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The Impact of Delayed Presentation on the Clinical Outcome of Acute Abdominal Surgical Pathologies

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Abstract

Introduction: Acute abdominal surgical pathologies represent life-threatening conditions, the absolute majority of which require emergency surgical intervention. In modern practice, delayed hospitalization is a common and notable phenomenon. The aim of this study is to determine the impact of delay on the clinical outcome of acute abdominal surgical pathologies, which plays a decisive role in patient prognosis and well-being.

Methods: The study is based on a retrospective-observational methodology. The subject of the study was the patient database of TSMU First University Clinic who underwent emergency surgery for the mentioned pathologies during 2025. A total of 58 patient medical histories (Form No. 100) were evaluated. Data were statistically processed using electronic spreadsheets, diagnostic protocols, and questionnaires.

Results: According to the study, 53% (n=31) of the patients were male, and 47% (n=27) were female. Elderly individuals predominated in the age category (62%, n=36). Various etiological forms of

secondary peritonitis were revealed, where gastrointestinal (perforation) — 25.86% (n=15) and biliary — 18.96% (n=11) were leading. The overall mortality rate was 15.5% (n=9), the majority of which (66.7%, n=6) occurred in patients who presented to the clinic with a delay of 24+ hours. A statistically significant positive correlation was established between delayed presentation and the level of inflammatory markers (P-value for neutrophils = 0.01; P-value for CRP = 0.033).

Conclusion: Delayed hospitalization directly increases the likelihood of disease complications, the risk of developing peritonitis and sepsis, as well as the need for intensive care treatment. Early hospitalization is critically important to improve the prognosis of acute abdominal surgical pathologies.

Keywords: acute abdominal surgical pathologies, delayed hospitalization, secondary peritonitis, clinical outcome, inflammatory markers, mortality, emergency surgery.

Introduction

The "acute abdomen" remains one of the most dynamic and critical challenges in modern surgical practice.[1] In the emergency department, this phenomenon is a daily yet highly complex reality: the treating physician must differentiate between immediately life-threatening and relatively benign conditions with split-second precision.[4]

This diagnostic labyrinth is further complicated by etiological diversity — ranging from acute gastrointestinal pathologies to silently progressing gynecological or vascular catastrophes, the clinical picture is often atypical. That is why making the right decision within a short timeframe, relying on clinical and laboratory markers, is the primary determinant of patient well-being. The time factor must not be forgotten; along with an appropriate response, rapid and timely mobilization adhering to the "golden hour" standard is highly critical.[2]

International studies show[3] that the time interval between symptom onset and hospitalization directly reflects the severity of the systemic inflammatory response. Along with the progression of acute abdominal pathologies, dynamic changes in acute-phase proteins and leukocyte formula begin in the body. Specifically, an increase in C-reactive protein (CRP) concentration and an increase in the absolute number of neutrophils are considered early and accessible indicators of the severity of the inflammatory process.

Aim of the Study: We tried to evaluate the clinical impact of delayed hospitalization on the postoperative outcomes, complication rates, and systemic inflammatory progression in patients presenting with acute abdominal surgical pathologies.

Objectives:

- To determine the distribution of etiological forms and demographic profiles among patients admitted with acute secondary peritonitis.
- To quantify the correlation between the duration of presentation delay (measured in hours) and the baseline levels of inflammatory biomarkers (Neutrophils and C-Reactive Protein) upon admission.
- To evaluate the relationship between a presentation delay exceeding 24 hours and the overall inpatient mortality rate.
- To analyze the clinical limitations of retrospective data in geriatric patient cohorts and identify factors contributing to diagnostic delays.

Methodology

This retrospective-observational study was carried out at the First University Clinic of Tbilisi State Medical University. The selection of this clinic was determined by its status as one of the capital's leading, highly centralized, and multidisciplinary tertiary-level referral centers, ensuring highly organized patient flow and high standardization of clinical and laboratory data.

Within the framework of the study, electronic medical histories of patients hospitalized during the 2024-2025 period were retrospectively reviewed. The study was conducted in full compliance with ethical norms, and the confidentiality of personal and clinical data of all involved patients was strictly maintained.

2.1 Inclusion Criteria

The target study population was formed based on predefined strict criteria. A total of 58 patients who met the following conditions were included in the selection:

- Age range: 18 to 90 years;
- Diagnostic classification: Patients whose primary clinical diagnosis was verified by the specific K65.0 code (acute peritonitis) of the International Classification of Diseases (ICD-10);
- The history fully presented the variation of CRP and leukocyte formula.

