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EDITORIAL

Dear Colleagues,

It is with big pleasure that I welcome you to the first issue of the new year. In this issue, reviews of new investigations in the field of emergency medicine and original research are included. One of our most important goals is to mediate appropriately the sharing of knowledge and experience among emergency medicine specialists, researchers and academicians. This issue included 3 original research articles and 2 interesting cases, covering various topics in emergency medicine.

Our first article evaluates the knowledge and attitudes of physical education students about basic life support. Our second article compares the clinical and laboratory features in ileus and subileus patients. Our third article provides information about the clinical evaluation of ethanol-positive patients in emergency services. In addition to these, our first case report includes information about DRESS syndrome associated with Methimazole, and the second case report includes information about renal colic-like presentation of splenic artery aneurysm rupture. These published studies appeal not only to academics but also to all healthcare professionals interested in emergency medicine. I hope they will contribute to new studies for students and researchers.

I would like to thank all of heros (researchers, reviewers, editorial board and publisher team) for their effort and dedication. We are happy to present you the latest updates in emergency medicine and we will strive to mediate all your contributions to science in the way of highest quality.

Best regards,

Prof. Hakan OĞUZTÜRK, MD
Editor in Chief

The Intercontinental Journal of
Emergency Medicine

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The Intercontinental Journal of Emergency Medicine

Original Article

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Assessment of knowledge and attitudes of physical education students about basic life support

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ABSTRACT

Aims: Sudden cardiac death in athletes can occur during training or competition. This study was conducted to assess the knowledge and attitudes of students from the faculty of sport sciences regarding basic life support (BLS) practices, emphasizing the importance of proper training in effectively responding to sudden cardiac arrest situations.

Methods: The study was conducted prospectively on students from the faculty of sport sciences. BLS knowledge was assessed using a questionnaire composed of two sections. The first section collected demographic data, while the second focused on sudden cardiac death and BLS practices.

Results: A total of 404 participated in the study. While 96.8% of students could recognize at least one indicator of sudden cardiac arrest, 3.2% could not identify any. Among participants, 85.9% knew how to perform chest compressions correctly, but only 56.7% identified the correct site, 18.6% knew the correct frequency, and 45.8% knew the correct compression depth. The proportion of students who correctly understood rescue breaths was 17.6%, while only 29.9% knew the correct compression-to-ventilation ratio. Additionally, 92.8% of students were unaware of the purpose of using an automated external defibrillator (AED). Overall, 75% of participants had previously received BLS training. Students with prior training demonstrated significantly better knowledge regarding pulse assessment duration, the definition and site of chest compressions, and AED usage compared to those without training ($p<0.05$). Similarly, students who had witnessed a sudden cardiac arrest scored significantly higher on questions related to chest compressions, hands-only CPR, and AED usage ($p<0.05$).

Conclusion: The results suggest that the knowledge level of sport sciences faculty students regarding BLS practices is inadequate. However, students with prior BLS training and those who have witnessed sudden cardiac arrest demonstrated higher levels of knowledge. It is recommended that sport sciences students receive regular BLS training to leverage their youth and dynamism for the benefit of public and athletic health.

Keywords: Sudden cardiac arrest, student, athlete, basic life support

This study was accepted as an oral presentation at the 6th International Conference on Science, Culture, and Sport. 25-27. April. 2018. Lviv, Ukraine.

INTRODUCTION

Basic life support (BLS) or cardiopulmonary resuscitation (CPR) is a procedure performed on a person whose heart and/or breathing has stopped. It involves chest compressions to restore circulation and airway-opening maneuvers combined with rescue breaths to restore breathing, without the use of medications or medical equipment.[1,2] It has been demonstrated that early and effective chest compressions performed by a rescuer can significantly increase the victim's chances of survival in cases of sudden cardiac arrest.[3,4] Therefore, it is crucial for bystanders who witness sudden cardiac death to have sufficient knowledge of BLS practices.[1,5]

Sudden cardiac death in athletes is defined as a non-traumatic death occurring during or immediately after exercise, within six hours of previously normal health.[6,7] These deaths are often associated with cardiovascular diseases, with primary causes including hypertrophic cardiomyopathy, abnormal coronary artery anatomy, commotio cordis, and myocarditis.[8-10] Studies have shown that the incidence of sudden death in athletes ranges from 0.3 to 20 per 100000 annually, and it is more commonly observed in males than females.[11-13] It has also been noted that these rates vary depending on the type of sport and the athlete's age group. In

the United States, basketball and American football are the sports most commonly associated with these deaths, while in Europe, football (soccer) is the leading sport.[14-16] The sudden death of a young person during a sports competition is a deeply tragic event for both the family and the community. Each year, social media and news outlets report cases of athletes losing their lives or narrowly escaping death during sports events (ESPN, Christian Eriksen-Discover Walk). One of the most notable examples of this was the sudden cardiac arrest suffered by Christian Eriksen during the 2021 European Football Championship. Considering the high number of active athletes worldwide, it becomes evident that not only healthcare professionals but also athletes and sports professionals must be equipped with knowledge and skills in BLS to prevent fatalities on the field.[17,18]

The aim of this study is to assess and evaluate the level of knowledge about BLS among students of the Faculty of Sport Sciences, emphasizing the importance of proper training. Additionally, it seeks to highlight the necessity of enhancing students' knowledge and skills to effectively respond to sudden deaths on sports fields.

METHODS

Ethics

The study was conducted with the permission of Kırıkkale University Faculty of Medicine Clinical Researches Ethics Committee (Date: 17.05.2016, Decision No: 2016-14/02). Informed consent was obtained from participants, and the study adhered strictly to the Helsinki Declaration and the Good Clinical Practice Guidelines throughout its execution.

Study Design

This study was conducted prospectively among students enrolled at the Faculty of Sport Sciences, Kırıkkale University. This study was designed as a cross-sectional diagnostic accuracy study.

Basic Life Support Questionnaire

The questions in the survey were prepared based on the American Heart Association (AHA) CPR Guidelines.[19] The questionnaire was developed by an expert who has conducted extensive research in the field of CPR. Incorrect choices were generated from common examples of clinical malpractice, common misinformation in the literature, and misinterpreted versions of relevant protocols. This method was chosen to objectively assess the level of knowledge and accuracy of the participants. Literature reviews and international guidelines (e.g., AHA) were taken into account in the study. This approach increases the methodological robustness of the study and has the potential to make important contributions to future research. The questionnaire consisted of two sections (Appendix-1):

First Section (Demographic Data): This section was designed to gather basic demographic information about the participants, including their age, years of sporting experience, gender, marital status, academic department, grade level, and sports branch. It comprised a total of 7 questions.

Second Section (BLS Knowledge): This section aimed to assess the participants' knowledge of BLS through 26 questions. The questions were distributed as follows:

- Questions 1 and 2: Inquired whether participants had received prior BLS training.
- Question 3: Assessed participants' recognition of sudden death indicators.
- Questions 4-6: Evaluated their knowledge of pulse assessment.
- Questions 7-10: Explored whether participants had ever witnessed a sudden death event.
- Questions 11-17: Assessed knowledge related to performing chest compressions (cardiac massage).
- Questions 18-21: Evaluated knowledge about rescue breathing (artificial respiration).
- Questions 22 and 23: Focused on the usage of an automated external defibrillator (AED).
- Question 24: Assessed knowledge about activating the emergency response system by dialing the appropriate number.
- Question 25: Asked participants to self-assess their level of knowledge about BLS.
- Question 26: Inquired whether participants were interested in attending a BLS course.

Evaluation of the Survey Questions

The survey questions were evaluated in different categories based on their characteristics. Questions 1, 7, 17, 18, and 26 were closed-ended questions answered with "yes/no". Questions 2, 3, 4, 8, 9, 10, 16, 19, 20, 21, and 23 were designed with multiple correct answers, aimed at assessing the distribution of knowledge levels in CPR. Questions 5, 6, 11, 12, 13, 14, 15, 22, and 24 were multiple-choice questions with only one correct answer. Question 25 asked participants to evaluate their own CPR knowledge level using a Likert scale ranging from "very insufficient" to "excellent." For the questions on recognizing sudden death symptoms and pulse assessment, each correct answer was assigned "1" point, and incorrect answers received "0" points. The minimum score for these questions was "0", and the maximum score was "6." An increase in the score (0 points="Does not know at all", 1-2 points="Low knowledge level", 3-4 points="Moderate knowledge level", 5-6 points="High knowledge level") indicated an improvement in CPR knowledge level.

Statistical Analysis

The data were analyzed using the SPSS 21.0 software (IBM SPSS Statistics 21.0, IBM Corporation, Armonk, NY, USA). Qualitative variables were expressed as frequency (n) and percentage (%), while quantitative variables were represented as mean and standard deviation (±SD). For the normality test of the data, the Kolmogorov-Smirnov test was used. To compare the groups, the Pearson Chi-square test was employed. A p-value <0.05 was considered statistically significant.

RESULTS

The study reached a total of 519 students. However, 94 students were excluded from the study due to incomplete survey forms, and 21 students who declined to participate

voluntarily were also removed. As a result, the study was completed with a final sample size of 404 students.

In Table 1, the majority of participants, 62.4%, are male. In terms of marital status, 98.8% of the participants are single. Regarding departmental distribution, physical education teaching (41.6%) and sports management (38.4%) stand out compared to the coaching and recreation departments. Based on class level, the highest percentage, 39.2%, belongs to the 2nd-year students. In terms of sport specialization, football is the most common sport at 17.6%, while 29.5% of participants have not yet selected a sport. This suggests that the study includes a young and newly introduced group of participants to sports.

