



Int. J. New. Chem., Special 2022. (Winter)

International Journal of New Chemistry

Published online 2022 in <http://www.ijnc.ir/>
Open Access



Print ISSN: 2645-7237

Online ISSN: 2383-188x

Original Research Article

Prevalence and Causes of Negative laparotomies in Penetrating and non-Penetrating Abdominal Trauma of Patients Admitted to the Intensive Care Unit

Seifollah Rezaie¹, Ali Enshaei^{2*}, Rozita Salehi Sedghiani³

¹ Assistant Professor of Thoracic Surgery, Department of General Surgery, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran (Email: Rezaei.s@umsu.ac.ir/ ORCID: 0000-0002-1654-6185)

² Associate Professor of Surgery, Department of General Surgery, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran

³ General Doctor, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran

Received: 2022-03-01

Accepted: 2022-05-26

Published: 2022-05-26

ABSTRACT

Introduction: The present study was performed to determine the frequency of various causes of negative laparotomy. It is hoped that by identifying the common causes of negative laparotomies, it will be possible to take steps to reduce mortality and increase community health by providing the necessary preconditions. **Material and Methods:** This study was performed as a descriptive retrospective study on the records of 138 patients who underwent emergency laparotomy during three years (2017-20) in Imam Khomeini Hospital affiliated to Urmia University of Medical Sciences. The number of the mentioned files was taken from the annual operating books of the operating room of the mentioned hospitals, in which the patient's details and the type of surgery were mentioned, and the relevant files were provided by referring to the archive. **Results:** In 40 patients out of 96 patients with blunt abdominal trauma, ultrasound was performed, which was positive in 32 patients and positive in 8 cases. Of the 32 positive ultrasounds, 30 had a positive result in laparotomy and 2 had a negative laparotomy; Also, out of 8 negative ultrasounds, only 2 cases were correct and in 6 cases, despite the negative ultrasound, there was a positive laparotomy. **Conclusion:** According to the findings of this study and according to scientific and reference books, the need for strict observance of surgical indications in trauma is emphasized and the observance of these scientific matters should not be limited to educational centers but can be implemented in all medical centers, both educational and non-educational.

Keywords: Prevalence, abdominal trauma, ICU

Introduction

In general, an incision in any part of the abdomen that results in the opening of the abdominal cavity is called a laparotomy. Various abdominal diseases and disorders can lead to laparotomy. Common incisions used in abdominal cavity exploration include vertical, transverse, and transverse-inclined incisions. Vertical section includes two types of midlines and paramedian [1-3]. Among them, almost all surgical operations on the abdomen or posterior peritoneum can be performed with a midline incision; For this reason, this method is widely used paramedian [4-6]. The term laparotomy is equivalent to the midline incision; In this article, laparotomy means midline incision. About 50% of referrals to general surgeons are acute surgical emergencies, about half of which are followed by abdominal symptoms (mainly abdominal pain) and half of which lead to abdominal surgery paramedian [7-9]. The use of emergency laparotomy generally includes the following: 1- Abdominal trauma 2- Acute abdominal surgery paramedian [10-13]. Trauma and injury and its consequences are among the major problems of today's societies and a serious threat to the health of society, and the abdomen is one of the most common parts of the body that suffers from injury; According to internal reports, about one million people are injured in various accidents every year, and in most cases, intra-abdominal viscera are damaged paramedian [14]. Abdominal trauma is divided into two general categories, impenetrable and penetrating paramedian [15-17]. In general, the mortality rate from blunt trauma is much higher than penetrating trauma, and despite new and better diagnostic methods such as CT scans, abdominal trauma is still a complex issue for any physician. About 60% of blunt traumas are due to car accidents and 20% of penetrating traumas occur in the abdomen paramedian [18-20]. The spleen, liver, kidneys and intestines are the most commonly vulnerable organs in abdominal trauma. The most common organ injured in blunt trauma is the spleen, and the most common organ damaged in penetrating trauma is the intestines paramedian [21-23]. Physical examination is still the most reliable diagnostic method in conscious patients, but diagnostic methods and facilities such as plain X-ray, sonography, CT scan and abdominal lavage can also be used. Laparoscopy is another possibility that can be used in some patients due to its various diagnostic possibilities; However, in critically ill and emergency patients, doing so is questionable in terms of usefulness paramedian [24]. Laparoscopy seems to be the ideal diagnostic tool for stable patients with possible anterior abdominal injury due to the excellent view of the liver to the

