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ABSTRACT

Neglected Treatment for Hand Injuries: Pain

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Objective: Hand injuries are a common reason for emergency room visits, and it is critical to managing the pain process effectively. This study aims to look at the demographics, pain assessment, and management of patients who visited the emergency department with hand injuries.

Materials and Methods: Healthy patients over 18 who presented to the emergency room within the first 24 hours of an acute hand injury between December 2020 and February 2021 were included. The Numerical Pain Rating Scale was employed to assess pain severity. The etiology of the trauma, pain scale, analgesic treatment, imaging requests, consultation, and tetanus vaccine situation were all documented.

Results: The patient's pain severity was classified at admission. It was found that 38.8% had mild pain, 39.2% moderate, and 21.9% had severe pain. The average pain scores of the patients were determined as 4.89 ± 2.14 . Analgesic was executed in 13.5% of the patients who applied, and 86.5% did not receive painkillers. Analgesia was applied to 2% of the patients with mild pain, 14.7% with moderate pain, and 31.6% with severe pain. We found that as pain severity increased, analgesia was more, and it was found to be statistically significant ($p=0.0001$).

Conclusion: Analgesia is a neglected step in trauma care. Emergency physicians should prioritize pain relief. All patients with hand trauma should be pain-scored and given appropriate analgesia.

Keywords: Hand, injury, pain, analgesia, treatment

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INTRODUCTION

The hand is an essential part of our bodies, as we use it in many aspects of our daily lives and careers (1). As the most active organ of the upper extremities, it is less protected and more susceptible to injury (2). Hand injuries are a typical complication of traumas. It accounts for roughly 10–20% of emergency room visits and 6.6–28% of all injuries (3–5). The majority of traumas are prevalent among working-age men actively participating in the labor market. Pain from a hand injury is a common reason for emergency applications. Several studies indicate that up to 78% of emergency room patients request pain medication (6–8).

Analgesia is not a commodity but a human right; hence, it must be administered swiftly and responsibly (9). Analgesia is one of the most important components in treating trauma patients in the Emergency Department since they typically experience high levels of pain and stress (10).

Hand injuries are not only extremely prevalent but also extremely diverse. This comprises various degrees of injury, ranging from extremely minor to quite severe, and various injury processes. Hand injuries are frequently quite painful, and maximum pain reduction is one of the primary goals of early injury care (11).

Many studies have demonstrated that hand injury pain is frequently disregarded and inadequately addressed (12). Just sixty percent of patients with pain received analgesics after lengthy delays, and seventy-four percent of patients were released with moderate to severe pain (13).

This study analyzes the demographic features, pain assessment, and pain treatment of patients who visited the emergency department with hand injuries.

MATERIALS and METHODS

Patients who were otherwise healthy and received medical care at an emergency room during the first 24 hours after suffering an acute hand injury between December 2020 and February 2021 were eligible to participate in this prospective trial. Information such as the type of injury, the severity of the pain, whether or not analgesics were administered, whether or not imaging was requested, whether a consultation was necessary, and the patient's tetanus vaccination status were all noted.

The degree of pain was determined using the Numerical Pain Rating Scale (NPRS). Individuals rate their pain on a subjective eleven-point scale, according to the NPRS. The scale ranges from 0 (no pain) to 10 (extreme pain) (worst imaginable pain). In addition, the NRS corresponds well with the perception of the need for analgesia, pain alleviation, and patient satisfaction. On this scale, pain is classed as mild between 1 and 3, moderate between 4 and 6, and severe between 7 and 10 (14). We categorized our patients into mild, moderate, and severe groups.

The study did not include individuals under 18 with various injuries other than hand trauma, who have undergone surgical intervention at another health care facility, and who have additionally had thermal, chemical, or electrical burns to the hand. All subjects gave informed consent for inclusion before participating in the study. The study was conducted following the last Declaration of Helsinki (2013), and the protocol was approved by the Ethics Committee of Project identification code: 2020-12/28 by Sivas Cumhuriyet University Ethics Committee.

Statistical Analysis

Using the SPSS 21 software tool, we examined the data from this study. Chi-square analysis was used to look for associations between the categorical variables, while the Mann-Whitney U test was used to compare the groups. The significance level utilized was 0.05; therefore, if the value was less than 0.05, it was determined that a difference existed; if it was greater than 0.05, no difference was found.

