

EFFICIENCY OF ABDOMINAL FLUID DRAINAGE COMBINED WITH CONTINUOUS HEMOFILTRATION FOR TREATMENT OF SEVERE ACUTE PANCREATITIS AT NGHE AN FRIENDSHIP GENERAL HOSPITAL

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Received: 05/11/2024

Revised: 16/11/2024; Accepted: 22/11/2024

ABSTRACT

Objective: Evaluate the effectiveness of abdominal fluid drainage combined with continuous hemofiltration to treat severe acute pancreatitis with increased abdominal pressure at Nghe An General Friendship Hospital.

Subjects: 14 patients diagnosed with severe acute pancreatitis according to Atlanta 2012 criteria, with increased abdominal pressure and were treated with abdominal drainage combined with continuous dialysis at the Intensive Care Department - Friendship Hospital Nghe An General Hospital from January 2023 to September 2023.

Methods: Case series study. Results: Grade I increased abdominal pressure: 14.3%; Grade II: 50%; grade II: 21.4%; Grade IV: 14.3%. Continuous dialysis time: Grade I intra-abdominal hypertension: 16.3 ± 2.83 hours; Grade II: 44.5 ± 16.5 hours; Grade III: 46.6 ± 18.7 hours; Grade IV: 82.5 ± 18.3 hours. Average amount of abdominal drainage fluid in the first 3 days: Grade I increased intra-abdominal pressure: 1221.5 ± 451.5 ml; grade II: 1912.12 ± 612.4 ml; grade III: 2978.21 ± 725.7 ml; Grade IV: 3571.21 ± 767.5 ml. The recovered group accounted for 64.3%, abdominal pressure decreased and returned to normal from day 4, average blood pressure tended to gradually increase and remained stable, creatinine decreased rapidly to near normal values after 1 day. week of treatment. Continuous dialysis time ranges from 1-7 days and the number of dialysis filters ranges from 1–8.

Conclusion: The cure rate of abdominal fluid drainage combined with continuous hemofiltration to treat severe acute pancreatitis with increased abdominal pressure is 64.3%; Abdominal pressure decreased rapidly, blood creatinine decreased and returned to normal, hemodynamics were stable in the recovery group.

Keywords: Acute pancreatitis, increased intra-abdominal pressure, Continuous Veno-Venous Hemofiltration.

1. INTRODUCTION

Acute pancreatitis is an acute inflammatory process of the pancreas. The clinical picture is diverse, manifesting at many different levels, with complex severity, many complications and a high mortality rate of 20-50% in multiple organ failure. [first]. The pathophysiological mechanism of acute pancreatitis is due to many mechanisms that cause systemic inflammatory response, release of cytokines, increased white blood cell response, vascular endothelial cells, increased abdominal pressure, this is the main cause of multiorgan failure in acute pancreatitis.[2]. Recent studies show that intra-abdominal pressure is valuable

in assessing the level, monitoring the progression and effectiveness in treating acute pancreatitis. Along with advances in treatment, especially the application of continuous dialysis techniques for patients with severe acute pancreatitis combined with drainage of abdominal fluid, treatment results have significantly improved. However, there has not been any study evaluating the results of abdominal fluid drainage combined with continuous hemofiltration in the treatment of severe acute pancreatitis with increased abdominal pressure in Nghe An. Therefore, we carried out the project with the goal of: Evaluating the effectiveness of abdominal fluid

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drainage combined with continuous hemodialysis in the treatment of severe acute pancreatitis with increased abdominal pressure in the Intensive Care Department - Nghe An General Friendship Hospital.

2. RESEARCH SUBJECTS AND METHODS

2.1. Research subjects

- Patient selection criteria

14 patients were diagnosed with severe acute pancreatitis according to Atlanta 2012 criteria, had increased abdominal pressure and were treated with abdominal drainage combined with continuous dialysis at the Intensive Care Department - Nghe An General Friendship Hospital. An annual period from January 2023 to September 2023.

- Exclusion criteria

Patients with chronic diseases such as heart failure grade III and IV; end-stage cancer; Systemic lupus erythematosus; chronic renal failure; Cirrhosis...

2.2. Research Methods

2.2.1. Study design: description of case series.

2.2.2. Steps to conduct research

Patients with severe acute pancreatitis who qualify for the study will have tests, ultrasound, abdominal computed tomography, and severity classification.

- Resuscitation according to the procedure for patients with severe acute pancreatitis according to the Procedures of the Ministry of Health (2015).