anterior diaphragm paramedian [25-27]. A potential concern is carbon dioxide embolism through hepatic venous injury, but this complication can be minimized with smaller laparoscopies that can be used under local anesthesia paramedian [28-30]. The present study was performed to determine the frequency of various causes of negative laparotomy. It is hoped that by identifying the common causes of negative laparotomies, it will be possible to take steps to reduce mortality and increase community health by providing the necessary preconditions [31].

Material and Methods

This study was performed as a descriptive retrospective study on the records of 138 patients who underwent emergency laparotomy during three years (2017-20-20) in Imam Khomeini Hospital affiliated to Urmia University of Medical Sciences. The number of the mentioned files was taken from the annual operating books of the operating room of the mentioned hospitals, in which the patient's details and the type of surgery were mentioned, and the relevant files were provided by referring to the archive. Data were collected using a questionnaire designed for this purpose and then analyzed using SPSS software. It should be noted that in this study, only emergency laparotomies with midline incision were included in the study and the rest of the surgeries with other incisions were excluded from the study. All patient information is available to the researcher only and the results of the study are presented in groups and without names. All stages of the study were approved by the University Ethics Committee .

Results

Out of 138 patients, 112 (81%) were male and 26 (19%) were female. Patients were in different age groups. The number of laparotomized patients following penetrating trauma was 42 (30.5%) and 96 patients (69.5%) underwent emergency laparotomy following penetrating trauma. The highest prevalence of abdominal trauma was in the third decade of life. Out of 96 cases of blunt abdominal trauma, 88 cases (91.6%) had abdominal injuries and 8 cases (8.4%) had negative laparotomy; Out of 42 cases of penetrating abdominal trauma, 22 cases (50%) had abdominal injuries and in 20 patients (48%) laparotomy was negative. Abdominal lavage was not performed for any disease and abdominal paracentesis (peritoneal tap) was performed in only 4 cases, all of which were positive and their laparotomy was positive. In 40 patients out of 96 patients with

blunt abdominal trauma, ultrasound was performed, which was positive in 32 patients and positive in 8 cases. Of the 32 positive ultrasounds, 30 had a positive result in laparotomy and 2 had a negative laparotomy; Also, out of 8 negative ultrasounds, only 2 cases were correct and in 6 cases, despite the negative ultrasound, there was a positive laparotomy. Of the 138 trauma patients who underwent laparotomy, 10 died, all due to blunt trauma.

Discussion

In this study, the highest number of emergency laparotomies following trauma (40%) was in the age group of 30-30, which is consistent with the statistics presented in reference books. In this study, the male to female ratio was 3.4; The reason for the increase in trauma cases in men is mostly due to the appropriateness of work and social conditions that expose them to more trauma. The highest prevalence of abdominal trauma was in the third decade of life and in women in the first and second decades. 70% of male traumas in the third decade were of the penetrating type and in all age groups, 50% of the traumas were of the penetrating type and all of them were caused by stabbing, which can explain the importance of social and cultural problems [32-34]. In this study, the most common type of abdominal trauma was non-penetrating type due to car and vehicle accident (52.2%) and penetrating trauma due to stabbing (26.1%) was in the next rank. It seems that observing the principles and rules of traffic and correcting the driving culture and reducing the factors involved in the occurrence of accidents (roads, etc.) and in general, cultural promotion is one of the things that can play an important role in reducing these complications [35]. Findings related to laparotomy showed that about 50% of penetrating abdominal trauma and about 8.5% of non-penetrating trauma were negative; The reason for the high rate of negative laparotomy in penetrating abdominal trauma should be sought in the choice of criteria for surgery, or it is better to attribute the cause of this increase to incorrect choice of criteria for surgery and even lack of scientific criteria in laparotomy [36]. The most common injured organs were in sphincter trauma, spleen (34.1%) and liver (32%) and in penetrating trauma of the intestine, which is almost according to the scientific reference books. In this study, the mortality rate in trauma was 7.2% and all were related to impenetrable trauma; The mortality rate was 20% in liver trauma and 12% in splenic trauma; This rate is mentioned in reference books as 10% -15% and 1%, respectively; The high mortality rate in liver and spleen trauma was mainly related to delayed delivery to the hospital, severity of trauma and other associated non-