Table 1. Demographic characteristics of participants

Gender	**(n=404)**
• Male, n (%)	252 (62.4)
• Female, n (%)	152 (37.6)
Marital status	
• Married, n (%)	5 (1.2)
• Single, n (%)	397 (98.8)
Department	
• Physical education teaching, n (%)	168 (41.6)
• Sports management, n (%)	155 (38.4)
• Coaching, n (%)	72 (17.8)
• Recreation, n (%)	9 (2.2)
Class	
• 1st year, n (%)	43 (10.6)
• 2nd year, n (%)	158 (39.2)
• 3rd year, n (%)	98 (24.3)
• 4th year, n (%)	105 (25.9)
Sport specialization	
• Football, n (%)	71 (17.6)
• Swimming, n (%)	52 (12.9)
• Badminton, n (%)	40 (9.9)
• Athletics, n (%)	27 (6.7)
• Volleyball, n (%)	25 (6.2)
• Basketball, n (%)	17 (4.2)
• Gymnastics, n (%)	10 (2.5)
• Other sports, n (%)	43 (10.6)
• No sport specialization yet, n (%)	119 (29.5)

In Table 2, 75% of the participants have previously received BLS training, with the majority of them (77.2%) having received this training at the faculty. The participants demonstrated recognition of signs of sudden death, with the most commonly identified signs being the absence of pulse, cessation of breathing, loss of consciousness, and lack of verbal response. Regarding their level of knowledge on recognizing sudden death signs, 44.8% were found to have a high level of knowledge. In the case of sudden death, the most frequently chosen site for pulse evaluation was the carotid artery (78.6%), and for pulse evaluation duration, 36.4% of participants selected 60 seconds. However, only 19.3% of the participants correctly identified the "10 seconds" response as the correct pulse evaluation time.

The proportion of participants who correctly knew how to perform CPR was 86.4%. The correct location for performing effective CPR, which was identified as the "center of the sternum," was chosen by 57.7% of the students. Only 18.6% of the participants knew the correct number of chest

Table 2. Evaluation of CPR knowledge

Have you previously received CPR training? (n=404)	
• Yes, n (%)	303 (75.0)
• No, n (%)	101 (25.0)
Where was CPR training received? (n=303)	
• Faculty, n (%)	234 (77.2)
• Driver's license course, n (%)	106 (34.9)
• First aid book, n (%)	23 (7.6)
• Visual media (TV, internet), n (%)	15 (4.9)
• Health worker friend, n (%)	9 (2.9)
• Received training from multiple sources, n (%)	64 (21.1)
Recognizing signs of sudden death (n=404)	
• No pulse, n (%)	354 (87.6)
• No breathing, n (%)	327 (80.9)
• Loss of consciousness, n (%)	266 (65.8)
• No verbal response, n (%)	183 (45.2)
• Chest pain, n (%)	17 (4.1)
• Nausea or vomiting, n (%)	17 (4.1)
Knowledge level in recognizing signs of sudden death (n=404)*	
• Do not know at all (0 points), n (%)	13 (3.2)
• Insufficient (1-2 points), n (%)	75 (18.7)
• Moderate (3-4 points), n (%)	135 (33.4)
• High (5-6 points), n (%)	181 (44.8)
Pulse assessment location in the event of sudden death (n=404)	
• Carotid artery, n (%)	318 (78.6)
• Radial artery, n (%)	240 (59.4)
• Femoral artery, n (%)	8 (1.9)
• I don't know, n (%)	22 (5.4)
Time taken for pulse assessment in the event of sudden death (n=404)	
• 1 second, n (%)	17 (4.2)
• 10 seconds, n (%)	78 (19.3)
• 30 seconds, n (%)	89 (22.1)
• 60 seconds, n (%)	147 (36.4)
• Until the pulse is detected, n (%)	22 (5.4)
• I don't know, n (%)	51 (12.6)

*Each correct answer to the question on recognizing the symptoms of sudden death was given a score of "1" and each incorrect answer was given a score of "0" (0 points, "not at all familiar", 1-2 points, "low level of knowledge", 3-4 points, "moderate level of knowledge", 5-6 points, "high level of knowledge"). CPR: Cardiopulmonary resuscitation

compressions for hands-only CPR, while 29.9% knew the correct chest compression-to-breath ratio. Additionally, 45.8% of participants were aware of how much pressure should be applied to the chest wall during CPR. Regarding the potential harms of CPR, 87.9% of participants stated that CPR could be harmful, and 74.8% believed that it most commonly leads to "rib fractures" (Table 3).

Of the participants, 24.1% had performed CPR before, and 35.1% had performed this intervention on a family member. Among those who did not perform CPR, 17.6% did not perform CPR because they "did not know the correct technique", 63.1% did not perform CPR because they had never encountered such a situation, 7.5% did not perform CPR because of feeling of disgust and 2.2% because of the risk of infectious diseases. The most common rescue breathing technique was "mouth-to-mouth breathing" by 64.9% (Table 4).

According to the knowledge of the AED, only 10.4% of the students correctly knew the purpose of using the AED. However, it was believed that this device is most commonly

Table 3. Evaluation of CPR knowledge

What is CPR? (n=404)	
• Pressing on the chest wall at regular intervals, n (%)	349 (86.4)
• Compressing the heart by opening the chest wall, n (%)	28 (6.9)
• Applying an electrical shock to the chest wall, n (%)	14 (3.5)
• I don't know, n (%)	13 (3.2)
What is the correct location for performing CPR? (n=404)	
• The center of the chest wall, n (%)	233 (57.7)
• The left side of the chest wall, n (%)	123 (30.4)
• The right side of the chest wall, n (%)	17 (4.2)
• I don't know, n (%)	31 (7.6)
How many times per minute should hands-only CPR be performed? (n=404)	
• 10 times per minute, n (%)	115 (28.5)
• 50 times per minute, n (%)	106 (26.2)
• More than 100 times per minute, n (%)	75 (18.6)
• I don't know, n (%)	108 (26.7)
How much pressure should be applied to the chest wall during CPR? (n=404)	
• 1-2 cm, n (%)	145 (35.9)
• 5-6 cm, n (%)	185 (45.8)
• 7-10 cm, n (%)	30 (7.4)
• I don't know, n (%)	44 (10.8)
What should the ratio of chest compressions to breaths be during CPR? (n=404)	
• 5/1, n (%)	93 (23.1)
• 15/1, n (%)	32 (7.9)
• 15/2, n (%)	41 (10.1)
• 30/1, n (%)	19 (4.7)
• 30/2, n (%)	121 (29.9)
• I don't know, n (%)	98 (24.2)
Is CPR harmful? (n=404)	
• Yes, n (%)	355 (87.9)
• No, n (%)	13 (3.2)
• I don't know, n (%)	36 (8.9)
What are the potential harms of CPR? (n=404)	
• It could stop the heart, n (%)	160 (39.6)
• The heart could be injured, n (%)	141 (13.9)
• The ribs could break, n (%)	302 (74.8)
• The stomach could be injured, n (%)	71 (17.3)
• The lungs could be injured, n (%)	76 (18.8)
• I don't know, n (%)	37 (9.2)

CPR: Cardiopulmonary resuscitation

Table 4. Evaluation of rescuer breathing knowledge

Have you ever performed artificial respiration? (n=404)	
• Yes, n (%)	97 (24.1)
• No, n (%)	307 (75.9)
Who did you perform artificial respiration on? (n=97)	
• Family member, n (%)	34 (35.1)
• Friend/acquaintance, n (%)	22 (22.7)
• Athlete, n (%)	11 (11.3)
• Stranger (unknown person), n (%)	30 (30.9)
Why didn't you perform artificial respiration? (n=307)	
• I have not encountered such a situation, n (%)	194 (63.1)
• I didn't do it because I didn't know how, n (%)	54 (17.6)
• I didn't do it because I didn't know the person, n (%)	19 (6.2)
• I didn't do it because I was disgusted (blood, vomit, etc.), n (%)	23 (7.5)
• I didn't do it due to fear of infectious disease risk, n (%)	7 (2.2)
• I didn't do it for multiple reasons, n (%)	48 (15.6)
What techniques can be used to perform artificial respiration? (n=404)	
• Mouth-to-mouth, n (%)	262 (64.9)
• Mouth-to-nose, n (%)	9 (2.2)
• Mouth-to-both mouth and nose, n (%)	26 (6.4)
•All methods can be used, n (%)	81 (20.1)
• I don't know, n (%)	26 (6.4)

Table 5. Automated external defibrillator (AED) knowledge evaluation

When is an AED used? (n=404)	
• It is used to correct life-threatening heart rhythms, n (%)	47 (10.4)
• It is used when the heart stops and there is no pulse, n (%)	270 (66.8)
• It is used when respiration stops and the patient is not breathing, n (%)	42 (9.9)
• I don't know, n (%)	45 (10.1)
Where can the AED be found?(n=404)	
• Emergency room, n (%)	377 (93.3)
• Ambulance, n (%)	348 (86.1)
• Other (e.g., olympic village, cinema, theater, shopping mall), n (%)	19 (4.5)
• I don't know, n (%)	13 (3.2)

found in emergency rooms (93.3%) and ambulances (86.1%) (Table 5).

Witnessing Sudden Death: The percentage of participants who have witnessed a sudden death before is 26.2%, with 31.1% having experienced it with family members and 33.9% with strangers. The most common locations for these incidents were the home (35.8%) and the street (33.1%). Among those who responded to a sudden death situation, 33.1% called an ambulance, while 23.5% reported that they did nothing due to shock. Despite having CPR knowledge, 11.3% could not intervene, and 12.2% performed CPR (Table 6).

It was observed that those who had previously received CPR training had significantly higher rates of correct answers to the questions on "pulse evaluation time, definition and application location of CPR, and the purpose of using AED" compared to those who had not received training ($p<0.001$; 0.026; 0.011; 0.037, respectively) (Table 7).

