ORIGINAL ARTICLE

Hand injuries with mole gun: A hidden danger

Tuba Baykal, M.D.,[1] Dudu Dilek Yavuz, M.D.,[2] Serpil Savaş, M.D.,[1] Fuat Uslusoy, M.D.,[2] Selman Hakkı Altuntaş, M.D.,[2] Mustafa Asım Aydın, M.D.[2]

[1]Department of Physical Medicine and Rehabilitation, Süleyman Demirel University Faculty of Medicine, Isparta-*Türkiye*
[2]Department of Plastic and Reconstructive Surgery, Süleyman Demirel University Faculty of Medicine, Isparta-*Türkiye*

ABSTRACT

BACKGROUND: Mole guns are handmade destructive tools used in the fight against harmful rodents in agricultural areas. Accidental triggering of these tools at the wrong time can result in major hand injuries that impair hand functionality and cause permanent hand disability. This study aims to draw attention to the fact that mole gun injuries cause severe loss of hand functionality and that these tools should be considered within the scope of firearms.

METHODS: Our study is a retrospective, observational cohort study. The demographic characteristics of the patients, the clinical features of the injury, and the surgical methods applied were recorded. The severity of the hand injury was assessed by the Modified Hand Injury Severity Score. The Disabilities of Arm, Shoulder, and Hand Questionnaire was used to evaluate the upper extremity-related disability of the patient. The patients' hand grip strength and palmar and lateral pinch strengths, and functional disability scores were compared with healthy controls.

RESULTS: Twenty-two patients with mole gun hand injuries were included in the study. The mean age of the patients was 63.0±16.9 (22–86), and all but one were male. Dominant hand injury was found in more than half of the patients (63.6%). More than half of the patients had major hand injuries (59.1%). The functional disability scores of the patients were significantly higher than the controls, and the grip strengths and palmar pinch strengths were significantly lower.

CONCLUSION: Even after years from the injury, our patients had hand disabilities, and their hand strengths were lower than that of the controls. Public awareness should be raised on this issue, and mole guns should be prohibited and considered in the scope of firearms.

Keywords: Disability; firearms; hand injury severity score; mole gun.

INTRODUCTION

The mole gun is a primitive hand-made tool produced as a trap to kill rodents such as moles and voles. It propels pellets similar to a shotgun. It is easy and cheap to manufacture and obtain a mole gun. However, since mole guns are not designed as firearms, user safety is often overlooked. Injuries mostly to the hands and fatal accidents may occur during transport, trapping, and firing.[1,2] These injuries can be seen in developed countries such as Germany and France.[3,4] A mole gun can cause a blast injury. Although they are low-energy injuries, they are quite destructive due to their close-range and contaminated nature.[1,5] Like other blast injuries to the hand, mole gun injuries can damage different tissues simultaneously, so-called mutilan trauma, and include various types of injury (laceration, dissemination, avulsion, blast, crush, and burns).[3,6] The surgical management and rehabilitation process of these hand injuries comprising multiple tissue involvement with different types of injuries are challenging and may result in permanent disability.[6,7]

Although mole guns contain cartridges and barrels (Fig. 1), they are not considered within the scope of firearms in our country's gun laws.[1,8] In some countries, where only the age

Cite this article as: Baykal T, Yavuz DD, Savaş S, Uslusoy F, Altuntaş SH, Aydın MA. Hand injuries with mole gun: A hidden danger. Ulus Travma Acil Cerrahi Derg 2023;29:402-408.

Address for correspondence: Tuba Baykal, M.D.
Süleyman Demirel Üniversitesi Tıp Fakültesi, Fiziksel Tıp ve Rehabilitasyon Anabilim Dalı, Isparta, Türkiye
Tel: +90 246 - 211 93 57 E-mail: drtubabaykal@gmail.com

Ulus Travma Acil Cerrahi Derg 2023;29(3):402-408 DOI: 10.14744/tjtes.2023.55484 Submitted: 17.05.2022 Revised: 24.12.2022 Accepted: 01.02.2023