RESULTS

The average age of the patients was 34.5 ± 14.18 / year (min=18, max=74). 70.8% of the patients were male, and 29.2% were female. The male/female ratio was 2.42. When the reasons for admission to the emergency department were examined, 47.3% (n=123) presented with blunt trauma, 46.5% (n=121) laceration with cutlery, and 6.2% (n=16) with crush injuries. While 52.3% (n=136) of these injuries were requested X-Ray and 6.9% (n=18) tomography, 40.8% (n=106) were not requested any imaging studies. As a result of the evaluations and radiology examinations, 50.8% (n=132) of the patients had simple lacerations without tendon and nerve injuries, 23.5% (n=61) soft tissue trauma, 19.2% (n=50) fractures, 3.5% (n=9) fingers amputation, 2.7% (n=7) laceration with a tendon injury, 0.4% (n=1) finger dislocation were detected. According to these findings, hand surgery consultation was requested in 34.2% (n=89) of the patients. When the pain severity of the patients was classified at the time of admission to the emergency service, it was found that 38.8% (n=101) had mild pain, 39.2% (n=102) moderate, and 21.9% (n=57) severe pain. The average pain scores of the patients were determined as 4.89 ± 2.14 (Table 1).

Analgesic was executed in 13.5% (n=35) of the patients who applied and 86.5% (n=225) of those who did not receive painkillers. Analgesia was applied to 2% (n=2) of the patients with mild pain, 14.7% (n=15) of the patients with moderate pain, and 31.6% (n=18) of the patients with severe pain. It was determined that as pain severity increased, analgesia was more, and it was found to be statistically significant ($p=0.0001$). Intravenous non-steroidal anti-inflammatory drugs were used as analgesics in all patients. However, the statistics of analgesic use with age were not found to be significant ($p=0.095$) (Table 2).

Table 1. Distribution of demographic characteristics

Demographic characteristics	n	%
Mean age (SD)	34.5	14.18
Gender		
Male	184	70.8
Female	76	29.2
Injury mechanism		
Blunt trauma	123	47.3
Laceration	121	46.5
Crush injury	16	6.2
Pain severity		
Mild	101	38.8
Moderate	102	39.2
Severe	57	21.9
Injury types		
Simple laceration	131	50.8
Soft tissue trauma	61	23.5
Fractures	50	19.2
Finger amputation	9	3.5
Tendon injury	7	2.7
Finger dislocation	1	0.4

SD: Standard deviation

When pain classification and injury type were compared, despite more pain in crush injuries, there was no statistically significant difference between pain severity and injury mechanism ($p=0.164$). In addition, although analgesia was higher in blunt traumas, it was not significant with trauma types. ($p=0.098$) (Table 3).

When the pain severity was analyzed by radiological imaging, although it was mostly used in moderate pain, it was not found to be statistically significant ($p=0.911$). At the same time, analgesic use was desired for more X-ray imaging ($p=0.112$) (Table 4).

Analgesia was most commonly used in incisions. Fractures and soft tissue injuries followed. While analgesia was not used at all in patients with dislocation, it was observed that only one patient received treatment for tendon injuries (Table 5).

Tetanus vaccine status was questioned in all the patients who applied, and it was found that 52.7% (n=137) of the patients did not have a tetanus vaccine in the last five years. These patients were vaccinated in the emergency department.

DISCUSSION

Pain is common among trauma victims who report to emergency departments worldwide. Pain assessment and management are critical in caring for patients admitted to emergency services (15). For a long time, people have categorized and standardized pain in various ways. Pain is recognized to be heavily influenced by both emotional and physiological factors. In the emergency room, pain and hand injuries are prevalent issues.

Table 2. The relationship between analgesia and pain severity and age

	Analgesic			χ^2	p
	Yes n (%)	No n (%)	Total n (%)		
Pain severity				27.6	0.001
Mild	2 (5.7)	99 (44)	101 (38.8)		
Moderate	15 (42.9)	87 (38.7)	102 (39.2)		
Severe	18 (51.4)	39 (17.3)	57 (21.9)		
Total	35 (100)	225 (100)	260 (100)		
	n	Median	Min–Max	Mean (SD)	
Age					0.095
Yes	35	37	18–60	37.74 (13.29)	
No	225	31	17–74	34.09 (14.28)	
Total	260	32	17–74	34.58 (14.18)	

Min: Minimum; Max: Maximum; SD: Standard deviation

Table 3. The relationship between pain severity and analgesia of the injury mechanism

Laceration	Injury mechanism			χ^2	p
	Crushing n (%)	Blunt trauma n (%)	Total n (%)		
Pain severity				6.5	0.164
Mild	46 (38)	4 (25)	51 (41.5)	101 (38.8)	
Moderate	46 (38)	5 (31.3)	51 (41.5)	102 (39.2)	
Severe	29 (24)	7 (43.8)	21 (17.1)	57 (21.9)	
Total	121 (100)	16 (100)	123 (100)	260 (100)	
Analgesic				4.6	0.098
Yes	11 (9.1)	4 (25)	20 (16.3)	35 (13.5)	
No	110 (90.9)	12 (75)	103 (83.7)	225 (86.5)	
Total	121 (100)	16 (100)	123 (100)	260 (100)	

