The study of stroke volume variation combined with cardiac index in guiding volume therapy in non-severe patients undergoing intestinal neoplasm surgery

NCT02841046

2019-8-10

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【Abstract】**Objective** To observe the application of goal-directed therapy (GDT) with the combination of stroke volume variation(SVV) and cardiac index(CI) as the primary judgment in non-severe patients undergoing intestinal neoplasm surgery. **Methods** 50 patients (ASA Ⅰ-Ⅱ,26-55 years old) scheduled for intestinal neoplasm surgery were divided randomly: group C using CI as the primary judgment for GDT and group S with the combination of SVV and CI. Patients in group C received a therapy with the goal of CI was no less than 2.5L•min^{-1}•m^{-2} while in group S was both SVV less than 12% and CI no less than 2.5L•min^{-1}•m^{-2}. HR, MAP, CVP, CI, SVV were recorded 15 minutes after the induction of anesthesia(T1), making surgical incision(T2), performing intestinal anastomosis(T3) and closing the abdominal incision(T4). Oxygen delivery(DO_2),oxygen consumption(VO_2),O_2 extraction rate (ERO_2)and plasma Lactic acid(Lac) were monitored at T1 and T4. The volume of fluid, the incidence of adverse cardiovascular events, the exhaust time, hospital stay and complications were recorded. **Results** in group S, the amount of colloidal fluid increased and crystalline fluid decreased, the incidence of hypotension was lower than group C. DO_2, VO_2 were increased and Lac decreased at T4 in group S. The exhaust time and hospital stay were reduced in group S. (P <0.05) **Conclusions**

GDT with the combination of SVV and CI as the primary judgment maintained a more stable hemodynamic and better tissue perfusion, which helps to improve the prognosis of patients. This protocol was more suitable for the non-severe patients.

【Key words】 stroke volume variation; cardiac index; non-severe; volume therapy

Statistical Analysis methods : Spss19.0 statistical software was used to analyze the data ($\bar{x} \pm s$) means that independent sample t-test is used for normal distribution, independent sample rank sum test is used for non normal distribution, ANOVA is used for comparison of different time points of hemodynamics and oxygen metabolism indexes, paired t-test is used for comparison of two time points, chi square test is used for counting data, and $P < 0.05$ is statistically significant.

Informed Consent Form

Study Name: The study of stroke volume variation combined with cardiac index in guiding volume therapy in non severe patients undergoing intestinal neoplasm surgery

Project Leader: Yang Lin Tel: 87755766 to 8273

1. Research purpose

To observe the application of goal-directed therapy (GDT) with the combination of stroke volume variation(SVV) and cardiac index(CI) as the primary judgment in non-severe patients undergoing intestinal neoplasm surgery. To compare the difference of hospitalization time, postoperative complication rate and other indexes to explore a better rehydration scheme for non severe patients.

2. Research process

This study is to be conducted from July 2016 to July 2018. It is a prospective randomized controlled parallel study. 50 patients scheduled for intestinal neoplasm surgery were divided randomly into two groups, 25 patients in each group. According to different target directed rehydration schemes, the two groups adjusted rehydration speed and guided the application of vasoactive drugs by monitoring the real-time values of SVV, CI and SVI.

During the large-scale gastrointestinal operation, the routine deep vein puncture and artery puncture will not increase the additional trauma during the whole process of experiment, evaluation and follow-up, and no additional blood or other tissue samples need to be taken, and no additional laboratory examination is required. However, Vigileo technology is used in all patients, and the consumables of this monitoring project need to be paid by you.

3. Possible risks

Goal-directed therapy has been proved to be feasible by a large number of studies, and it has been shown that this method can shorten the hospitalization time of high-risk surgical patients and reduce the incidence of postoperative complications, and no obvious complications have been found so far. However, in order to ensure your safety, we will strictly control the inclusion and exclusion criteria of the subjects, closely monitor, actively follow up, and timely find complications. If there are complications, we will actively treat the symptoms and bear the corresponding treatment costs.

4. Subject benefit

1) More accurate intraoperative capacity management; 2) Beneficial to shorten the length of stay; 3) Beneficial to reduce the incidence of postoperative adverse reactions.

5. Confidentiality of research records

We will keep your identity records and personal data completely confidential, and the medical records related to your identification will also be kept confidential. Your name and personal information will not appear in research reports and publications.

6. Rights of subjects

Participation in this study is voluntary. You can refuse to participate in the study or withdraw from the study at any time at any stage of the study without any discrimination or retaliation. Your medical treatment and rights and interests will be affected in any way.

7. Subject statement

I have read the research contents indicated in this informed consent in detail, and my doctor has given me a detailed description of the research scheme. I fully understand the purpose, quality, method, rights and risks of participating in this study. I learned that my personal data is confidential and my right to privacy is protected.

I volunteered to participate in this study, and agreed to cooperate with doctors in accordance with the research plan and informed consent to complete this study.

Subject signature_____Date_____/_____/_____TEL_____

Doctor signature_____Date_____/_____/_____TEL_____