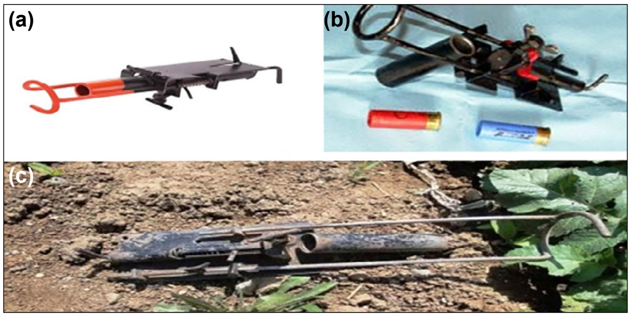

Figure 1. A mole gun has a spring-loaded mechanism **(a)**. It contains cartridge and barrel **(b)**. The mechanism is placed in the soil in front of the molehills and fired by the movement of the mole **(c)**.

limit (18 years) for acquisition is encountered, studies emphasized the necessity of considering these devices within the scope of firearms.[3,4,9] The severity of damage and long-term consequences of mole gun injuries point to this necessity. To the best of our knowledge, this is the first study objectively evaluating the severity of the mole gun injury and its long-term effects, such as hand strength and hand functional disability on the injured hands.

This study aims to raise awareness of the severity, management process, and long-term effects of mole gun injuries on the hands and draw attention to the necessity of evaluating these tools within the scope of firearms.

MATERIALS AND METHODS

In this retrospective cohort study, the medical records of patients with hand injuries caused by mole guns between June 2014 and April 2021 were analyzed, and the patients were called for control. All patients were referred to our outpatient clinic for hand rehabilitation from our institution's Plastic and Reconstructive Surgery outpatient clinic. The study protocol conformed to the ethical guidelines of the 1975 Declaration of Helsinki and was approved by the institutional Ethical Committee on May 31, 2021 (number: 72867572–050.01.04–61971). All participants included in the study signed a consent form.

Patients under 18 and patients with pre-existing orthopedic or neurological diseases affecting the upper extremity were excluded from the study.

Demographics, dominant hand injury, injured site of the hand (radial, ulnar, midpalmar, finger), presence of a foreign body, affected tissues at the injury site (bone, tendons, nerves, and arteries), the severity of the injury, surgical treatment procedures, and the number of surgeries were recorded from the medical records. Hand injury was defined as damage to structures of the hand (distal to the ulna and radius bones) caused by an injury. Bone fractures were determined by radiological examination. Open wounds in different body parts caused by mole guns were also recorded. A patient was defined as a manual worker when the patient worked 35 h or more per week in a job requiring manual skill.[10] Employment in non-managerial jobs in industries such as landscaping, construction, restaurant, hotel, childcare, and manufacturing was designated as manual labor.

The severity of the injury was calculated by Modified Hand Injury Severity Score System (MHISS) from medical records and hand photographs taken before the operation of the patients. Urso et al.[11] created the MHISS by expanding the HISS designed by Campbell and Kay[12] to determine the severity of traumatic hand injuries accompanied by wrist and forearm injuries. Hand, wrist, and forearm injuries are evaluated separately in terms of integument, skeletal, motor, and neurovascular (ISMN) components. If weighting factors exist, the relevant ISMN values are multiplied by the weight coefficient specified for each ray. The total score of each component is doubled in the presence of a contaminated wound, open/fragmented fracture, crush, or avulsion. All amputated structures are scored as damaged. The total MHISS is the sum of the scores for each ISMN component. The severity of the injury is graded on four degrees: Minor, Moderate, Severe, or Major injury (minor, MHISS <20; moderate, MHISS 21–50; severe, MHISS 51–100; major, MHISS >101). It was questioned and recorded whether they received physical therapy and rehabilitation and, if they did, how many days they got. The time to return to work was calculated and recorded according to the information learned from the medical records of the patients and the patient himself.

All patients were called for control by phone. In control, the patients were asked to list the complaints about their injured hands, if they had any. Their upper extremity-related disability was evaluated using the Disabilities of Arm, Shoulder, and Hand (DASH) Questionnaire. DASH Questionnaire contains 30 items related to physical and social functioning. It is a self-reported functional assessment tool, and the patient should answer the questions considering her/his condition in the last week.[13] The patients' grip strengths were tested with a single calibrated Jamar dynamometer (Sammons Preston, Inc., Bollingbrook, IL), followed by lateral and palmar pinch measurements using a manual pinch meter (Sammons Preston, Inc., Bollingbrook, IL). For each hand strength test, the standard test position approved by the American Society of Hand Therapists was used.[14] For each strength test, the scores of three successive trials were used.[15] The mean scores of the DASH Questionnaire and the hand strength values were compared to 30 sex- and age-matched controls.