It was observed that those who had not previously witnessed sudden death had a significantly higher correct answer rate for the questions about 'hands-only CPR and the purpose of using an AED' compared to those who had witnessed sudden death. On the other hand, the definition of CPR was found to be significantly higher among those who had witnessed sudden death ($p=0.001$; 0.001; 0.013, respectively) (Table 8).

DISCUSSION

The aim of this study is to determine and evaluate the BLS knowledge level of students in the faculty of sports sciences. This is particularly important because students in this field may face situations of sudden respiratory arrest on sports fields, or physical education teachers may need to perform BLS in school settings. Therefore, it is crucial for students

Table 6. Distribution of those who witnessed sudden death

Did you witness his sudden death? (n=404)	
• Yes, n (%)	106 (26.2)
• No, n (%)	298 (73.8)
The distribution of individuals who have witnessed a sudden death (n=106)	
• Family member, n (%)	33 (31.1)
• Friend, n (%)	13 (12.2)
• Acquaintance (neighbor or relative), n (%)	24 (22.6)
• Stranger, n (%)	36 (33.9)
The distribution of the locations where individuals have witnessed a sudden death (n=106)	
• Home, n (%)	38 (35.8)
• School or sports hall, n (%)	7 (6.5)
• Workplace, n (%)	7 (6.5)
• Street, n (%)	35 (33.1)
• Seaside, n (%)	7 (6.5)
• Forest or picnic area, n (%)	3 (2.8)
• Hospital, n (%)	9 (8.4)
The response to a sudden death situation (n=106)*	
• I was in shock, i couldn't do anything, n (%)	25 (23.5)
• I couldn't do anything because i didn't know CPR, n (%)	15 (14.1)
• Even though i knew CPR, i couldn't do anything, n (%)	12 (11.3)
• I asked people around for help, n (%)	13 (12.2)
• I called an ambulance (112), n (%)	35 (33.1)
• I checked the pulse, n (%)	22 (20.7)
• I checked the breathing, n (%)	16 (15.1)
• I performed CPR, n (%)	13 (12.2)

*Reaction to sudden death; more than one answer was given, CPR: Cardiopulmonary resuscitation

in the faculty of sports sciences to have knowledge of BLS procedures.

It was found that the majority of students had previously received BLS training, which was provided during their education at the faculty. The students were familiar with signs of sudden death, such as the inability to detect a pulse, respiratory arrest, loss of consciousness, and lack of verbal response. About half of the students had a high level of knowledge regarding recognizing symptoms of sudden death. However, the correct response rate for detecting the pulse during sudden death was only about a quarter, which is relatively low. This finding indicates that while students have general knowledge about BLS and sudden death interventions, there are gaps in their practical knowledge. Hırça[20] emphasized these gaps and suggested that BLS training should be compulsory and regularly provided in teacher-training schools.

The knowledge level regarding how to perform chest compressions was found to be high. More than half of the students correctly identified the "midline of the sternum" as the appropriate point for chest compressions. However, the percentage of students who knew the correct number of chest compressions or the correct ratio of compressions to breaths was lower. Around half of the participants knew how much pressure should be applied to the chest wall during CPR. Additionally, a high percentage of students expressed concerns about potential harm from chest compressions, particularly rib fractures. These findings suggest that while students possess some basic knowledge about chest compressions, certain key details need to be emphasized

Table 7. Comparison of the correct answer rates of those who received and those who did not receive combined repercussion therapy training

	Trained (n=303)	Non-trained (n=101)	p
• What are the signs of sudden death? (n, %)	296 (97.7)	95 (94.1)	0.109
• Where should the pulse be checked in the case of sudden death? (n, %)	297 (98.1)	90 (89.1)	<0.001
• How long should pulse checking last in the case of sudden death? (n, %)	52 (17.2)	24 (23.8)	0.293
• What is CPR (cardiopulmonary resuscitation)? (n, %)	267 (88.1)	80 (79.2)	0.026
• Where is the correct location for CPR? (n, %)	185 (61.1)	47 (46.5)	0.011
• How many compressions should be performed during hands-only CPR? (n, %)	58 (19.1)	15 (14.8)	0.521
• How deep should chest compressions be during CPR? (n, %)	27 (8.9)	4 (3.9)	0.105
• What is the ratio of chest compressions to breaths during CPR? (n, %)	97 (32.1)	4 (3.9)	0.117
• What are the techniques for performing rescue breathing? (n, %)	283 (93.4)	92 (91.1)	0.436
• In which situations is an automated external defibrillator (AED) used? (n, %)	147 (48.5)	38 (37.6)	0.037
• Where can an AED be found? (n, %)	232 (76.6)	78 (77.2)	0.909

Table 8. Comparison of correct answer rates between those who have witnessed sudden death (WSD) and those who have not

	WSD (n=106)	No WSD (n=298)	p
• What are the signs of sudden death?, n (%)	101 (95.3)	290 (97.3)	0.394
• Where should the pulse be checked in the event of sudden death?, n (%)	74 (69.8)	236 (79.2)	0.121
• How long should the pulse be checked during sudden death?, n (%)	19 (17.9)	57 (19.1)	0.803
• What is CPR (cardiopulmonary resuscitation)?, n (%)	78 (73.6)	269 (90.3)	0.001
• Where is the correct place to perform CPR?, n (%)	60 (56.6)	172 (57.7)	0.842
• How many compressions should be done in hands-only CPR?, n (%)	38 (35.8)	35 (11.7)	0.001
• How deep should chest compressions be during CPR?, n (%)	54 (50.9)	131 (43.9)	0.215
• What is the ratio of chest compressions to breaths during CPR?, n (%)	38 (35.8)	83 (27.8)	0.123
• What are the techniques for performing rescue breathing?, n (%)	95 (89.6)	280 (93.9)	0.137
• In which situations is an automated external defibrillator (AED) used?, n (%)	14 (13.2)	17 (5.7)	0.013
• Where can an automated external defibrillator (AED) be found?, n (%)	99 (93.4)	288 (96.6)	0.139

more. Bohn et al.[21] found that even 10-year-old children could perform chest compressions as effectively as adults.

About a quarter of the participants had previously performed mouth-to-mouth resuscitation, and about one-third had performed it on a family member. Those who had not performed mouth-to-mouth resuscitation either did not know the correct technique or had never encountered such situations. Some students refrained from performing mouth-to-mouth resuscitation due to disgust or fear of infectious diseases. The most well-known technique was "mouth-to-mouth breathing". These findings indicate that the majority of students lack practical experience, and their knowledge of the techniques needs to be further developed. Casa et al.[22] argue that since coaches are often responsible for such interventions in schools, all coaches should be trained in CPR and AED use. Priyangika et al.[23] advocated for the inclusion of first aid in school curricula.

When evaluating knowledge of AED use, only a small proportion of participants correctly identified its purpose. The majority of participants believed AEDs were used when the heart stopped and there was no pulse. However, there was a noticeable lack of awareness regarding the availability of AEDs in public spaces, such as shopping malls. This indicates the need for more education regarding the function and accessibility of AEDs. Kramer et al.[24] noted that the majority of public participants were unaware of AEDs, and Johnson et al.[25] reported that only 11% of schools had implemented the necessary emergency action plans.

The percentage of participants who had witnessed sudden death was generally low, but those who had experienced it typically encountered it in family settings or in public spaces. Most participants who witnessed sudden death called for an ambulance, while some were unable to intervene due to the shock of the event. The proportion of participants with BLS knowledge who did not intervene was low. These findings suggest that individuals' response capacity in sudden death situations needs to be enhanced, and more effective training programs are needed to improve intervention skills.

A comparison of the correct response rates of students who had received BLS training and those who had not showed that those who had received training generally performed better, particularly in questions like "where should the pulse be checked during sudden death?" and "what is chest compression?". However, there were no significant differences between the two groups in some other areas (e.g., how many chest compressions should be performed in hands-only CPR?). These results indicate that BLS training is particularly effective in critical areas of knowledge, but the content of the training should be enhanced in some areas.

Studies by Al-Turki et al.[26], Almesned et al.[27], Al-Turkistani[28], Suri et al.[29] and Kara et al.[30] have shown that university students and the general public lack knowledge of BLS, though their attitudes toward it are generally positive. These findings support the need for widespread BLS training and ongoing education programs.

CONCLUSION

As a result, this study found that students were able to recognize symptoms of sudden death, such as the inability to detect a pulse, cessation of breathing, loss of consciousness, and lack of verbal response. While the students possessed general knowledge of BLS and sudden death interventions, it was observed that there were notable gaps in their knowledge. A significant portion of students accurately understood how to perform CPR, including the correct location for effective chest compressions, with most students identifying the "sternum center" as the right point. However, the proportion of students who correctly knew the number of chest compressions required, as well as the chest compression/ventilation ratio, was low. Additionally, nearly half of the students correctly identified the appropriate depth of chest compression during CPR, but there was a significant lack of knowledge regarding the proper number of chest compressions and the correct chest compression/ventilation ratio.

Only a small portion of the students had ever performed artificial respiration, and most of them had administered it to family members. Those who did not perform artificial respiration either lacked knowledge of the proper technique or had never encountered a situation requiring it. A few students were also reluctant to perform artificial respiration due to a sense of disgust or the fear of contagious diseases. It was found that the majority of students lacked practical experience. In terms of the use of the AED, students thought it was only used in emergency services and ambulances, and many were unaware of its availability in other public spaces, such as shopping malls.

Students who had received BLS training generally showed a higher level of knowledge compared to those who had not. However, it was observed that those who had witnessed sudden death incidents had lower levels of knowledge compared to those who had not. This highlights the importance of hands-on experience in learning, suggesting that knowledge acquired through real-life experience plays a critical role in the effectiveness of BLS interventions.

