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RESEARCH ARTICLE

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How important is Hemogram Control in non-surgical follow-up in Stab Injuries?

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ABSTRACT

Aim: Elective management of stable patients with abdomen stab wounds has become a gold standard management approach throughout the world. However, there is still no unique standard of approach. In this study, we aimed to emphasize the differences in laboratory values between patients who were followed up nonoperatively and those who were operated on in stab injuries.

Materials and methods: 95 patients who applied to Istanbul Bagcilar Training and Research Hospital with stab injuries and who were hospitalized in the General Surgery Department between January 2017 and June 2019 were identified retrospectively. The patients were divided into two groups and the patients who underwent surgical treatment in the first group and those who were followed up with medical treatment and those who underwent diagnostic laparoscopy were included in the second group. According to the laboratory parameters, age, drug addiction, white blood cell count (WBC), hemoglobin (HGB), neutrophil (NEU), lymphocyte (LYM), platelet (PLT), Neutrophil/Lymphocyte Ratio, and Platelet/Lymphocyte ratio groups were examined.

Results: 5 of them were women (5.2%) and 90 of them were men (94.7%). It was observed that there were 38 patients in the first group and 57 patients in the second group. As a result of the statistical comparison between the two groups, age, drug addiction white blood cell count (WBC), hemoglobin (HGB), neutrophil (NEU), lymphocyte (LYM), platelet (plt), neutrophil/lymphocyte ratio, and platelet/lymphocyte ratio were found that there was no significant difference between the two groups statistically (P>0.05). The presence of an abdominal stab wound is not always a marker for increased risk of intraabdominal injury, the surgeon must be awake and find clues that will benefit her/him while deciding on the operation.

Conclusion: The presence of an abdominal stab wound is not always a marker for increased risk of intraabdominal injury the surgeon must be awake and find clues that will benefit her/him while deciding on the operation.

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Introduction

The clinical approach to penetrating abdominal trauma has changed appreciably over the years. The treatment approach (medical or surgical) in stab injuries differs significantly depending on the previous experience of the clinics. The high mortality and morbidity experienced in non-operative treatment and judicial responsibilities pushed physicians to behave more radically, which led to an increase in unnecessary laparotomies. Elective management of stable patients with abdomen stab wounds has become a gold standard management approach throughout the world [1]. However, there is still no unique standard of approach. Evidence-based options for selective management include observation, local wound exploration (with or without diagnostic peritoneal lavage), and abdominal imaging methods [2,3]. We questioned whether we can give surgeons another trump card by taking this impasse from a slightly different angle. In this study, we aimed to emphasize the differences in laboratory values between patients who were

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followed up non-operatively and those who were operated on in stab injuries.

Materials and Methods

In this retrospective study, 95 patients who applied to Istanbul Bagcilar Training and Research Hospital emergency service with stab injuries and who were hospitalized in the General Surgery Department (operative/non-operative) between January 2017 and June 2019 were identified and recorded electronically. Laboratory parameters of the patients at the time of the first admission to the hospital and whether surgical treatment was applied or not were obtained from their files and recorded. Subsequently, the patients were divided into two groups and the patients who underwent laparotomy as surgical treatment (unstable patient with solid organ injury/hollow organ perforation) in the first group and those who were followed up with medical treatment and those who underwent planned diagnostic laparoscopy to eliminate suspicion of diaphragm damage in left-sided injuries (without solid organ injury/hollow organ perforation) were included in the second group. Laboratory parameters between the two groups were compared statistically. Moreover, according to the age, drug addiction, white blood cell count (WBC), hemoglobin (HGB), neutrophil (NEU), lymphocyte (LYM), platelet (PLT), neutrophil/lymphocyte ratio, and platelet/lymphocyte ratio groups were examined. Continuous variables were analyzed using the Mann-Whitney U test. Categorical variables were assessed using Fisher's exact test or the chi-squared test as appropriate. A value of $P<0.05$ was considered statistically significant.

