Intraperitoneal Mesalamine Does Not Restores Mesenteric Perfusion or Prevent Mucosal Injury Following Intestinal Ischemia and Reperfusion

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Background and Hypothesis:
Acute Mesenteric Ischemia (AMI) is characterized by a sudden decrease in blood flow to varying segments of the small intestine. It can lead to cellular damage, life-threatening intestinal necrosis and, if corrected, subsequent reperfusion injury. Reducing inflammation is key to preventing further cell damage. We therefore hypothesized that administration of mesalamine prior to intestinal ischemia would reduce epithelial cell damage by I/R and restore mesenteric perfusion.

Project Methods:
C57Bl6J wild type (WT) mice were assigned to mesalamine or vehicle treatment groups (N=8/group). Prior to surgery, mice underwent intraperitoneal injection of treatment. Midline laparotomy was performed. Intestines were eviscerated, superior mesenteric artery (SMA) located, and baseline intestinal perfusion determined using Laser Doppler. SMA was then occluded to induce intestinal ischemia for sixty minutes, thereafter the occlusion was removed. Mesenteric reperfusion was then determined by Laser Doppler. Midline incisions were reapproximated with suture and animals were allowed to recover. After twenty-four hours, animals were re-anesthetized and underwent final assessment of mesenteric perfusion by Laser-Doppler. Animals were then euthanized, and intestines explanted. A portion of tissue was snap frozen for assessment for proinflammatory cytokines by ELISA. Another portion of tissue was stained with H&E and scored for intestinal mucosal injury. Data were assessed for normalcy and compared by Mann-Whitney-U test. $P<.05$ was significant.

Results:
Preliminary data suggests mesalamine treated mice show no significant change in mortality compared to vehicle. Mesalamine treated mice also show an insignificant increase in histological damage score. Despite this, they show an insignificant improvement in oxygen perfusion.

Conclusion:
Intraperitoneal mesalamine administration does not appear to be a useful method for limiting cell damage in GI diseases associated with AMI such as necrotizing enterocolitis. A larger sample size is needed to further elucidate treatment effects.