These findings underscore the need for ongoing and updated BLS training programs, which should not only provide theoretical knowledge but also emphasize practical experience. BLS education should be tailored to current needs, ensuring that students not only acquire knowledge but also gain hands-on practice. Additionally, such training programs should be consistent, widely accessible, and continuously improved to keep up with the evolving requirements of modern-day emergencies.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was conducted with the permission of Kırıkkale University Faculty of Medicine Clinical Researches Ethics Committee (Date: 17.05.2016, Decision No: 2016-14/02).

Informed Consent

All patients signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

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Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Original Article

Comparison of clinical and laboratory features in ileus and subileus patients: a retrospective study

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ABSTRACT

Aims: This study aims to compare the demographic, clinical, and laboratory parameters of patients diagnosed with ileus and subileus, with a particular focus on the need for intensive care unit (ICU) admission and the diagnostic value of inflammatory markers and platelet indices.

Methods: This retrospective study was conducted on patients diagnosed with intestinal ischemia at Ankara Bilkent City Hospital Emergency Department between January 1, 2024, and December 31, 2024. Patients were grouped into ileus and subileus based on CT reports. Demographic, clinical, and laboratory data were collected and analyzed using SPSS version 28. Statistical analysis included parametric and non-parametric tests.

Results: No significant differences were observed in the demographic and clinical characteristics of the two groups. However, a statistically significant difference was found in ICU admission rates, with the ileus group having a higher need for ICU care (p=0.03). No significant differences were found in laboratory parameters, including white blood cell count, platelet indices, and markers of inflammation.

Conclusion: This study suggests that while ileus and subileus share similar clinical characteristics, ileus patients may require more intensive care, highlighting the need for closer monitoring and early intervention. Larger prospective studies are needed to further explore the prognosis and optimal treatment strategies for these patients.

Keywords: Intestinal obstruction, ileus, subileus, inflammatory markers, emergency medicine

INTRODUCTION

Intestinal obstructions are serious and potentially life-threatening clinical conditions encountered in the emergency department. These obstructions are divided into two groups based on their etiological causes and luminal patency: ileus and subileus. Subileus refers to a condition in which the intestinal passage is partially preserved but significantly slowed down or restricted, while ileus is characterized by complete obstruction, preventing the passage of intestinal contents to distal areas. If left untreated, both conditions can lead to serious complications such as ischemia, bacterial translocation, perforation, and sepsis in the bowel wall.[1,2]

Early diagnosis and appropriate treatment approaches in intestinal obstructions are crucial in reducing mortality and morbidity. Patients typically present with abdominal pain, nausea, vomiting, abdominal distention, and progressive constipation. Findings such as high fever, marked abdominal tenderness, rebound tenderness, severe leukocytosis, or metabolic acidosis may indicate serious complications such as bowel necrosis, perforation, or widespread peritonitis.[2] In the diagnostic process, in addition to clinical findings, various laboratory parameters are also evaluated. Recent studies suggest that some hematological and biochemical markers used to assess inflammatory responses and systemic stress may provide important insights into the severity and prognosis of intestinal obstruction. Hematological parameters such as mean platelet volume (MPV) and platelet distribution width (PDW), which reflect the degree of inflammatory response, have also been shown to be associated with complications like intestinal ischemia and necrosis.[3-6]

Furthermore, early diagnosis of acute intestinal ischemia still presents challenges due to the lack of specific biomarkers. Experimental studies have revealed that serum enzyme levels change during intestinal ischemia. In particular, alanine aminotranspherase (ALT), aspartate aminotranspherase (AST), alkaline phosphatase (ALP), and lactate dehydrogenase (LDH) levels have been found to increase significantly in the later stages of ischemia. However, while these enzymes indicate the presence of ischemic processes, they do not

provide definitive information about the degree of ischemia or its reversibility.[7]

This study aims to compare the hematological and biochemical parameters of patients diagnosed with subileus and ileus, investigating the diagnostic and prognostic value of inflammatory markers and platelet indices. The findings are expected to offer new approaches to the use of laboratory parameters in the clinical management of intestinal obstructions.

METHODS

Ethics

This study was approved by Ankara Bilkent City Hospital Clinical Researches Ethics Committee No. 1. (Date: 16.08.2023, Decision No: E1-23-3869). The study was conducted in accordance with the principles of the Helsinki Declaration and Good Clinical Practice.

Study Design

This retrospective cross-sectional study was conducted on patients diagnosed with intestinal ischemia who presented to the Ankara Bilkent City Hospital Emergency Department between [01.01.2024-31.12.2024]. Patients aged 18 years and older, with a confirmed diagnosis of intestinal ischemia based on clinical, laboratory, and radiological findings, were included in the study. Patients with missing data or those diagnosed with gastrointestinal diseases other than intestinal obstruction were excluded from the study.

Data Collection

Patient data were collected retrospectively from the patient registration system of the Ankara Bilkent City Hospital Emergency Department. Demographic characteristics such as age, gender, and comorbidities were recorded. All patients underwent computed tomography (CT), and based on the CT reports, the patients were divided into two groups: ileus and subileus. Additionally, laboratory test results (hemogram, ALT, AST, LDH, C-reactive protein (CRP), lactate, platelet indices, etc.) were collected.

Grouping

Based on the CT reports, patients were divided into two groups: 'ileus' and 'subileus'. The 'ileus' group consisted of patients showing signs of complete intestinal obstruction, while the 'subileus' group consisted of patients with partial intestinal obstruction. The severity of intestinal ischemia was assessed based on CT images and clinical findings.

Statistical Analysis

The collected data were analyzed using SPSS version 28 [for MacOs] software. The normality distribution of the groups was analyzed using histograms, Q-Q plot curves, and the Kolmogorov-Smirnov test. Continuous variables were expressed as mean±standard deviation or median (interquartile range; IQR) depending on the distribution, while categorical variables were presented as frequencies and percentages (%). Differences between groups were evaluated using parametric tests (Student's t-test) or non-parametric tests (Mann-Whitney U test) based on the distribution of the data. Chi-square test or Fisher's exact test was used for the comparison of categorical variables.

RESULTS

Demographic and Clinical Characteristics

A comparison of the demographic and clinical characteristics of the ileus and subileus groups is presented in Table 1. No significant differences were found between the groups. There were no significant differences between the groups in terms of variables such as age, gender, chronic obstructive pulmonary disease (COPD), diabetes mellitus (DM), cardiovascular disease (CVD), malignancy, hematologic diseases, intra-abdominal mass, surgical history in the last 3 months, or prior ileus history. There was also no significant difference between the groups regarding the level (small intestine/large intestine) parameter. These findings indicate that there were limited clinical differences between the two groups.

Surgical and Admission Status

A comparison of surgical and admission statuses between the ileus and subileus groups is presented in Table 2. No significant differences were found between the groups in terms of surgical operation and hospital ward admission ($p=0.759$ and $p=0.635$). However, a statistically significant difference was observed in intensive care unit (ICU) admission ($p=0.03$), with a higher ICU admission rate in the ileus group compared to the subileus group. This result suggests that ileus patients may have been facing more severe clinical conditions.

Laboratory Parameters

No statistically significant differences were found between the ileus and subileus groups in terms of laboratory parameters (Table 3). No significant differences were observed between the two groups in terms of white blood cell count (WBC), neutrophils, lymphocytes, monocytes, platelets, MPV, PCT, PDW, hemoglobin (HGB), glucose, electrolytes, urea, creatinine, AST, ALT, LDH, pH, bicarbonate, lactate, base excess, aPTT, international normalized ratio (INR), CRP, and procalcitonin levels. These findings suggest that there were no clinically significant differences in laboratory parameters between the two groups.

Logistic regression analysis was deemed unnecessary because the differences between the groups were mostly not significant, and the predictive power of independent variables for disease outcome was low.

DISCUSSION

In our study, no significant differences were found between the demographic and clinical characteristics of patients with ileus and subileus. The lack of significant differences in variables such as age, gender, COPD, DM, heart failure, malignancy, hematologic diseases, intra-abdominal mass, surgical history, and previous ileus history suggests that these two patient groups have similar clinical profiles. However, a statistically significant difference was observed in terms of ICU admission, with the ileus group requiring ICU care more frequently. This finding suggests that ileus patients may have more severe clinical courses.

Ileus and subileus refer to different degrees of intestinal obstruction, and their clinical courses can vary. Ileus is typically characterized by complete obstruction, while

Table 1. Comparison of demographic and clinical characteristics between ileus and subileus groups

Variables		Groups		p-value	Diff-95% CI
		Ileus	Subileus		
Age		63.64±17.10	60.88±16.17	0.181*	-3.21-8.73
Gender	Male	46 (55.4)	26 (53.1)	0.792**	
	Female	37 (44.6)	23 (46.9)		
COPD		2 (2.4)	2 (4.1)	0.627***	
DM		10 (12.0)	11 (22.4)	0.114**	
Heart failure		6 (7.2)	2 (4.1)	0.710***	
Malignancy		22 (26.5)	8 (16.3)	0.178**	
Hematologic disease		1 (1.2)	1 (2.0)	1.000***	
Intra-abdominal mass		15 (18.1)	5 (10.2)	0.223**	
Surgery in the last 3 months		14 (16.9)	4 (8.2)	0.159**	
History of ileus		6 (7.2)	4 (8.2)	1.000***	
Level	Small intestine	62 (74.7)	41 (83.7)	0.229**	
	Large intestine	21 (25.3)	8 (16.3)		

*Independent Sample-T test, mean±SD; **Pearson Chi-square, n (%); ***Fisher Exact test, n (%), COPD: Chronic obstructive pulmonary disease, DM: Diabetes mellitus

Table 2. Comparison of hospitalization and surgical intervention status in ileus and subileus groups

Variables	Groups		p-value
	Ileus	Subileus	
Surgical operation	31 (37.3)	17 (34.7)	0.759
Ward hospitalization	27 (32.5)	14 (28.6)	0.635
ICU hospitalization	58 (69.9)	25 (51.0)	0.03

Pearson Chi-square test, n (%), ICU: Intensive care unit

subileus is defined as partial obstruction or impaired transit. In cases of complete obstruction, the risk of bowel distention, ischemia, and perforation is higher, leading to an increased need for ICU care.[8] Similarly, in our study, the ICU admission rate was higher in the ileus group compared to the subileus group. This supports the idea that ileus is a more severe clinical condition that may lead to serious complications and requires early intervention.

