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A study on observation of intravenous fluid management in the postoperative period in patients of gastrointestinal surgery

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Abstract

Background: Fluid replacement therapy rehydrates and replenishes the electrolyte stores and helps the patient to recover fast. However, the amount of fluid and type of fluid to be administered is most important in critical care because it is associated with morbidity and mortality of the patients.

Objectives: The present study was undertaken to observe the role of intravenous fluids in the postoperative period in patients of gastrointestinal surgery.

Methods: The present study involved 60 patients of gastrointestinal surgery, within the age group of 30 to 60 years of age. Both the genders (males =20), Females =40) were included in the study. A thorough clinical evaluation was conducted on all the patients. Data were collected from the medical records department after proper permission.

Results: The majority of patients belong to the age group of 41-50 years of age. The majority of cases were of appendicitis (36.66%). On basis of gender also a majority of cases are appendicitis. On day 4 of administration of the fluid majority of patients recovered with normal urinary output (23.33).

Conclusion: The study results support the importance of the intravenous fluids in boosting the recovery of the patients and restoration of their electrolyte balances and urinary output. It was observed that day 4 majority of patients showed recovery with normal urinary output. It was recommended to administer the fluids for adequate recovery of the patients. Further, detailed studies in this area are much needed to explore the importance of intravenous fluids in postoperative care.

Keywords: Gastrointestinal surgery, intravenous fluids, fluid therapy

Introduction

The use of intravenous fluids is age-old history of medical sciences where the first transfusion of fluids was conducted to a dog in the year 1656^[1]. Followed by this, in the year 1662, the fluids were transfused to the human being through veins^[2]. The role of intravenous fluids is lifesaving in critical care. It helps for restoration of blood volume, blood pressure and hydration status of the patient. Hence, in the postoperative period's administration of the fluids has an immense role. The intravenous fluids are normally a composition of sugars which are simple and amino acids and electrolytes as well^[3]. As it is well known that the majority of body composition is water that is about sixty percentages^[4]. The body has two portions intra and extracellular portions. Also electrolyte composition is most essential for homeostasis^[5]. During surgery due to loss of blood, the volume of blood is decreased which must be restored by proper fluid therapy^[6]. Fluid replacement therapy rehydrates and replenishes the electrolyte stores and helps the patient to recover fast^[7, 8]. However, the amount of fluid and type of fluid to be administered is most important in critical care because it is associated with morbidity and mortality of the patients. Hence, the present study was undertaken to observe the role of intravenous fluids in the postoperative period in patients of gastrointestinal surgery.

Materials and Methods

Study design: Retrospective study

Sampling method: Convenient sampling

Study population

The present study involved 60 patients of gastrointestinal surgery, within the age group of 30 to 60 years of age. Both the genders (males =20), Females =40) were included in the study. A thorough clinical evaluation was conducted on all the patients. Voluntary informed consent was obtained from all the patients before the study. Willing participants, who are not having any severe complications, were included in the study. Unwilling patients with severe complications were excluded from the study.

Method of data collection

Data was collected from the medical records department after proper permission.

Ethical consideration

The study proposal was approved by an institutional human ethical committee. Informed consent was obtained from all the participants. Confidentiality of data was maintained.

Data analysis

Data was analyzed using SPSS 20.0 version. Demographic data were presented as frequency and percentage. Student t-test was used to assess the significance of the difference between the groups.

Results

Table 1 presents the age-wise distribution of cases. Table 2 presents the disease-wise distribution of cases. Table 3 presents the disease wise distribution of cases – females. Table 4 presents the disease-wise distribution of cases–males. Table 5 presents the number of patients recovered using the intra venous fluids. Majority of patients belongs to the age group of 41-50 years of age. Majority of cases were of appendicitis (36.66%). On basis of gender also majority of cases is appendicitis. On day 4 of administration of fluid majority of patients recovered with normal urinary output (23.33).

Table 1: Age wise distribution of cases

Age group in years	Number of patients (n=60)	percentage
30-40	8	13.33
41-50	30	50
51-60	22	36.66

Data was presented as frequency and percentage

Table 2: Disease wise distribution of cases

Disease	Number of patients (n=60)	percentage
Hernia	12	20
Appendicitis	22	36.66
Fundal gastritis	8	13.33
Liver disorder	8	13.33
Carcinoma stomach	2	3.33
Perforation	8	13.33

Data was presented as frequency and percentage

Table 3: Disease wise distribution of cases – females

Disease	Number of patients (n=40)	percentage
Hernia	8	20
Appendicitis	14	35
Fundal gastritis	6	15
Liver disorder	7	17.5
Carcinoma stomach	1	2.5
Perforation	4	10

Data was presented as frequency and percentage

Table 4: Disease wise distribution of cases– males

Disease	Number of patients (n=20)	percentage
Hernia	4	20
Appendicitis	8	40
Fundal gastritis	2	10
Liver disorder	1	5
Carcinoma stomach	1	5
Perforation	4	20

Data was presented as frequency and percentage

Table 5: Number of patients recovered using the intra venous fluids

Number of days to reach normal urine output	Number of patients (n=60)	percentage
1	2	3.33
2	6	10
3	16	26.16
4	26	23.33
5	5	8.33
6	2	3.33
7	3	5

Data was presented as frequency and percentage

Discussion

Maintenance of constant internal environment of body is called homeostasis. One of the most important aspects of homeostasis is fluid balance [9]. Because, many vital functions are associated with the balance of the fluids [10-12]. Blood pressure management needs to maintain adequate blood volume and electrolyte volume [13]. Fluid loss is most common aspect of surgery. That is the reason why there should be fluid restoration after the surgery. Intra venous fluid administration do not have effect on tissue perfusion but it effects the stroke volume that is increases the stroke volume and there after cardiac output [14]. As there is two types of the components in the intra venous fluids based on its composition. Crystalloids and colloids compositions of

intra venous fluids. Crystalloids contains glucose or sodium chloride (saline) solutions. Colloids are mainly products of blood such as solution of albumin etc. [15].

There are still debates going on about the administration of fluids to the postoperative patients in the critical care units [16]. Especially the type and the amount of administration is matter of debate. It was reported that the stay in the hospital was shortened and improvement of patient outcome was observed followed by the administration of intra venous fluids [17]. Also other study reported improvement in hemodynamic condition of patients followed by the administration of fluids [18]. Another study reported that there is improvement in the cardiac index and oxygen saturation followed by the fluid therapy [19]. Still there is less

studies in this area. Hence, the present study was undertaken. The present study was undertaken to observe role of intra venous fluids in the postoperative period in patients of gastro intestinal surgery. Majority of patients belongs to the age group of 41-50 years of age. Majority of cases were of appendicitis (36.66%). On basis of gender also majority of cases is appendicitis. On day 4 of administration of fluid majority of patients recovered with normal urinary output (23.33). The study results support the importance of the intra venous fluids in boosting the recovery of the patients and restoration if their electrolyte balances and urinary output. It was observed that day 4 majority of patients showed recovery with normal urinary output. It was recommended to administer the fluids for adequate recovery of the patients. The study recommends to assess the advantages and disadvantages of the fluid administration also should be considered before administering the fluids.

Conclusion

The study results support the importance of the intra venous fluids in boosting the recovery of the patients and restoration if their electrolyte balances and urinary output. It was observed that day 4 majority of patients showed recovery with normal urinary output. It was recommended to administer the fluids for adequate recovery of the patients. Further, detailed studies in this area are much needed to explore the importance of intra venous fluids in the postoperative care.

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Conflicts of interest: None-declared

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