- All patients were placed with central venous catheters and were given sodium chloride 0.9% at a volume of 250 - 300 ml/hour for the first 24 hours.

- Measure abdominal pressure and perform abdominal drainage under ultrasound guidance

- Continuous dialysis according to the procedures of the Intensive Care Department, Nghe An General Friendship Hospital.

- Evaluate the effectiveness of continuous hemodialysis through criteria: pulse, average blood pressure, abdominal pressure, SOFA score, APACHE II, treatment time, complications...

2.3. Data processing: Using SPSS 20.0 software.

3. RESULT

From January 2023 to September 2023, 14 patients who met the inclusion criteria and did not have exclusion criteria were included in the study.

Table 1. Degree of increased abdominal pressure during hospitalization of study subjects

Degree of increased abdominal pressure	n	%
Degree I	2	14,3
Degree II	7	50,0
Degree III	3	21,4
Grade IV	2	14,3
Total	14	100

All patients had increased abdominal pressure, patients with grade II and III increased abdominal pressure accounted for high rates: 58.4% and 25%, respectively.

Table 2. Relationship between the degree of increased abdominal pressure and the time of continuous bleeding

Degree of increased abdominal pressure	Continuous dialysis time (hour) ($\bar{X} \pm SD$)
Degree I (n=2)	16,3 \pm 2,83
Degree II (n=7) *	44,5 \pm 16,5
Degree III (n=3) *	46,6 \pm 18,7
Grade IV (n=2) *	82,5 \pm 18,3

* $p < 0.05$ (Compare data with levels (II, III, IV) with level I

Table 3. Relationship between increased abdominal pressure and abdominal drainage

Degree of increased abdominal pressure	Average fluid volume/patient in the first 3 days ($\bar{X} \pm SD$)(ml)	Drainage retention time ($\bar{X} \pm SD$)(day)
Degree I (n=2)	1221,5 \pm 451,5	3,5 \pm 1,0
Degree II (n=7) *	1912,12 \pm 612,4	5,4 \pm 2,5
Degree III (n=3) *	2978,21 \pm 725,7	8,5 \pm 3,3
Grade IV (n=2) *	3571,21 \pm 767,5	10,5 \pm 3,5

* $p < 0.05$ (Compare data for levels (III, IV) with level I

The amount of drainage fluid in the first 3 days increases according to the increase in abdominal pressure. The difference is statistically significant from level III, IV compared to level I ($p < 0.05$).

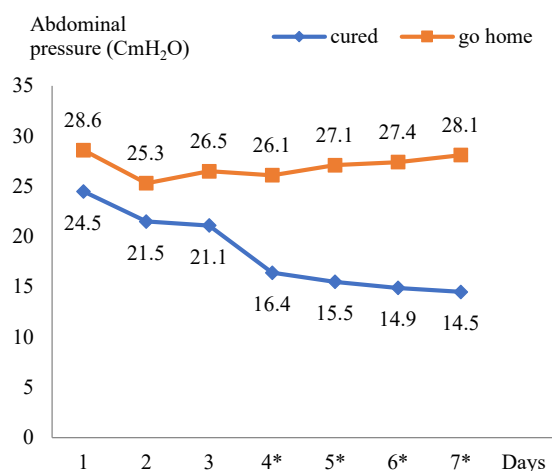


Figure 1. Evolution of abdominal pressure in the recovery group and the severe group returning home

Abdominal pressure decreased and returned to normal from day 4 in the recovered group ($p < 0.05$). In the severe group, abdominal pressure tends to change little and gradually increase

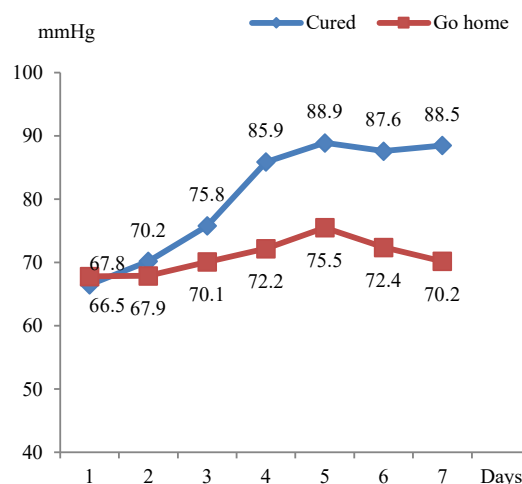


Figure 2. Average blood pressure development of patients

Average blood pressure tends to gradually increase and remain stable in the patient group; In the group of seriously ill patients, average blood pressure did not improve.