Table 3. Comparison of laboratory parameters and blood gases between ileus and subileus groups

Variables	Groups		p-value	Diff-95%CI
	Ileus	Subileus		
WBC	10.48±4.22	10.96±4.98	0.502*	-2.15-1.05
Neutrophil	8.35±4.03	8.89±4.62	0.587*	-1.92-1.09
Lymphocyte	1.36±0.66	1.19±0.68	0.152*	-0.06-.42
Monocyte	0.47 (0.36-0.67)	0.57 (0.43-0.86)	0.101**	
Platelet	290.00 (232.00-381.00)	314.00 (236.75-389.75)	0.381**	
MPV	8.30 (8.00-8.90)	8.35 (7.72-9.07)	0.867**	
PCT	0.24 (0.18-0.32)	0.26 (0.19-0.33)	0.487**	
PDW	49.68 (8.69)	50.50 (10.88)	0.640**	-4.25-2.62
HGB	13.2 (10.5-14.8)	12.9 (11.2-14.8)	0.899**	
Glucose	110.00 (97.00-142.00)	123.0 (99.50-150.25)	0.268**	
Sodium	138.00 (136.00-140.00)	138.00 (135.00-140.00)	0.509**	
Potassium	4.20 (3.90-4.50)	4.30 (3.90-4.80)	0.333**	
Urea	41.00 (30.00-51.00)	41.50 (26.50-61.50)	0.971**	
Serum kreatinine	0.84 (0.69-1.11)	0.95 (0.75-1.35)	0.148**	
AST	24.00 (20.00-30.00)	21.50 (16.25-28.75)	0.051**	
ALT	19.00 (15.00-26.25)	20.50 (15.00-33.75)	0.282**	
LDH	267.50 (220.50-307.75)	236.50 (211.25-305.50)	0.359**	
pH	7.40 (7.35-7.44)	7.40 (7.35-7.44)	0.807**	
Bicarbonate	24.00 (21.07-26.25)	24.15 (22.55-25.90)	0.604**	
Lactate	1.82 (1.41-2.42)	1.91 (1.41-2.84)	0.611**	
Base excess	-0.45 (-2.90- 1.52)	-0.55 (-1.70-1.50)	0.707**	
aPTT	22.70 (15.30-24.85)	22.80 (20.85-25.10)	0.301**	
INR	1.10 (1.00-1.20)	1.10 (1.05-1.20)	0.996**	
CRP	16.87 (5.90-58.00)	7.80 (1.58-48.95)	0.172**	
Procalcitonin	0.07 (0.03-0.19)	0.10 (0.03-0.049)	0.693**	

WBC: White blood cell count, MPV: Mean platelet volume, PDW: Platelet distribution width, HGB: Hemoglobin, AST: Aspartate aminotranspherase, ALT: Alanine aminotranspherase, LDH: Lactate dehydrogenase, INR: International normalized ratio, CRP: C-reactive protein, *Independent Sample T test, mean±SD; **Mann-Whitney U test, Median (25-75%)

In two animal studies, the WBC count was reported to be higher in the group with complete obstruction due to necrosis compared to the partial obstruction group.[9,10] Additionally, a study on mesenteric ischemia patients reported that in the mortality group, WBC, neutrophil, lymphocyte, and platelet indices were numerically higher, though not statistically significant, depending on the degree of ischemia.[11] As previously mentioned in the literature, ALT, AST, alkaline phosphatase, and lactate dehydrogenase levels increase significantly in the later stages of ischemia.[7] Based on these findings, CRP and procalcitonin levels are considered important indicators of inflammation and infection in bowel obstruction. Another study noted that in bowel obstructions, nonspecific laboratory abnormalities are often observed. Hemoconcentration and electrolyte disturbances are frequently seen due to fluid loss and vomiting. Increases in BUN and creatinine levels may indicate prerenal azotemia. Leukocytosis, neutrophilia, and a left shift may indicate a risk of sepsis, while metabolic acidosis and lactic acidosis can be signs of mesenteric ischemia, which may require surgical intervention.[12] However, in our study, no significant differences were found between the two groups in terms of laboratory parameters. The similar levels of WBC, neutrophils, lymphocytes, monocytes, platelets, MPV, PCT, PDW, hemoglobin, glucose, electrolytes, urea, creatinine, AST, ALT, LDH, pH, bicarbonate, lactate, base excess, aPTT, INR, CRP, and procalcitonin suggest that there was no significant difference in systemic inflammatory response and organ dysfunction between the two groups. This does not align with the literature and does not support it. We believe this inconsistency may be due to the relatively small sample size and the retrospective nature of our study.

The clinical management of ileus patients depends on the underlying cause, the patient's overall condition, and the risk of complications. In cases of simple obstruction, conservative treatment may be sufficient, while surgical intervention is required in cases with complications such as strangulation or peritonitis. In subileus cases, gastrointestinal decompression and correction of fluid-electrolyte imbalances generally result in improvement. However, in patients who do not respond to conservative treatment and are at risk of strangulation, surgical treatment may be required depending on the etiology of the intestinal obstruction and the patient's overall condition.[13] The lack of a significant difference between the two groups in terms of surgical operation rates suggests that subileus cases may also require surgical intervention. However, the higher ICU admission rate in the ileus group suggests that these patients may respond less to conservative treatment and encounter more severe clinical outcomes.

A study conducted in 2019 and another study reported that 80% of obstructions were located at the small intestine level.[14,15] Our study supports the literature, as approximately 80% of obstructions were at the small intestine level. Small bowel obstructions are most commonly caused by adhesions from previous surgeries, with studies showing that about 75% of these obstructions result from adhesions. In the past, hernias were the most common cause of small bowel obstructions, but over time, adhesions have become more prevalent. However, other less common causes of small bowel obstructions include malignancies, Crohn's disease, and volvulus. The overall mortality rate for small bowel obstructions is around 3%, but this rate increases with age.[14] Other studies have also reported adhesions, hernias, malignancies, and various causes (11.2%).[16,17] In cases complicated by strangulation, the mortality rate can rise to 30%.[18] Adhesion-related small bowel obstructions typically occur within the first year after surgery but can also be observed as late as 10 years later in about 21% of cases.[14] In our study, no significant differences were observed between the clinical and demographic characteristics of the small bowel obstruction and subileus groups. However, the difference in ICU admission rates between the two groups suggests that more severe clinical courses require higher ICU care, particularly in elderly patients or those at risk for serious complications.

In conclusion, our study shows that ileus and subileus patients have largely similar clinical characteristics, but ileus patients require more frequent ICU care. This finding emphasizes the importance of closely monitoring ileus cases and the need for early intervention. Future larger-scale prospective studies will help better understand the prognosis and optimal treatment approaches for these patient groups.

Limitations

This study has several limitations. Firstly, the small sample size may limit the statistical power and generalizability of the findings. We believe that studies with larger sample sizes would yield more meaningful results. Secondly, the retrospective design of the study may affect the accuracy and integrity of the data. Prospective studies, where data is recorded in real-time, are considered more reliable for obtaining accurate results. Thirdly, our study is single-centered and geographically limited, which may hinder the ability to generalize the findings to different populations. Additionally, potential confounding variables, such as patients' previous treatment history, comorbidities, and psychosocial factors, were not fully controlled, which may have influenced the results. Finally, long-term outcomes were not assessed, making it difficult to draw conclusions regarding the sustained effects of the intervention. Future studies should involve larger sample sizes, multiple centers, and long-term follow-up to confirm the findings.

CONCLUSION

In this study, no significant difference was found between the demographic and clinical characteristics of the ileus and subileus patients; however, it was observed that the need for admission to the ICU was significantly higher in the ileus group. This suggests that ileus may represent a more severe clinical condition, requiring closer monitoring and potentially more aggressive interventions.

ETHICAL DECLARATIONS

Ethics Committee Approval

This study was approved by Ankara Bilkent City Hospital Clinical Researches Ethics Committee No. 1. (Date: 16.08.2023, Decision No: E1-23-3869).

Informed Consent

Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process
Externally peer-reviewed.

Conflict of Interest Statement
The authors have no conflicts of interest to declare.

Financial Disclosure
The authors declared that this study has received no financial support.

Author Contributions
All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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The burden of ethanol-positive patients in emergency departments: a clinical evaluation

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ABSTRACT

Aims: Alcohol-related emergency department (ED) admissions pose a significant burden on healthcare systems. This study aims to evaluate the demographic, clinical, and biochemical characteristics of ethanol-positive patients and analyze the impact of blood ethanol levels on the ED.

Methods: This retrospective study included 769 patients who presented to a tertiary care ED between November 1, 2023, and April 30, 2024, with a blood ethanol level ≥50 mg/dl. Patients were categorized into two groups (<200 mg/dl and ≥200 mg/dl), and their demographic data, admission reasons, biochemical parameters, and brain computed tomography (CT) findings were compared.