Statistical Analysis

Descriptive statistics presented the demographic and clinical characteristics of patients. Spearman's correlation test was used to evaluate the association between MHISS and DASH scores, pinch strength, and grip strength. The mean DASH scores and mean hand strengths of patients with controls were compared using the Independent Samples t-test. All the statistical analyses were performed by using IBM SPSS version 21.0.

The p-value equal to or <0.05 was considered significant.

RESULTS

Twenty-two patients were included in the study. The characteristics of the patients are detailed in Table 1.

None of our patients had a bilateral injury. Both dorsal and palmar side injuries were detected in 77.3% of the patients. The third finger injury was the most common (54.5%). Half of the patients had digital nerve injuries (50%). The mean MHISS score was 149.9±112.2 (36–504). More than half of the patients (59.1%) had major hand injuries. In addition to a hand injury, one patient (4.5%) had thigh and femoral artery injury followed by compartment syndrome in the leg. The clinical features of the injuries are summarized in Table 2.

All of our patients underwent surgical repair within the first 24 h after injury, except three patients (13.6%) who did not require surgical treatment. Prophylactic antibiotic therapy was started in all patients. All patients who underwent surgery were consulted at our hand rehabilitation outpatient clinic within 3 days following the surgery, and early treatment protocols were planned according to the characteristics of the injury. All but one patient had skin defects. Fifteen patients (68.1%) had bony defects, and 12 patients (54.5%) had other accompanying tissue defects (soft tissue, tendon, nerve, and artery). More than one operation was performed in 12 (54.5%) patients, with a maximum of 7 in one patient, and flaps were used in 7 (58.3%) of these patients. Seven patients (31.8%) had finger amputations. Thumb amputation was performed in one patient (4.5%) (Fig. 2), and complete or partial amputation in one or more fingers was performed in six patients (27.2%).

Table 1. Characteristics of the patients

	n=22
Age (mean±SD) (min.-max.)	63.0±16.9 (22–86)
Gender, n (%)	
Male	21 (95.5)
Female	1 (4.5)
BMI (mean±SD) (min.-max.)	26.3±3.2 (19.5–33.2)
Education, n (%)	
Illiterate	4 (18.2)
Primary school	11 (50)
Secondary school	2 (9.1)
Highschool	2 (9.1)
Occupation, n (%)	
Farmer	13 (59.1)
Other	9 (40.9)
Work status, n (%)	
Manual worker	15 (68.2)
Non-manual worker	7 (31.8)

SD: Standard deviation; BMI: Body mass index.

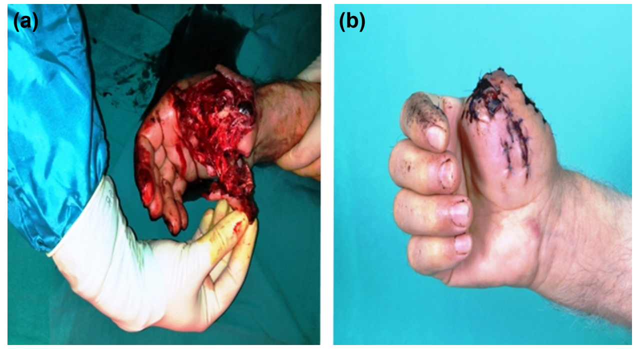

Figure 2. A patient with an amputated thumb while setting up the mole gun **(a)**. Surgical replantation could not be performed on the patient's thumb **(b)**.

Thirteen (59.1%) patients were included in the physiotherapy program for a mean duration of 37.4±29.1 (10–120) days. The mean time to start physiotherapy was 13±5.31 (min. 7, max. 22) days. Eleven (50%) patients were able to return to work within (102.27±101.91 days) (15–360 days). There was a positive correlation between the time to return to work and the injury severity score (r=0.634, p=0.036).