2.2 Data Collection and Studied Parameters

Based on a detailed, individual analysis of medical histories, the following clinical and laboratory variables were retrospectively identified and entered into a structured database for each patient:

- **Time factors:** Hospitalization delay interval (time elapsed from symptom onset to presentation at the clinic, measured in hours) and overall duration of hospitalization (number of bed-days).
- **Primary and concomitant diseases:** Which helped identify both the etiogenesis of the acute abdomen and its complications.
- **Laboratory markers:** C-reactive protein (CRP) values and leukocyte formula data from the complete blood count (specifically, absolute and relative neutrophil counts), which were taken immediately upon the patient's arrival at the emergency department.
- **Outcome:** For the evaluation of the patient's postoperative condition (severe, stable, MORS/death).

2.3 Data Processing and Statistical Analysis

After verifying the validity of the primary clinical data, their systematization and formation into primary tables were carried out using Microsoft Excel software. Relevant graphical charts were constructed for visual analysis and trend identification.

Spearman's rank correlation coefficient was used to assess the correlations between the time of hospitalization delay and inflammatory markers (CRP, neutrophils). The determination of correlation strength and direction, as well as the calculation of the statistical significance (p-value) of the results, was carried out using Microsoft Excel analytical functions. Results were considered statistically significant when $p < 0.05$.

Results

3.1 Demographic Data and Etiological Structure

Analysis of the gender distribution of the 58 patients involved in the study showed that 53% (n=31) were male, while 47% (n=27) were female. In the age structure, the elderly category clearly dominated, accounting for 62% (n=36). Middle-aged patients accounted for 24.1% (n=14) of the group, and young individuals made up 13.9% (n=8).

(See Chart N1)

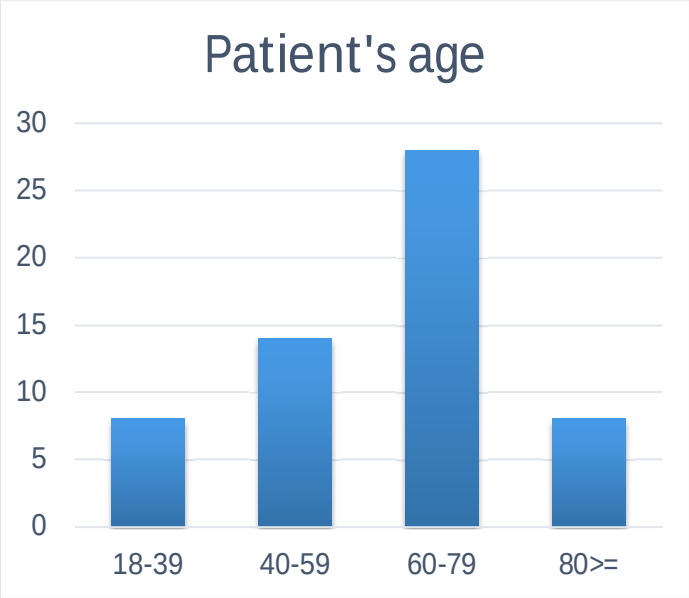

Chart N1

When studying the etiological profile of secondary peritonitis development, a diverse structure of nosologies was revealed:

- Gastrointestinal (organ perforation): 25.86% (n=15)
- Biliary: 18.96% (n=11)
- Neoplastic (tumor complications): 15.55% (n=9)
- Intestinal (occlusive obstruction): 13.79% (n=8)
- Angiogenic-ischemic pathologies: 12.06% (n=7)
- Appendicular processes: 5.18% (n=3)

- Pancreatogenic damage: 3.44% (n=2)
- Traumatic injury: 3.44% (n=2)
- Urogenic complications: 1.72% (n=1)

(See Table N1)

Etiology of Nosology	Number of Patients	Percentage Share	Lethal Outcome	Share of Total Mortality %	Share of Intra-group Mortality %
Gastrointestinal (perforation)	15	25.86%	3	33.33%	20.00%
Biliary	11	18.96%	0	0.00%	0.00%
Neoplastic (tumor)	9	15.55%	4	44.44%	44.44%
Intestinal (occlusive)	8	13.79%	1	11.11%	12.50%
Angiogenic-ischemic	7	12.06%	1	11.11%	14.28%
Appendicular	3	5.18%	0	0.00%	0.00%
Pancreatogenic	2	3.44%	0	0.00%	0.00%
Traumatic	2	3.44%	0	0.00%	0.00%
Urogenic	1	1.72%	0	0.00%	0.00%
Total	**58**	**100%**	**9**	**15.50%**	**-**