Results: The mean age of the study population was 38.24±13.81 years, and 80% were male. Patients in the ≥200 mg/dl group were significantly older than those in the <200 mg/dl group. Trauma was the leading cause of ED admission (90% of cases), with falls being more common in the ≥200 mg/dl group (19.9% vs. 8.4%, p<0.001) and assaults being more frequent in the <200 mg/dl group (25.5% vs. 18.2%, p<0.001). Biochemical analysis showed significant elevations in AST, amylase, and lipase levels in the ≥200 mg/dl group. Brain CT scans were performed in 54.4% of patients, with no significant differences in intracranial pathology between groups (p=0.427).

Conclusion: Alcohol-related ED visits contribute to both clinical and operational challenges. Patients with ethanol levels ≥200 mg/dl were more advanced in age and had higher rates of trauma-related admissions, particularly falls. Despite increased brain CT utilization in this group, no significant difference was found in intracranial pathology rates. These findings highlight the need for more selective imaging strategies. Additionally, targeted interventions such as alcohol screening protocols, specialized sobering units, and staff training programs are essential to reducing the burden of alcohol-related ED visits and improving patient care.

Keywords: Alcohol consumption, emergency department burden, blood alcohol content, trauma

INTRODUCTION

Emergency departments (EDs) are critical healthcare units that provide 24/7 medical care to patients with a wide range of conditions, from life-threatening emergencies to non-urgent cases.[1] Their open-access nature results in unpredictable patient flow, frequent overcrowding, and increased pressure on healthcare providers.[2] Limited resources, high patient turnover, and the necessity for rapid decision-making further contribute to ED strain.[1] Among the many challenges EDs face, managing patients under the influence of alcohol is particularly complex, as these cases often require prolonged observation, behavioral interventions, and interdisciplinary coordination, further exacerbating ED workload.[3,4]

Alcohol is one of the most widely misused psychoactive substances worldwide and is a major contributor to morbidity and mortality.[5] According to the World Health Organization, excessive alcohol consumption accounts for approximately 2.6 million deaths annually and is one of the top five risk factors for the global burden of disease.[5,6] Beyond its direct toxic effects—such as liver disease, pancreatitis, and cardiovascular complications—alcohol use significantly increases the risk of accidents, violence, and self-harm.[7,8] In many countries, alcohol-related injuries and intoxications constitute a significant proportion of emergency medical admissions, placing an additional burden on healthcare systems.[9]

Studies indicate that alcohol-related cases comprise 5–9% of all ED admissions, with injury-related cases reaching 17–35% in certain settings.[2] These patients not only require

medical stabilization but also pose unique challenges, such as aggressive behavior, impaired cognitive function, and a higher likelihood of repeat ED visits.[10,11] Moreover, alcohol-related cases contribute to prolonged hospital stays, increased healthcare costs, and a heightened risk of occupational hazards for ED staff.[12] Despite their significant impact, many health systems lack comprehensive data on the true burden of alcohol-related ED visits, highlighting the need for targeted interventions and preventive strategies.[13]

This retrospective study aims to evaluate the clinical and demographic characteristics of patients presenting to the ED with positive blood ethanol levels. The study examines the relationship between blood ethanol levels and biochemical parameters, reasons for admission, and radiological findings, providing a comprehensive overview of the burden alcohol-related cases place on emergency services. By identifying key trends and patient profiles, this study seeks to contribute to the development of evidence-based interventions, improved triage strategies, and targeted public health policies to optimize the management of alcohol-related ED visits.

METHODS

This study was approved by the Scientific Researches Evaluation and Ethics Committee of Ankara Etlik City Hospital (Date: 05.06.2024, Decision No: AEŞH-BADEK-2024-530). All procedures were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki.

This retrospective study was conducted on patients admitted to the ED of a tertiary care hospital. The study aimed to evaluate the demographic characteristics, reasons for presentation, and clinical outcomes of patients who presented to the ED between November 1, 2023, and April 30, 2024, with positive blood ethanol levels. This threshold was selected based on legal regulations, which define a blood ethanol level of ≥50 mg/dl as the threshold for determining ethanol positivity.[14]

Patient data, including demographic information (age, gender), reasons for admission (traumatic injuries, altered consciousness, alcohol intoxication, etc.), treatment interventions in the ED, and discharge outcomes, were retrospectively retrieved from the hospital's electronic medical record system.

Although there is no universally accepted threshold for severe alcohol intoxication, many studies consider a blood ethanol level of ≥200 mg/dl as indicative of severe intoxication.[15-17] Based on this, patients in our study were classified into two groups:

- Mild to moderate exposure: Blood ethanol level <200 mg/dl
- Severe exposure: Blood ethanol level ≥200 mg/dl

These groups were compared in terms of reasons for admission, Glasgow Coma Scale (GCS) scores, blood test results, and brain computed tomography (CT) findings.

Inclusion Criteria

- Patients aged 18 years and older,
- Patients with blood ethanol level ≥50 mg/dl.

Exclusion Criteria

- Patients younger than 18 years,
- Patients with incomplete or inadequate medical records,
- Patients transferred to another facility before completion of their ED evaluation,
- Patients with confirmed pregnancy.

RESULTS

A total of 769 patients were included in the study, with a mean age of 38.24±13.81 years. Among them, 80% were male. Patients were categorized into two groups based on their blood ethanol levels: <200 mg/dl and ≥200 mg/dl. A total of 346 patients had a blood ethanol level of <200 mg/dL. Patients in the ≥200 mg/dl group were significantly more advanced in age compared to those in the <200 mg/dl group (Table 1).

No significant difference was observed between the two groups in terms of glucose, pH, and lactate levels (p>0.05) (Table 1).

Ninety percent of the patients presented to the ED due to trauma-related causes. The most common reasons for admission were assault, falls, and traffic accidents. Patients in the ≥200 mg/dl group had a significantly higher rate of falls compared to those in the <200 mg/dl group. In contrast, assault-related admissions were more frequent in the <200 mg/dl group (Table 2).

A total of 9.4% of patients presented with alcohol intoxication, while 2.2% were admitted due to suicidal ideation. There was no statistically significant difference between the two groups regarding these admission reasons (p>0.05) (Table 2).

The GCS scores at admission were similar between the two groups, with a median value of 15 (IQR: 15–15). Brain CT was performed in 54.4% of the patients; however, there was no significant difference in CT scan rates between the groups (p=0.077) (Table 3).

Upon evaluation of brain CT findings, 85.5% of the patients had normal results. There was no statistically significant difference between the groups regarding intracranial pathologies (p=0.427). Similarly, no significant differences were observed between the groups in terms of fracture (4.5%), hemorrhage (1.8%), fracture+hemorrhage (0.9%), maxillofacial fracture (3.2%), and other brain CT abnormalities (4.9%) (p>0.05) (Table 3).

DISCUSSION

This study aimed to assess the impact of alcohol consumption on ED by evaluating the demographic, clinical, and biochemical characteristics of patients with positive blood ethanol levels. Our findings indicate that higher ethanol levels were associated with significant alterations in certain biochemical parameters and variations in trauma-related admissions among specific subgroups.

Among our patient cohort, 80% were male, consistent with existing literature, where gender distribution varies significantly by age and geographic region.[18,19] White et al.[2]

Table 1. Comparison of groups based on ethanol levels

		<200 mg/dl	≥200 mg/dl	p value/ 95% CI
Age		32 (24-43)	40 (30.5-53)	<0.001*
Gender	Female (n, %)	82 (23.7)	72 (18.0)	0.051†
	Male (n, %)	264 (76.3)	351 (82.0)	
Ethanol (mg/dl)		153.00 (126-177.8)	262.00 (228.00-318.00)	<0.001*
Glucose (mg/dl)		101.00 (89.0-118.7)	102.00 (91.00-117.00)	0.322*
pH		7.37 (7.32-7.39)	7.37 (7.32-7.40)	0.133*
Bicarbonate (mmol/L)		22.20 (20.20-24.00)	22.80 (20.60-24.75)	0.008*
Base excess (mmol/L)		-3.03±4.05	-2.40±3.32	0.028/(-1.138- -0.063) ‡
Lactate (mmol/L)		2.52 (1.90-3.37)	2.55 (1.93-3.43)	0.996*
AST (U/L)		27.00 (21.00-36.00)	30.00 (24.00-49.50)	<0.001*
ALT (U/L)		22.00 (17.00-34.00)	24.00 (16.50-37.00)	0.372*
Amylase (U/L)		61.80 (48.50-79.00)	64.00 (51.00-90.00)	0.024*
Lipase (U/L)		31.70 (23.85-42.95)	38.40 (26.30-61.40)	<0.001*

*Mann Whitney U test, median (25-75%), †Pearson Chi-square test, n (%), ‡Independent Samples test, mean±SD, AST: Aspartate aminotransferase, ALT: Alanine aminotransferase

Table 2. Comparison of admission reasons and brain CT utilization between groups

Admission reason		<200 mg/dl	≥200 mg/dl	p
Traffic accident		52 (15.1)	48 (11.2)	<0.001†
Assault		88 (25.5)	78 (18.2)	
Falls		29 (8.4)	85 (19.9)	
Other		129 (37.3)	157 (36.7)	
Lacerations		10 (2.9)	7 (1.6)	
Suicide attempt		8 (2.3)	9 (2.1)	
Alcohol intoxication		29 (8.4)	44 (10.3)	
Admission GCS		15.0 (15.0-15.0)	15.0 (15.0-15.0)	
Brain CT performed?	Yes	176 (50.9)	245 (57.2)	0.077†
	No	170 (49.1)	183 (42.8)	

†Pearson Chi-square test, n (%), GCS: Glasgow Coma Scale, CT: Computed tomography

Table 3. Comparison of brain CT findings between groups

Brain CT findings	<200 mg/dl (n, %)	≥200 mg/dl (n, %)	p
Normal	294 (85.0)	368 (86.0)	0.427†
Fracture	21 (6.1)	14 (3.3)	
Hemorrhage	5 (1.4)	9 (2.1)	
Fracture+hemorrhage	4 (1.2)	3 (0.7)	
Maxillofacial fracture	12 (3.5)	19 (4.4)	
Other	10 (2.9)	15 (3.5)	