Table 4. The relationship between pain intensity and analgesia of radiological imaging types

	Radiologic imaging			Total	χ^2	p
	X-ray n (%)	CT n (%)	No n (%)			
Pain severity					0.996	0.911
Mild	51 (37.5)	6 (33.3)	44 (41.5)	101 (38.8)		
Moderate	56 (41.2)	7 (38.9)	39 (36.8)	102 (39.2)		
Severe	29 (21.3)	5 (27.8)	23 (21.7)	57 (21.9)		
Total	136 (100)	18 (100)	106 (100)	260 (100)		
Analgesic					4.3	0.112
Yes	24 (17.6)	2 (11.1)	9 (8.5)	35 (13.5)		
No	112 (82.4)	16 (88.9)	97 (91.5)	225 (86.5)		
Total	136 (100)	18 (100)	106 (100)	260 (100)		

CT: Computed tomograph

Table 5. The relationship between analgesic and injury types

	Diagnosis						Total n (%)
	Fracture n (%)	Dislocation n (%)	STT n (%)	Incision n (%)	Tendon n (%)	Amputation n (%)	
Analgesic							
Yes	11 (22)	0	6 (9.8)	14 (10.6)	1 (14.3)	3 (33.3)	35 (13.5)
No	39 (78)	1 (100)	55 (90.2)	118 (89.4)	6 (85.7)	6 (66.7)	225 (86.5)
Total	50 (100)	1 (100)	61 (100)	132 (100)	7 (100)	9 (100)	260 (100)

STT: Soft tissue trauma

Everyone who works in the emergency room has encountered these two scenarios regularly. The first stage in injury management is pain management (16). Proper analgesic care promotes patient satisfaction and early mobilization, minimizing hospital stay time and expenditures (17). According to studies, the dose and frequency of analgesics given to patients with pain in the emergency room are insufficient (18, 19).

In our study, the average age of patients who presented to the emergency room due to hand injury was 34, with 70.8% male and 29.2% female. When the literature is examined, it is shown that most patients presenting with hand injuries are men. Hand and wrist injuries are most common between the ages of 21 and 55 (20–23). Most male patients outnumber female patients since men comprise most of the working population.

According to research, hand traumas are frequently caused by penetrating injuries (20, 24, 25). Similarly, our study discovered many hand trauma cases due to penetrating damage. Yet, we discovered that the rate of harm caused by blunt trauma was comparable to that of penetrating injury. Hand injuries are typical types of injuries, particularly in the workplace or the industrial environment, and various hand injuries are frequently admitted to emergency services near industrial locations.

Only 13.5% of all patients who presented with hand injuries received analgesia in our study. According to the pain score, analgesic was provided to 2% of the patients who applied with mild pain, 14.7% who applied with moderate pain, and 31.6% who applied with severe pain. When the literature was examined, it was discovered that the pain was not usually treated. In one study, 27% of patients who presented to the emergency department with hand damage and discomfort received no care (16). There could be a variety of reasons for not using analgesics. The pain threshold varies from person to person. The patient does not want medications, painless injuries, and occasionally even strongly classed injuries, such as underestimating existing pain, can be painless. Unfortunately, our study needed to evaluate which of these are effective.

We found no correlation between injury type and pain scale in our investigation. However, while we determined the severity of pain in crush injuries more specifically than in other injuries, this was not statistically significant. In larger trials, alternative outcomes can be found. Analgesics are more likely used in patients with serious trauma or fractures. Advanced radiological examinations or inva-

sive treatments can be conducted on patients in the emergency department, depending on the nature of the injuries. In this scenario, the patient must relocate from one location to another. In this instance, the patient may experience increased discomfort and pain. This will necessitate analgesic management during the patient's initial admission to the emergency room (26).

Study Limitations

The study's most significant limitation is that it is Unicenter, and the number of cases is prospectively minimal. Furthermore, the challenges in questioning the pain scale in the acute periods of the patients, as well as the patients' desire to begin therapy as quickly as feasible.

CONCLUSION

As demonstrated in our study, analgesia might be neglected even in common conditions such as hand injury. We believe that analgesia treatment in trauma patients strongly predicts medical treatment quality. As a result, all patients referred to the emergency room with hand injuries should have their pain scored and appropriate analgesics administered as soon as possible.

Ethics Committee Approval: The Sivas Cumhuriyet University Clinical Research Ethics Committee granted approval for this study (date: 16.12.2020, number: 2020-12/28).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – SÖ, ED; Design – SÖ, ED; Supervision – SÖ, ED; Resource – SÖ, ED; Materials – SÖ, ED; Data Collection and/or Processing – SÖ, ED; Analysis and/or Interpretation – SÖ, ED; Literature Search – SÖ, ED; Writing – SÖ, ED; Critical Reviews – SÖ, ED.

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