Table N1

3.2 Correlation of Clinical Outcome and Laboratory Markers

The overall mortality rate in the study was 15.5% (n=9). From a clinical perspective, it is highly noteworthy that the majority of patients with a fatal outcome — 66.7% (n=6, which is an absolute figure close to the 62% proportion of the total sample) — was recorded when the interval of delay in presenting to the clinic exceeded 24 hours from symptom onset.

The relationship between the time of hospitalization delay and acute phase markers registered in the admission department was evaluated using Spearman's rank correlation analysis. The study revealed a statistically significant, directly proportional correlation between the time elapsed since symptom onset and laboratory parameters:

(See Charts N2-N3)

- Neutrophil level: P-value = 0.01
- C-reactive protein (CRP): P-value = 0.033

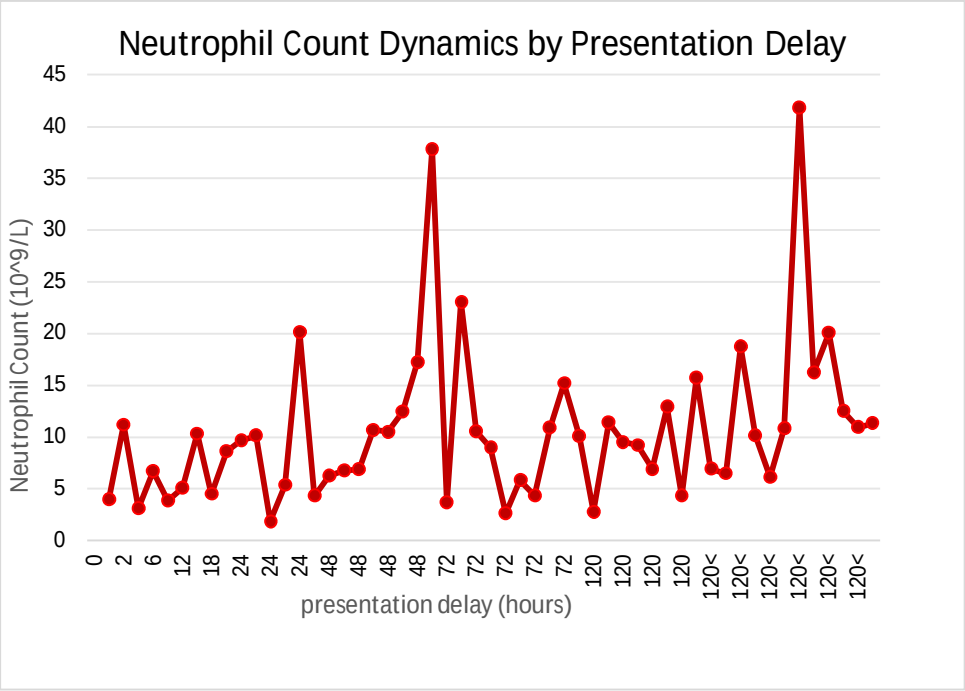

Chart N2

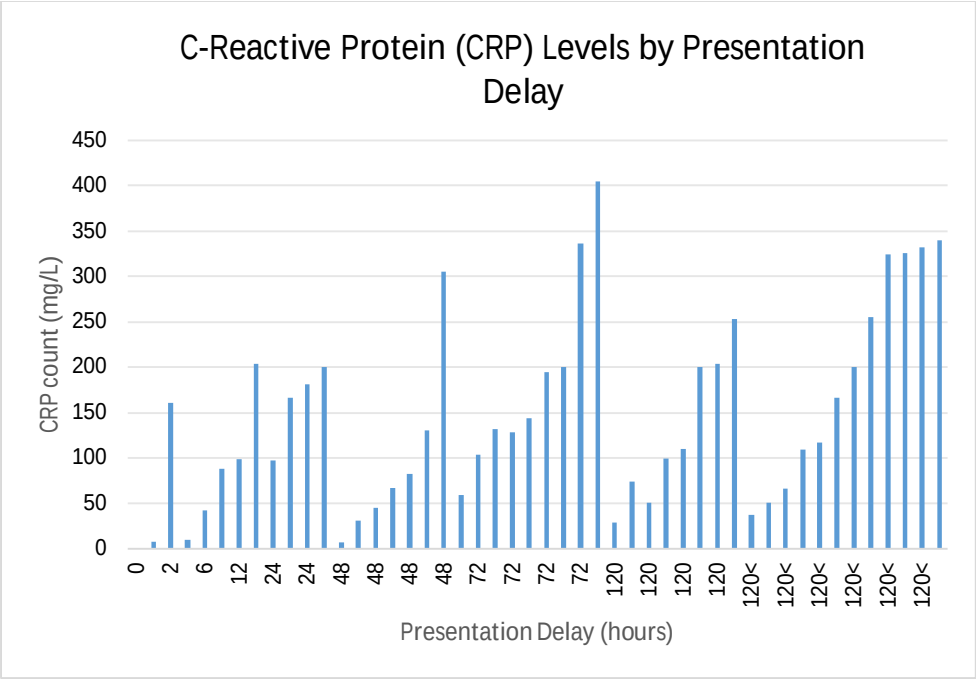

Chart N3

These data empirically confirm that prolonging the time before presentation to the clinic leads to a linear progression of the systemic inflammatory response and endotoxicoses.

Discussion

The results of the present study clearly highlight the critical role of the time factor in the management of acute abdominal surgical pathologies. The overall mortality rate identified by us (15.5%) is closely linked to delayed hospitalization, which is in line with international literature data.[1] A delay of more than 24 hours from symptom onset was observed in 66.7% of patients with a fatal outcome, confirming that loss of time is directly proportionally associated with irreversible pathophysiological processes.

The high proportion of elderly patients in the sample (62%) is noteworthy. In the geriatric population, the diagnosis of acute abdomen presents a particular challenge due to atypical, often weakly expressed clinical symptoms (e.g., the absence of pronounced abdominal wall defense or moderate pain against the background of neuropathies). This factor, along with concomitant comorbid diseases and the widespread practice of self-medication in the population (uncontrolled intake of painkillers), creates the preconditions for delayed presentation to the clinic.

Analysis of laboratory markers showed that CRP and neutrophil levels reflect the dynamics of the systemic inflammatory response syndrome (SIRS) with high accuracy. Statistically significant P-values indicate that these accessible tests can be used as valid tools for rapid triage and risk stratification of patients upon hospital admission.