†Pearson Chi-square test, n (%), CT: Computed tomography

reported a 68% male predominance in a 9-year analysis of alcohol-related ED admissions in the United States. Similarly, Lotfipour et al.[19] found that 55% of alcohol-positive ED patients were male. The high proportion of male patients in our study may be attributed to the younger age distribution and the predominance of trauma-related admissions. Furthermore, 57% of male patients and 47% of female patients were classified as heavy alcohol users, a finding that aligns with previous studies.[19]

Analysis by age revealed a statistically significant increase in heavy alcohol consumption with advancing age. Lotfipour et al.[19] similarly reported a progressive increase in alcohol intake with age. This trend is consistent with both sociocultural expectations and previous research, which suggest that individuals tend to consume more alcohol as economic stability improves and tolerance develops due to regular alcohol use.[5,19,20]

When evaluating biochemical parameters, our results demonstrated that higher ethanol levels were associated with significant changes. In particular, aspartate aminotransferase (AST), amylase, and lipase levels were significantly elevated in the high-ethanol group, in line with previous studies linking alcohol consumption to hepatocellular damage, elevated pancreatic enzyme levels, and metabolic acidosis.[22-24] Approximately 70% of pancreatitis cases are reported to be alcohol-related.[25] Despite these biochemical findings, no major clinical pathology related to heavy alcohol consumption was detected in our cohort. This may be attributed to the fact that nearly 90% of patients presented due to trauma, while only a small proportion sought medical attention for alcohol intoxication or suicide attempts. Although our study did not specifically assess acute versus chronic alcohol consumption, the high proportion of trauma-related admissions suggests that acute alcohol effects were predominant.

Blood glucose analysis revealed no significant difference between patients with heavy and light alcohol intake. While alcohol consumption is known to predispose individuals to hypoglycemia, our findings suggest that blood glucose levels should be evaluated independently of alcohol intake when assessing patients in the ED.[26-28]

Regarding presentation patterns, our results indicate that approximately 90% of patients presented due to trauma, with only 2.2% due to suicidal ideation and 9.4% due to alcohol intoxication. Among trauma cases, falls were more common in the severe ethanol group, whereas assault-related admissions were more frequent in the mild ethanol group. This finding is consistent with the negative effects of alcohol on motor coordination and balance, which have been well-documented in the literature.[2,29,30] Previous studies have shown that acute alcohol intoxication increases the risk of falls by two to three times.[31,32] Our findings align with these reports, as heavy alcohol intake was associated with suppressed consciousness and heightened neurological impairment, leading to more frequent falls, whereas mild alcohol consumption was more often linked to aggressive behavior and assault cases.[10,11,33]

Evaluation of brain CT scans revealed that 58% of those undergoing imaging were in the severe ethanol group. However, approximately 85% of both mild and severe cases had normal CT findings, and the incidence of intracranial hemorrhage or fractures did not differ significantly between groups. The remaining 15% of cases exhibited similar pathology distributions. It is noteworthy that, despite a higher proportion of CT imaging in severe cases, no significant differences were observed in outcomes. While more severe cases naturally require central nervous system evaluation, these findings raise important questions regarding cost-effectiveness and the necessity of routine neuroimaging in alcohol-intoxicated patients.[17,30] The lack of significant difference in GCS scores between mild and severe cases further supports this observation. Although this study did not aim to evaluate neuroimaging criteria specifically, our results may serve as a valuable reference for future research on the appropriateness of CT scanning in alcohol-intoxicated patients.

The relationship between excessive alcohol consumption and severe head trauma remains controversial in the literature. While some studies suggest that high blood alcohol levels exacerbate traumatic brain injury severity, others propose that alcohol may exert a neuroprotective effect via cerebral vasodilation.[34-36] Stuke et al.[37] analyzed the GCS scores of over 55.000 patients with positive blood alcohol levels and found that alcohol presence did not significantly reduce GCS scores in head trauma cases compared to alcohol-negative patients. These findings have been corroborated by other studies.[36,38] Conversely, Pandit et al.[35], in their study of 23.000 patients, found no evidence supporting a neuroprotective effect of alcohol and reported that ethanol-positive patients experienced a higher incidence of complications. This highlights the need for further studies to strengthen the existing literature in this field.

When considered collectively, these results suggest that the burden of alcohol-related ED admissions extends beyond clinical challenges to operational and economic concerns. Patient aggression, personnel safety risks, prolonged ED stays, and the increased demand for radiological imaging pose significant challenges to ED efficiency.[10-12,39] We believe that various strategies could be implemented to optimize the management of alcohol-related ED visits, including; expanding alcohol screening protocols in EDs, establishing specialized sobering units for severe alcohol intoxication cases, providing ED staff with training on aggressive patient management, enhancing public awareness and preventive public health programs. By implementing these strategies, the strain on ED resources can be mitigated, patient care can be improved, and the overall burden of alcohol-related admissions on healthcare systems may be reduced.

Limitations

This study has several limitations. First, its retrospective design limited data collection, preventing the evaluation of additional variables based on patient histories. Second, the study was conducted in a single center, which may limit the generalizability of the results. Future multicenter studies will provide a more robust foundation for these findings. Third, long-term clinical outcomes were not assessed, and patient status following ED discharge remains unknown. Finally, a blood ethanol level of ≥50 mg/dl was used as the threshold, but given the variability in threshold definitions across the literature, this factor should be considered when interpreting the results.

CONCLUSION

This study examined the effects of high ethanol levels by evaluating the clinical, biochemical, and radiological characteristics of alcohol-positive patients presenting to the ED. Our findings indicate that patients with ethanol levels ≥200 mg/dl were more advanced in age, exhibited significant alterations in biochemical markers, and had a higher incidence of falls. The implementation of targeted strategies for alcohol use can help alleviate the burden of alcohol-related ED admissions, enhance patient care, and optimize healthcare resource utilization.

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Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Case Report

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Methimazole associated DRESS syndrome: a rare case

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ABSTRACT

Drug rush with eosinophilia and systemic symptoms (DRESS) syndrome is a rare, life-threatening idiosyncratic drug reaction characterized by acute onset of fever, skin rash, lymphhadenopathy and multisystemic organ involvement. Rapid diagnosis and treatment of patients with DRESS syndrome is crucial because of high mortality risk. Supportive therapy includes antipyretics, H1 antihistamines, humidifiers and the use of topical steroids to heal symptoms. Systemic corticosteroids can minimize symptoms of delayed hypersensitivity reactions. In this article, a case with DRESS syndrome due to use of methimazole is showed and it has been requested to take attention to DRESS syndrome.

Keywords: DRESS, drug rash, methimazole

INTRODUCTION

Drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome is a rare, life-threatening drug reaction characterized by acute onset of fever, skin rash, and multisystemic involvement. Many drugs from different groups have been reported to cause this syndrome. The most frequently reported drugs in both pediatric and adult populations include phenytoin, carbamazepine, dapsone, sulfasalazine, allopurinol, vancomycin, sulfonamides.[1] In a multicenter study in our country, amoxicillin-clavulanate and carbamazepine were found to be the main responsible drugs in the investigation of multiple cases in the childhood age group.[2]

CASE

A 68-year-old woman was admitted to our emergency medicine clinic with an erythematous rash covering the whole body for 5 days. She stated that she had been taking methimazole for about 10 days due to hyperthyroidism and had a fever of 37.8°C at presentation (Figure 1,2). Laboratory tests revealed pathologic values as urea: 105 mg/dl, serum creatinine 1.32 mg/dl, gama-glutamyl transferase (GGT): 94 U/L, laktat dehydrogenase (LDH): 423 U/L, C-reactive protein (CRP): 37.69 mg/dl, platelet: 421,000/µL. The patient had maculopapular rash all over the body (Figure 1), edema and erythema on the tongue. The patient was hospitalized with a prediagnosis of 'DRESS' syndrome, thyromazole treatment was discontinued and the patient was admitted to dermatology after other related consultations were completed. The patient was diagnosed with 'DRESS' syndrome based on anamnesis, clinical and histopathologic findings. Prednol treatment (60 mg/day) resulted in almost complete improvement in the lesions and laboratory findings and the steroid dose was reduced and discontinued in 2 months. The patient was observed to have no complaints at follow-up visits.

Figure 1,2. Patient's rash on admission

DISCUSSION

Similar to adults, in a review of 82 publications including 148 cases of DRESS syndrome in childhood, anticonvulsants were found to be responsible in 52.6% of cases.[3] In a study conducted in North America, antibiotics (mostly vancomycin and beta-lactam antibiotics) were found to be responsible in 74% of cases and anticonvulsants in 20%.[4]

DRESS is a highly variable entity with a wide spectrum of clinical manifestations. Clinical manifestations can occur over a wide period of time, ranging from 2-8 weeks after the onset of suspected drug ingestion. Changes in laboratory values may be observed in the asymptomatic early period. Although certain organ involvement is seen with certain drugs, the clinical picture is more closely related to the host immune system rather than the responsible drug.[5]

The clinical picture usually begins with a rapidly progressive fever accompanied by a maculopapular morbiliform rash. Lymphadenopathy and pharyngitis are added in the following 1-2 days, followed by multiple organ involvement.[5] The long and variable severe clinical picture also leads to reactivations of various viruses from the herpes virus family. Skin lesions, the most common and widespread finding, typically begin as a mildly pruritic morbilliform eruption with symmetrical distribution on the face, neck, upper extremities and trunk and coalesce into a generalized erythema. The rash may become edematous, sometimes developing purpuric lesions, pustules and even vesicles. If the responsible drug is not discontinued, the lesions progress to erythroderma and/or exfoliative dermatitis. Facial edema is a very characteristic finding for DRESS.