abdominal limb injuries and the presence of associated internal diseases. Considering that no lavage and CT scan was performed in any of the patients and only abdominal TAP was performed in 8 cases and sonography was performed in 40 cases, it can be said that the decision to perform laparotomy was mostly based on the findings of physical examination. In the case of penetrating trauma, all patients who underwent hypotension based on clinical examination and had tenderness and guarding and underwent surgery did not have negative laparotomy, but in penetrating abdominal trauma, out of 42 cases, 4 had positive hypotension and 4 cases each had hypotension. There was no specific symptom in the other 38 cases and an exploratory laparotomy was performed due to the penetration of the wound, which was negative in 20 cases of laparotomy.

Conclusion

According to the findings of this study and according to scientific and reference books, the need for strict observance of surgical indications in trauma is emphasized and the observance of these scientific matters should not be limited to educational centers but can be implemented in all medical centers, both educational and non-educational. On the other hand, the age group with trauma is mainly the active and efficient group of human resources and the cause of trauma (accident and stabbing) that caused laparotomy in most patients is one of the important findings of this study that should attract the attention of relevant officials. By adopting appropriate methods, we can see the reduction of these problems and complications.

References

- [1]. K. Solo, S. Lavi, C. Kabali, G. N. Levine, A. Kulik, A. A. John-Baptiste, S. E. Femes, J. Martin, J. W. Eikelboom, M. Ruel, *bmj.*, 367(2019)
- [2]. K. Hashemzadeh, M. Dehdilani, M. K. Gol, *Int J Womens Health Reprod Sci.*, 9:69(2021)
- [3]. W. Q. Ma, X. J. Sun, Y. Wang, X. Q. Han, Y. Zhu, N. F. Liu, *Obesity reviews.*, 19:1236(2018)
- [4]. W.-Q. Ma, Y. Wang, X.-J. Sun, X.-Q. Han, Y. Zhu, R. Yang, N.-F. Liu, *Coronary artery disease.*, 30:367(2019)
- [5]. W. Wang, X. Zhou, X. Liao, B. Liu, H. Yu, *Journal of anesthesia .*, 33:543(2019)