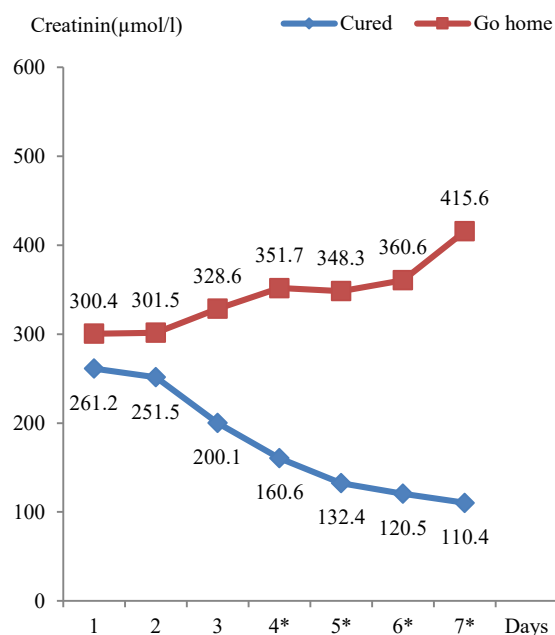


Figure 3. Development of blood creatinine

Creatinine in the group of patients who improved - recovered rapidly decreased during treatment and returned to a value close to normal after 1 week of treatment. In the group of severe patients, creatinine should be gradually increased

4. DISCUSS

Continuous hemodialysis in the treatment of severe acute pancreatitis is associated with increased intra- abdominal pressure

We prescribe continuous dialysis for patients with severe acute pancreatitis (with and without kidney failure when hospitalized): APACHE II score ≥ 8 ; have

systemic inflammatory response syndrome, SIRS score ≥ 2 and/or have organ failure, increased abdominal pressure.

The research results in Table 1 show that: the time needed for continuous dialysis lasts according to the level of increase in abdominal pressure, corresponding to the number of dialyzers needed to use also increasing with the level of increase in abdominal pressure. This may

explain that patients who require long-term continuous dialysis are patients with multiple organ failure (shock, kidney failure, ARDS). This result is consistent with Vu Duc Dinh's research. [3] Continuous hemodialysis has been shown to significantly improve mortality and improve multi-organ failure in acute pancreatitis.

Compared with the results of domestic research at the intensive care unit of Bach Mai hospital according to Nguyen Gia Binh's research, applying continuous hemofiltration to patients with acute pancreatitis, the mortality rate in the continuous hemodialysis group decreased. from 53% with conventional treatments to 27% with continuous dialysis [4]

Abdominal fluid drainage is related to the degree of increased intra-abdominal pressure

The research results in Table 2 also show that the average amount of drainage fluid also gradually increases with the increase in abdominal pressure. In the group with grade I abdominal hypertension, the average amount of drainage fluid in 3 days is 1221.5 ± 451.5 ml increased to 3571.21 ± 676.5 ml in the group with grade IV abdominal hypertension ($p < 0.05$) consistent with the study of Nguyen Quang Hai (2010) [5]

Drainage time of intra-abdominal fluids: very different depending on each specific patient, depending on the amount of fluid monitored daily. Normally we monitor the fluid from the drainage fluids daily and check with ultrasound. or CT scan, our procedure is to remove the drainage when the amount of fluid is < 20 ml/day and do an ultrasound at that location to see if there is no more fluid

Changes in abdominal pressure in the treatment of severe acute pancreatitis combined with abdominal drainage and continuous hemofiltration

Research results in chart 1 show that in the group of patients who recovered - abdominal pressure decreased rapidly and had statistical significance right after day 4. Meanwhile, abdominal pressure did not decrease and tended to increase. in the first week in the group of seriously ill patients returning home. Our research is consistent with the research of Dao Xuan Co (2012) [6]. Nguyen Quang Hai's research results show that abdominal pressure also decreased from the 2nd day, and from the 4th day onwards it became statistically significant. The author did not analyze separately the death group and the death group. alive and only studied on 18 patients [5]

Vu Duc Dinh's study comparing two groups of patients with severe acute pancreatitis with continuous hemodialysis and without continuous hemodialysis showed that abdominal pressure decreased from day 2. However, the group receiving continuous hemodialysis decreased faster. and return to normal on day 5 [3]

5. CONCLUSION

The time needed for continuous dialysis (from 1 to 7 days) and the number of dialysis filters (from 1 to 8) increase with the degree of increase in abdominal pressure. The amount of abdominal drainage fluid and the time required for drainage increase with the degree of increase in abdominal pressure.

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