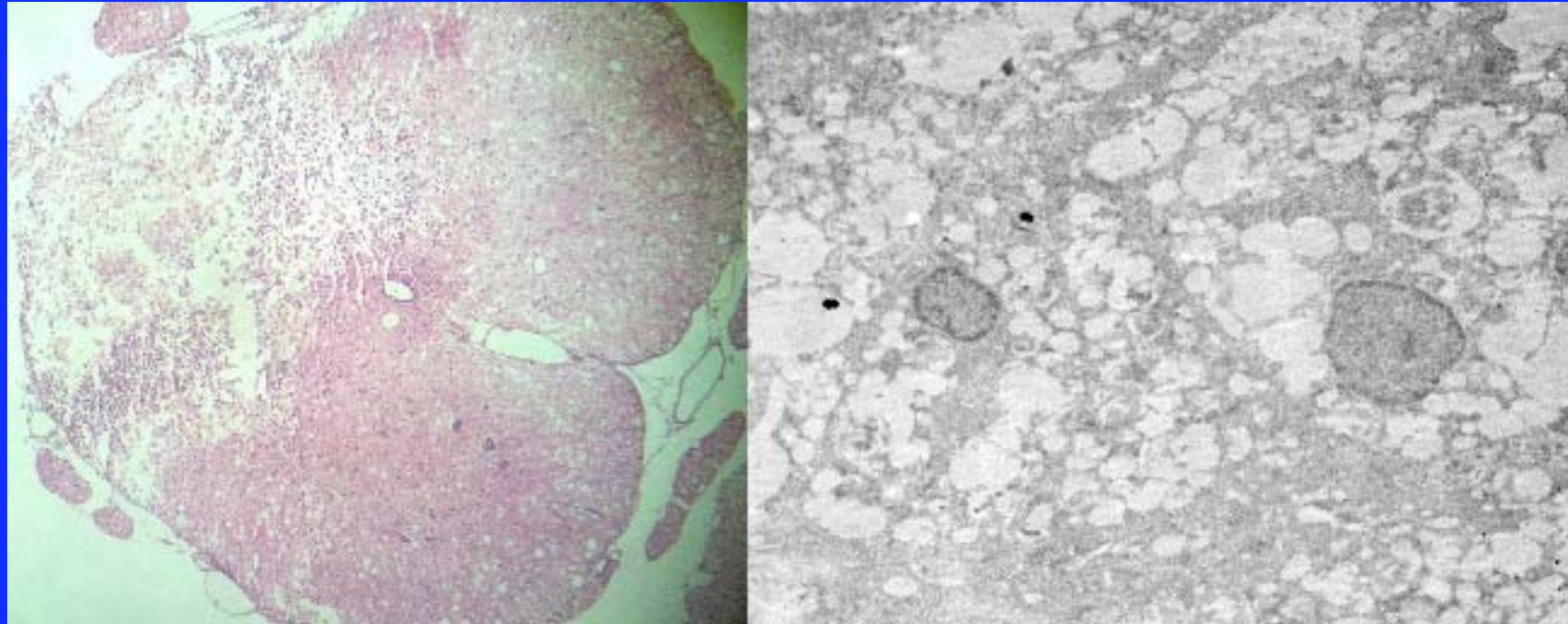
- Sprague-Dawley rats randomly separated into three groups
  - I [n:7; dorsal laminectomy]
  - II [n:7; laminectomy + spinal cord trauma using Allen's spinal cord trauma method]
  - III [n:7; laminectomy + trauma + 100 µg/kg recombinant protein C (activated)]
- All the animals sacrificed at the end of 4<sup>th</sup> week
- 10 mm segments of spinal cord were removed and examined with light microscope, and transmission electron microscope



a

b

Light (a, HE x 40) and electron microscopic (b) appearance of control group

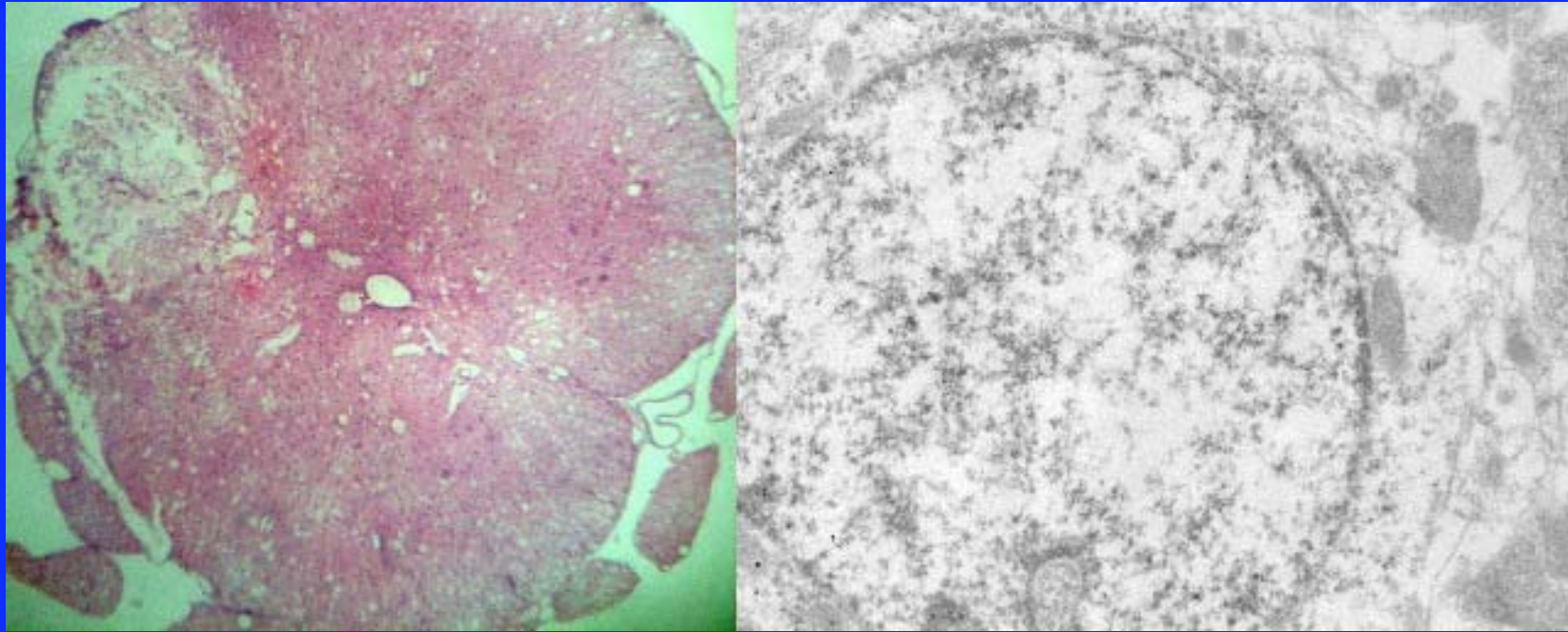


a

b

Hemorrhagic necrosis in gray matter, infarctus of white matter, and significant axonal swelling and macrophage infiltration in light (a, HE x 40) and electron microscopic (b) appearance (trauma group)





A significant decrease in hemorrhagic necrosis, infarctus, axonal swelling and macrophage infiltration in APC group

# Conclusion

- Drotrekogin alfa had a neuroprotective effect on the spinal cord in case of trauma
- Data make us to suggest, this drug may reduce the effects of traumatic ischemia with its anti-inflammatory, antithrombotic and profibrinolytic effects