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Peritoneal instillation of taurolidine or polihexanide modulates intestinal microcirculation in experimental endotoxemia.

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BACKGROUND AND AIMS: Treatment of peritonitis may include peritoneal lavage/instillation with anti-infective agents like taurolidine or chlorhexidine. MATERIALS AND METHODS: We examined the effects of peritoneal instillation (INST, 5-ml solution) with taurolidine (TAURO) or polihexanide (POLI-LS) on intestinal microcirculation using intravital microscopy (IVM) in experimental endotoxemia (15 mg/kg lipopolysaccharide i.v.; LPS) in the rat (n = 8 each group), their direct effects on local small blood vessels, aortal rings, and myocardial strips in vitro, as well as plasma interleukin levels. RESULTS: It was found that LPS produced hypotension (98.8 +/- 9.5 vs 130.4 +/- 10.5 mmHg; mean arterial pressure [MAP], mean +/- standard deviation [SD]), which was further pronounced after INST of TAURO (78.8 +/- 10.8; $P < 0.005$) or POLI-LS (78.1 +/- 6.0; $P < 0.001$). IVM revealed a reduction in temporary adhering leucocytes and an increase in firmly adhering leucocytes after INST with TAURO and POLI-LS. Both agents reduced functional capillary density either in the mucosa (POLI-LS vs sham: 259.7 +/- 54 cm/cm(2) vs 337.1 +/- 35.5) or longitudinal muscular layer in LPS rats (TAURO vs sham: 119.8 +/- 14.8 vs 153.7 +/- 11.0). POLI-LS induced local vasodilatation, whereas TAURO induced small vasoconstriction; in vitro, both agents showed vasodilating properties and did not have any effect on myocardial strip contraction. CONCLUSION: Some of the observed microcirculatory changes could be a result of the direct vascular effects of these agents.

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