Limitations

Despite the clinical significance of the obtained results, the present work has several methodological limitations that should be taken into account when interpreting the data:

- **Retrospective design:** The study relies on pre-existing medical histories, which increases the risk of subjective error in anamnestic data (e.g., the exact time of symptom onset reported by the patient) and does not allow us to evaluate the subjective reasons for delay.
- **Small sample size:** 58 patients were included in the study, which represents a relatively small population and limits the possibility of generalizing the obtained statistical patterns on a wider scale.
- **Single-center nature:** Data were obtained from only one tertiary-level clinical base, which may not fully reflect the general trends existing in other regional or primary healthcare sectors of the country.

Conclusion

1. **Negative impact of delayed hospitalization:** An increase in the time interval from symptom onset to presentation at the clinic directly proportionally worsens the clinical outcome of acute abdominal surgical pathologies, which sharply increases the risk of developing severe postoperative complications, secondary peritonitis, sepsis, and the need for prolonged intensive care treatment.
2. **Prognostic value of inflammatory markers:** The statistically significant correlation of neutrophil levels and C-reactive protein (CRP) values with the time of hospitalization delay confirms that these laboratory parameters represent valid, rapid, and accessible clinical indicators of the severity of acute abdominal processes and the progression of systemic intoxication.
3. **Critical role of timely intervention:** Early hospitalization and emergency surgical intervention, with maximum adherence to international "golden hour" standards, are critically important to

improve the treatment outcome of patients with acute abdominal surgical pathologies and to minimize the mortality rate.

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დაგვიანებული მიმართვიანობის გავლენა მუცლის მწვავე ქირურგიული პათოლოგიების კლინიკურ გამოსავალზე

ქამადაძე მათე[1], გულედანი მარიამი,[1] მარგალიტა გოგოლაძე[2], რუხაძე მარიამი[1], პაპავა ელგა[1]

კვლევის ბაზა: თსსუ-ის პირველი საუნივერსიტეტო კლინიკა, ქირურგიული დეპარტამენტი.

