The bacterial translocation from bowel to peritoneal cavity in experimental intestinal obstruction

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In pathogenesis of acute intestinal obstruction (AIO) development and its complications a significant role is played by bacterial translocation. Study of peculiarities of intestinal peritoneal translocation can be carried out using the model of AIO, performed in aseptic conditions with minimal invasiveness and preservation of physical hermiticity of intestinal wall for the period of 5-7 days.

Model was carried out by aseptic opening of abdomen and clipping the bowel by Hem-o-lok at once proximal caecum. In group II rats was similarly laparotomized with extrusion of caecum and dipping back into abdomen without clipping. The material for microbiological study was peritoneal effusion and content of bowel.

Research aim
To study of bacterial translocation in a model of AIO.

Material and methods
35 rats were divided into 3 groups: I – intact, II– control for 3 and 5 days, III – AIO model for 3 and 5 days.

Statistical analysis was carried out using IBM “SPSS Statistics 20.0” program with calculation of the average value (m) and standard deviation (SD) for the decimal logarithm of colony forming unit -lg (CFU) value. Analysis of differences in the groups was performed using Mann-Whitney U criteria for independent samples.

Results and discussing
In bowel of all rats there were found Escherichia - 62.9% and Klebsiella – 37.1%. In I and II groups in the peritoneal content no bacteria were found, in group III there were found Escherichia - 65.7% and Klebsiella – 35.3%.

Average lg (CFU) in group III on 3 day (blue) and on 5 day (red)

Difference of values AIO model in comparison with the control in the same days was significant (p=0.03 and 0.02 correspondently).

Conclusion
During experimental AIO there is a significant increase of gram-negative flora compared to control for 3 day to 10^7 (p=0.03) and for 5 day to 10^7 (p=0.01) due to their translocation from lumen above the obstruction.

An immunological research is planned in rats to study the bacterial translocation.