Results

95 patients were included in the study. 5 of them were women (5.2%) and 90 of them were men (94.7%). It was observed that there were 38 patients in the first group and 57 patients in the second group (52 patients followed up non-operatively +5 patients who underwent diagnostic laparotomy). As a result of the statistical comparison between the two groups, age, drug addiction, white blood cell count (WBC), hemoglobin (HGB), neutrophil (NEU), lymphocyte (LYM), platelet (PLT), neutrophil/lymphocyte ratio, and platelet/lymphocyte ratio were found that there was no significant difference between the two groups statistically. ($P>0.05$) (Table)

(LEU: Leucocyte number, NEU: Neutrophil number, LYM: Lymphocyte number, PLT: Platelet number, HGB: Hemoglobin level, Neu/Lym: Neutrophil/Lymphocyte number, Plt/Lym: Platelet/Lymphocyte number).

Table. Comparisons between Group I and Group II

Patients (n=95)	**Group I**	**Group II**	**p**
Age	28,7 ± 9,3	27,9 ± 8,5	>0,05
Drug addiction	8	14	>0,05
LEU (mm3)	12,48 ± 4,94	12,05 ± 3,44	>0,05
NEU (mm3)	7,1 ± 4,8	7,7 ± 3,2	>0,05
LYM (mm3)	4,1 ± 1,9	3,6 ± 2,9	>0,05
PLT (K/mm3)	291,12 ± 61,88	277,95 ± 64,57	>0,05
HGB(g/dl)	14,3 ± 1,8	14,7 ± 1,5	>0,05
Neu /Lym	3,73 ± 2,4	3,09 ± 2,6	>0,05
Plt/Lym	85,71 ± 44,71	98,91 ± 49,42	>0,05

Discussion

Penetration of the abdominal cavity was previously considered an absolute indication for laparotomy. This indication has been replaced by selective management of patients with penetrating abdominal stab wounds in the last two decades [4]. Some studies show that the rate of non-therapeutic laparotomy in stable patients without peritonitis or evisceration comes near 53% [5]. The increasing technological developments of today have accomplished a great contribution to this issue and run upside down the protocols. With the widespread use of developing imaging methods, negative laparotomies have been reduced and patients have been prevented from having unnecessary surgery, nonoperative management of stab wounds to the abdomen has become the option of care. About 50% of stab wounds to the anterior abdomen and about 85% of stab wounds to the posterior abdomen can safely be managed nonoperatively [6]. Moreover, in the existence of peritoneal breaking, a significant number of patients have no major intra-abdominal injury requiring an operation. In a prospective study of 476 patients with stab wounds and proven

peritoneal penetration, 27.6% had no significant intra-abdominal injury [7]. Therefore, all findings that can be clues to us such as imaging method and examination findings save the patient from unnecessary laparotomy and even diagnostic laparoscopy. In this study, in which we originate this hypothesis, we tried to obtain more information about patient injury with simple and easily accessible laboratory methods. Leukocyte number is a highly cost-effective and easily accessible laboratory parameter that is widely used. A characteristic shifting to the left is observed in the hemogram due to neutrophilia and lymphopenia in the situation of inflammation and acute reactions. Infections, trauma, malignancies, burns, immunological and inflammatory events are stimuli that cause acute phase response in the body. The acute phase response aims to neutralize pathogens by isolating them, to reduce tissue damage to a minimum by limiting them, to prevent the generalization of the events, to start the repair, thereby allowing the host hemostatic mechanisms to restore the normal physiological function in a fast manner [8]. Mortality and morbidity in stab wounds are closely related to the damaged organ. Careful evaluation of the patient and choice of treatment are the most considerable subjects. Conscientious and legal responsibility due to fear of delay in surgical treatment leads physicians to act more radical. In this study, we wanted to draw attention to the laboratory parameters that may contribute to the surgeon's decision in nonoperative follow-up and determination of patients without solid organ injury/hollow organ perforation in patients with stab injuries. The benefits of successful nonoperative management should be weighed against the risks of missed hollow viscus injuries and delayed treatment. There are several limitations to this study. First, this is a retrospective, observational study, and less information on the number of wounds in each patient or the type of weapon used. The number of wounds and types of weapons are likely to have a great impact on treatment decisions. We think that further studies on this subject will increase the rate of non-operative follow-up and will make a great contribution to the physicians' decision making easier. Finally, we believe the continued pursuit of research will clarify an appropriate approach to this group of patients.

Conclusion

The presence of an abdominal stab wound is not always a marker for increased risk of intraabdominal injury, the surgeon must be awake and find clues that will benefit her/him while deciding on the operation.

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