- [6]. M. Dehdilani, M. K. Gol, K. Hashemzadeh, *Crescent Journal of Medical and Biological Sciences.*, 6:350(2019)
- [7]. M. Jannati, M. R. Navaei, L. G. Ronizi, *Journal of Family Medicine and Primary Care.*, 8:2768(2019)
- [8]. L. Melly, G. Torregrossa, T. Lee, J.-L. Jansens, J. D. Puskas, *Journal of thoracic disease.*, 10:1960(2018)
- [9]. K. Hashemzadeh, M. Dehdilani, M. K. Gol, *International Journal of Women's Health and Reproduction Sciences.*, 8:406(2020)
- [10]. M. Correa-Rodríguez, M. Abu Ejheisheh, N. Suleiman-Martos, M. J. Membrive-Jiménez, A. Velando-Soriano, J. Schmidt-RioValle, J. L. Gómez-Urquiza, *Journal of clinical medicine.*, 9: 909(2020)
- [11]. N. A. Smart, G. Dieberg, N. King, *Journal of the American College of Cardiology.*, 71: 983(2018)
- [12]. T. M. Kieser, D. P. Taggart, *Journal of Cardiac Surgery.*, 33: 219-(2018)
- [13]. K. Hashemzadeh, M. Dehdilani, M. K. Gol, ***Crescent Journal of Medical and Biological Sciences.***, 5: 517(2019)
- [14]. S. M. A. Hussain, A. Harky, *International Journal of Medical Reviews.*, 6: 1(2019)
- [15]. S. J. Head, M. Milojevic, J. Daemen, J.-M. Ahn, E. Boersma, E. H. Christiansen, M. J. Domanski, M. E. Farkouh, M. Flather, V. Fuster, *The Lancet.*, 391: 939(2018)
- [16]. A. Jedariforoughi, *Doctmedico Journal* 2(2):201 (2022)
- [17]. A. Johnson, A. Brous, A. Samimi, *Advanced Journal of Chemistry Section B.*, 4(2):124 (2022)
- [18]. H. Mirjalili, H. Amani, A. Ismaili, MM. Fard, A. Abdolrazaghnejad, *Journal of Medicinal and Chemical Sciences* 5(2):204 (2022)
- [19]. R. Alimoradzadeh, N. Moosavi, A. Karimkoshteh, Z. Sadeghi, MM. Fard, A. Ismaili, *Chemical Methodologies* 6(3):166 (2022)
- [20]. A. Jedariforoughi, *Doctmedico Journal* 2:180 (2022)
- [21]. A. Samimi, M. Samimi, *Journal of Engineering in Industrial Research.*, 2 (1): 1 (2021)
- [22]. B. Mahmoodiyeh, S. Etemadi, A. Kamali, S. Rajabi, M. Milanifard, *Annals of the Romanian Society for Cell Biology*, 2559 (2021)

- [23]. A. Susanabadi, M. Saleh Sadri, H. Taleby, S. Etemadi, B. Mahmoodiyeh, M. Milani Fard, *Annals of the Romanian Society for Cell Biology* 25(6):2703 (2021)
- [24]. A. Samimi, M. Samimi, *International Journal of Advanced Studies in Humanities and Social Science.*, 9:195 (2020)
- [25]. AO. Shirazi, H. Jahandideh, A. Yarahmadi, M. Milanifard, MM. Delarestaghi, *Medical Science* 24(104):2467 (2020)
- [26]. M. Jafari, A. Samimi, O. Mayeli, *Journal of Applied Researches in Technical and Engineering.*, 2 (7):247 (2018)
- [27]. A. Jedariforoughi, *Doctmedico Journal* 2:180 (2022)
- [28]. F. Zabihi, MA. Abbasi, R. Alimoradzadeh., *Annals of the Romanian Society for Cell Biology*, 2573 (2021)
- [29]. F. Rebut, A. Samimi, *Progress in Chemical and Biochemical Research.*, 5(2):196 (2022)
- [30]. MB. Abhari, PF. Afshar, R. Alimoradzadeh, H. Mirmiranpour., *Immunopathologia Persa* 6(1): e10 (2019)
- [31]. A. Jedariforoughi, *Doctmedico Journal* 1(2):176 (2021)
- [32]. A. Yarahmadi, K. Kamrava, A. Shafee, M. Milanifard, M. Aghajanpour, et al., *J Pharm Res Int*, 1 (2019)
- [33]. H Jahandideh, A Yarahmadi, S Rajaieh, AO Shirazi, M Milanifard, et al., *J Pharm Res Int* 31 (6): 1 (2020)
- [34]. A. Jedariforoughi, *Doctmedico journal* 1(2):154 (2021)
- [35]. A. Johnson, A. Brous, A. Samimi, *Progress in Chemical and Biochemical Research.*, 5(2):218 (2022)
- [36]. A. Jedariforoughi, *Doctmedico Journal* 2(1):194 (2022)

How to Cite This Article

Seifollah Rezaie, Ali Enshaei, Rozita Salehi Sedghiani, **“Prevalence and causes of negative laparotomies in penetrating and non-penetrating abdominal trauma of patients admitted to the intensive care unit”**, *International Journal of New Chemistry.*, 2022; DOI: 10.22034/ijnc.2022.5.16.