Steven-Johnson syndrome, toxic epidermal necrolysis, acute generalized exanthematous pustulosis, angioimmunoblastic T-cell lymphoma, hypereosinophilic syndromes, Sezary syndrome, acute cutaneous lupus erythematosus can be considered in the differential diagnosis.[6]

Unfortunately, there is no pathognomonic finding and/or diagnostic test for the diagnosis of DRESS. The diagnosis is made clinically by considering laboratory findings in the presence of a compatible clinical picture that may be related to drug intake. Since the mortality rate reaches up to 10%, detailed history, clinical observation and laboratory investigations should be performed rapidly in suspected cases within a plan. There are diagnostic scoring systems developed to confirm or exclude the diagnosis of DRESS. The most widely used diagnostic scoring system is RegiSCAR (The registry of severe cutaneous adverse reaction).[1]

DRESS syndrome is a potentially life-threatening drug hypersensitivity reaction with an estimated mortality rate of 10% in adults and 1% in children, mainly due to hepatic necrosis.[3] High absolute eosinophil count (6000/L), thrombocytopenia, pancytopenia, history of chronic renal failure, multi-organ involvement and multiple underlying diseases are poor prognostic indicators associated with high mortality. Nevertheless, most patients with DRESS syndrome experience complete recovery after discontinuation of the responsible drug.[7]

In the process of identifying the responsible drug in DRESS, clinical judgment should be relied upon to identify the most likely responsible drug. Complete blood count, markers of inflammation, liver function tests, renal function tests, blood electrolytes, lipase, amylase, creatinine kinase, troponin I, immunoglobulins should be rapidly evaluated.

In the early period in these patients; the responsible drug and cross-reacting drugs should be discontinued immediately. Empirical use of NSAIDs and antibiotics should be avoided. Patients should be evaluated together with a multidisciplinary group of specialists. All cases should be hospitalized, except for very mild cases of DRESS that can be followed closely with repeated clinical and laboratory monitoring.

Antipyretics, H1 antihistamines, humidifiers and other treatments should be given as supportive therapy. Systemic corticosteroid therapy is strongly recommended in severe cases. When control cannot be achieved with corticosteroids or if corticosteroids are contraindicated: Cyclosporine 4-5mg/kg/day for 5-7 days is recommended.

CONCLUSION

In conclusion, the diagnosis of DRESS syndrome is difficult because it occurs in a wide clinical spectrum and its latent period is prolonged. DRESS syndrome should be kept in mind in the differential diagnosis especially in patients who use every drug treatment and present with fever and skin rash. The awareness of DRESS syndrome among emergency medicine doctors should be increased and morbidity and mortality rates will decrease with early and rapid diagnosis-treatment.

ETHICAL DECLARATIONS

Informed Consent
The patient signed and free and informed consent form.

Referee Evaluation Process
Externally peer-reviewed.

Conflict of Interest Statement
The authors have no conflicts of interest to declare.

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Author Contributions
All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Case Report

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Renal colic-like presentation of splenic artery aneurysm rupture: a case report

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ABSTRACT

This report describes a rare case of a ruptured splenic artery aneurysm (SAA) presenting with symptoms indistinguishable from renal colic. A 43-year-old male patient presented with acute left-sided abdominal pain, radiating to the flank, and hematuria, initially suggesting renal colic. While the diagnosis was being evaluated, the patient's vital signs rapidly deteriorated, prompting a more aggressive diagnostic approach that revealed the ruptured SAA. The patient was successfully treated with emergency surgery. This case emphasizes the importance of considering unusual diagnoses when faced with atypical presentations and highlights the diagnostic challenges associated with such rare conditions.

Keywords: Aneurysm, ruptured, splenic artery, renal colic, hemorrhagic shock

INTRODUCTION

One of the most common reasons for emergency department visits is abdominal pain.[1] Among all the causes of abdominal pain, splenic artery aneurysm (SAA) is seen in less than 1% of cases.[2] A splenic artery diameter greater than 1 cm is considered an aneurysm.[3] It is the third most common type of intra-abdominal aneurysm.[2] It is usually asymptomatic, with the main risk factors including pregnancy, trauma, fibromuscular dysplasia, atherosclerosis, hepatobiliary system inflammation, and portal hypertension.[4,5] SAA is generally not the first diagnosis considered in patients presenting with abdominal pain in the emergency department.[1] With the widespread use of modern diagnostic methods, the diagnosis of SAA and SAA rupture has become more common.[6] SAA rupture can lead to hemorrhagic shock and has a high mortality rate.[7]

CASE

A 43-year-old male with no significant medical history presented to the emergency department with sudden-onset left flank pain, which had started 1-2 hours earlier. His general condition was stable, with a blood pressure of 160/100 mmHg, a pulse of 102 beats per minute, and other vital signs within normal limits. On initial physical examination, bowel sounds were normal, and there was tenderness in both the left upper and lower quadrants, as well as the left costovertebral angle, without signs of guarding or rebound tenderness. Laboratory findings revealed leukocytosis (11.470/ µL), normal hemoglobin levels (14.4 g/dl), and a normal platelet count (187.000/µL), along with normal biochemical test results, including blood glucose, kidney function tests, liver function tests, and electrolyte values. A complete urinalysis revealed leukocytes (8 HPF) and erythrocytes (9 HPF). The initial diagnosis was renal colic, and a renal ultrasound was considered for further evaluation.

However, within the next few hours, the patient's condition worsened. Approximately 2 hours after presentation, the pain intensified, and he developed restlessness and cold sweats. The abdominal pain migrated to the epigastric area, followed by tachycardia and hypotension. As signs of shock became more pronounced, an immediate reevaluation was conducted.

At around the 3-hour mark, in light of the new clinical developments and the possibility of an aortic aneurysm, an abdominal aorta computed tomography (CT) angiography was performed. This revealed a ruptured SAA, with a hematoma measuring 120x130 mm in the perisplenic area (Figure 1a) and active contrast extravasation (Figure 1b). The patient was promptly referred to the general surgery department for further management.

Emergency laparotomy was performed, during which the spleen and left adrenal gland were surgically removed. Post-operatively, the patient spent 2 days in the intensive care unit and 3 days on the surgical ward before being discharged in good health.

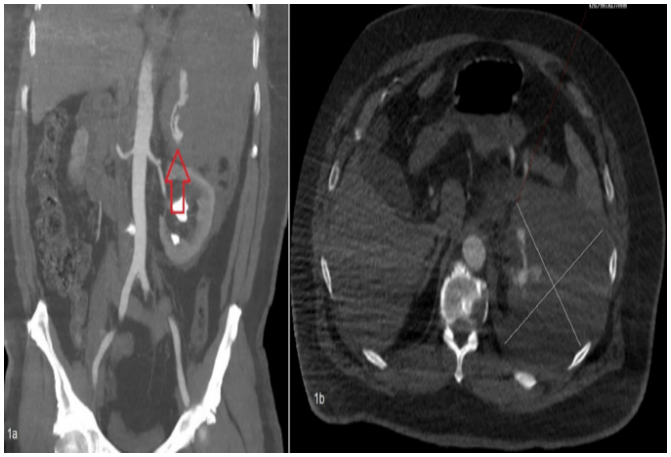

Figure 1a. Red arrow: Abdominal aorta CT angiography showing active contrast extravasation **1b.** The dimensions of the intra-abdominal hematoma due to splenic artery aneurysm rupture

DISCUSSION

This case represents a rare presentation of a ruptured SAA detected in a male patient with no known medical history. In large case series, it has been reported that SAAs are four times more common in women than in men.[8] The most common presenting symptoms in symptomatic patients are left upper quadrant abdominal pain and epigastric pain. In the case of rupture, diffuse abdominal pain, hemorrhagic shock, and an acute abdomen may be observed due to hematoma. However, the majority of patients are asymptomatic, and rupture may occur without prior symptoms, making it the first clinical manifestation in some cases.[4] This case, however, differs from others as it presents with localized, sudden pain in the left flank. Initially presenting with findings such as microscopic hematuria and costovertebral angle tenderness, the patient was assessed as having renal colic but required re-evaluation due to the worsening pain and its spread to the abdomen, followed by the development of shock.

In the diagnostic process, ultrasound is recommended as the first choice due to the absence of radiation exposure, especially in pregnant patients, and its bedside applicability, though it is highly operator-dependent.[9] CT angiography is considered the most suitable diagnostic method for SAA, but the gold standard remains endovascular angiography.[10] In this case, the initial diagnosis of renal colic led to consideration of renal. However, given the patient's rapid deterioration, a more aggressive diagnostic approach was initiated, leading to CT angiography, which confirmed the diagnosis.

For aneurysms smaller than 2 cm that are asymptomatic or non-ruptured, close monitoring is recommended. However, for aneurysms larger than 3 cm, whether symptomatic or asymptomatic, endovascular treatment has shown great success. In cases of rupture, emergency surgery is recommended.[11] In this case, emergency surgery was performed after the rupture resulted in the onset of shock. This case emphasizes the importance of using aggressive radiodiagnostic methods to identify the etiology of shock in patients who present with atypical symptoms and hemodynamic instability.

CONCLUSION

Spontaneous SAA rupture is a serious surgical emergency, often presenting with atypical clinical findings and a high mortality rate due to hemorrhagic shock. Early recognition and increased awareness of this condition are essential for timely diagnosis and intervention in the emergency department.

In our case, a male patient with no known risk factors for SAA presented with an atypical emergency presentation of sudden left-sided abdominal pain. As his symptoms worsened, he was diagnosed with a ruptured SAA and underwent life-saving surgery.

ETHICAL DECLARATIONS

Informed Consent

The patient signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

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Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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