დეპარტამენტის ხელმძღვანელი: გიორგი ასათიანი[3]; MD, PhD

სამეცნიერო ხელმძღვანელი: ზოგადი ქირურგიის დეპარტამენტის ასისტენტ პროფესორი მარგალიტა გოგოლაძე[2]; MD, PhD

1 - თბილისის სახელმწიფო სამედიცინო უნივერსიტეტი, მედიცინის ფაკულტეტი

2 - თბილისის სახელმწიფო სამედიცინო უნივერსიტეტის ზოგადი ქირურგიის დეპარტამენტის ასისტენტ-პროფესორი

3 - თბილისის სახელმწიფო სამედიცინო უნივერსიტეტის ზოგადი ქირურგიის დეპარტამენტის ხელმძღვანელი

შესავალი: მუცლის მწვავე ქირურგიული პათოლოგიები წარმოადგენს სიცოცხლისთვის საშიშ მდგომარეობას, რომელთა აბსოლუტურ უმრავლესობას გადაუდებელი ქირურგიული ჩარევა ესაჭიროება. თანამედროვე პრაქტიკაში ჰოსპიტალიზაციის დაგვიანება ხშირი და საყურადღებო მოვლენაა. მოცემული კვლევის მიზანია დადგინდეს დაგვიანების გავლენა მუცლის მწვავე ქირურგიული პათოლოგიების კლინიკურ გამოსავალზე, რაც გადამწყვეტ როლს ასრულებს პაციენტის პროგნოზსა და კეთილდღეობაში.

მეთოდები: კვლევა ეფუძნება რეტროსპექტიულ-ობსერვაციულ მეთოდოლოგიას. კვლევის ობიექტს წარმოადგენდა თსსუ-ის პირველი საუნივერსიტეტო კლინიკის პაციენტთა ბაზა, რომელთაც 2025 წლის განმავლობაში ჩაუტარდათ გადაუდებელი ქირურგიული ოპერაცია აღნიშნული პათოლოგიებით. სულ შესწავლილ იქნა 58 პაციენტის სამედიცინო ისტორია (ფორმა №100). მონაცემები სტატისტიკურად დამუშავდა ელექტრონული ცხრილების, სადიაგნოსტიკო პროტოკოლებისა და კითხვარების გამოყენებით.

შედეგები: კვლევის მიხედვით, პაციენტთა 53% (n=31) იყო მამაკაცი, ხოლო 47% (n=27) — ქალი. ასაკობრივ კატეგორიაში ჭარბობდნენ ხანდაზმულები (62%, n=36). გამოვლინდა მეორადი პერიტონიტების სხვადასხვა ეტიოლოგიური ფორმები, სადაც წამყვანი იყო გასტროინტესტინალური (პერფორაცია) — 25.86% (n=15) და ბილიარული — 18.96% (n=11). ლეტალობის საერთო მაჩვენებელმა შეადგინა 15.5% (n=9), რომელთა უმრავლესი ნაწილი (66.7%, n=6) დაფიქსირდა კლინიკაში 24+ საათის დაგვიანებით მიმართვისას. დადგინდა სტატისტიკურად სარწმუნო დადებითი კორელაცია დაგვიანებულ მიმართვიანობასა და ანთებითი მარკერების დონეს შორის P-value ნეიტროფილების = 0.01; P-value CRP = 0.033).

დასკვნა: დაგვიანებული ჰოსპიტალიზაცია პირდაპირპროპორციულად ზრდის დაავადების გართულების ალბათობას, პერიტონიტისა და სეფსისის განვითარების რისკს, აგრეთვე რეანიმაციული მკურნალობის საჭიროებას. ადრეული ჰოსპიტალიზაცია კრიტიკულად მნიშვნელოვანია მუცლის მწვავე ქირურგიული პათოლოგიების პროგნოზის გასაუმჯობესებლად.

საკვანძო სიტყვები: მუცლის მწვავე ქირურგიული პათოლოგიები, ჰოსპიტალიზაციის დაგვიანება, მეორადი პერიტონიტი, კლინიკური გამოსავალი, ანთებითი მარკერები, ლეტალობა, გადაუდებელი ქირურგია.