

## EXPRESS DIAGNOSTICS OF ABDOMINAL COMPARTMENT SYNDROME

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### AIMS

Developing a gas analyzer for measuring intestinal gas composition as a means to provide abdominal compartment syndrome diagnosis in patients with acute abdomen.

### METHODS

To achieve our goal, we proceeded with the following provisions:  
analysing the content of intestinal nitrogen and methane gas;  
automatic calculation of particular gas concentrations;  
no irritating effects to adjacent tissues and ensuring ease of maintenance.

### RESULTS

The diagnosis of abdominal compartment syndrome is proposed when intraabdominal hypertension is 15mmHg or more, and in the presence of two or more signs of multiple organ failure: acidosis, hypoxemia, increased central venous pressure, and / or pulmonary artery wedge pressure, hypotension, and / or decrease in cardiac output such as oligouria. The disadvantage of this diagnosis is its late detection in organs and organ systems and its presentation when physiological detoxification barriers have already been damaged. Pathogenetic substantiation of a quick detection method of abdominal compartment syndrome prophylaxes (before clinical signs manifestation) is to determine the quantitative and qualitative gas content composition after surgery. Swollen gas bowels directly lead to the development of abdominal compartment syndrome and later to multiple organ failure.

Our method is based on quick diagnostic determination of nitrogen and methane gas concentration in the intestines. The level of gas concentration determines the severity of abdominal compartment syndrome manifestations prior to the moment when systemic organs failure would be present. As a guide of inserting gas sensors during operation is by guiding the probe along the tube for intestinal drainage. Monitoring of gas concentration is carried out in the postoperative period throughout. Depending on the clinical situation, conservative or surgical treatment of abdominal compartment syndrome is conducted. For patients who used quick diagnosis followed by subsequent medical intervention of abdominal compartment syndrome were not observed to require surgery.

### CONCLUSIONS

The complex surgical treatment of patients with abdominal compartment syndrome is to reduce its clinical manifestations prompting us to develop and use the proposed method. Measuring intestinal gas concentration should be performed every 6 hours in the postoperative period. Depending on composition of gas mixture it could be an indication to introduce appropriate changes in a treatment course.