Of 22 patients, 15 patients (68.2%) came to control. The mean duration of time to control was 3.8 ± 2.2 years (0.3–8.1 years). Of these patients, 9 (60%) patients still had complaints about their hands. The most common complaints were stiffness after inactivity (46.2%), pain (38.5%), and numbness of the fingers (15.4%).

There was a statistically significant positive correlation between MHISS and DASH scores (r=0.611, p=0.015) and a statistically significant negative correlation between MHISS and grip strength (r=−0.806, p=0.000). No correlation was found between pinch strengths and MHISS (r=−0.433, p=0.107).

The DASH scores of the patients with dominant hand injuries were statistically significantly higher than the controls (p<0.001). The grip and palmar pinch strength of the patients with dominant and non-dominant hand injuries was statistically significantly lower than the controls (p<0.01). The comparison of the injured hand strength and disability scores of the patients with the control group is shown in Table 3.

DISCUSSION

More than half of our patients with mole gun injury had very severe hand injuries with low hand strength and high functional disability even after 4 years. The time to return to work was long concerning the severity of injury in our patients.

Table 2. Clinical features of patients

	Age	Sex	Injured hand/ dominance	Injury site	Foreign body	Tendon injury	Fracture	Artery/ Nerve (Major)	MHISS
1	22	M	Left/ND	Radial	+	–	–		46
2	31	M	Right/D	Finger (3,4)	+	4th FDP, EDC	3rd Phalanx		150
3	39	F	Right/D	Midpalmar	+	–	–		16
4	46	M	Right/D	Midpalmar	+	–	–		4
5	46	M	Left/ND	Midpalmar Finger (2,3)	+	3rd EDC, FDP, FDS	2,3rd Proximal phalanx		176
6	54	M	Right/D	Radial Wrist	+	FPL, APL and ECRL	Radius	Radial nerve	100
7	61	M	Left/ND	Midpalmar Finger (2,3)	+	2nd FDS, FDP 2nd, 3rd EDC	2nd, 3rd Phalanx		186
8	64	M	Right/D	Midpalmar Ulnar	+	4th FDP, FDS, EDC	5th Metacarp		140
9	66	M	Right/D	Ulnar	+	–	4th, 5th Phalanx		130
10	66	M	Left/ND	Ulnar	–	4th EDC, FDS, FDP	4th Phalanx 5th Metacarp		254
11	69	M	Left/ND	Wrist Radial	+	2nd FDP	2nd, 3rd Metacarp		130
12	70	M	Right/D	Midpalmar Finger (3,4)	+	–	3rd, 4th Metacarp, phalanx		162
13	70	M	Right/D	Finger (3) 2th web	+	3rd FDS, FDP, EDC	3th Phalanx		168
14	71	M	Right/D	Finger (4)	+	–	–		36
15	71	M	Right/D	Radial Midpalmar	–	2nd FDP, EDC	2nd Metacarp		92
16	72	M	Left/ND	Radial, Midpalmar Ulnar, Wrist	+	2nd, 3th, 4th, 5th FDP, FDS, EDC and FPL, EDM, EI	2,3,4,5th Metacarp Radius, carpal bones	Ulnar artery Median nerve	310
17	74	M	Right/D	Midpalmar Wrist	+	–	2nd, 3rd Metacarp Trapezoid bone		80
18	76	M	Right/D	Finger (2,3)	+	2nd, 3rd EDC	2nd Distal phalanx 3rd Proximal phalanx, Metacarp		90
19	76	M	Left/ND	Radial, Midpalmar Ulnar, Wrist	+	2nd, 4th EDC 3rd, 4th FDP	2nd, 3rd, 4th, 5th Metacarp Median nerve	Ulnar artery	310
20	78	M	Right/D	Midpalmar	+	3rd FDP	3rd Metacarp		58
21	79	M	Right/D	Radial Thumb (1)	+	FPL, EPL	1st Metacarp, phalanx		504
22	86	M	Left/ND	Finger (3,4)	–	–	3rd, 4th Phalanx		96

D: Dominant; ND: Non-dominant; FDP: Flexor digitorum profundus; EDC: Extensor digitorum communis; FDS: Flexor digitorum superficialis FPL: Flexor pollicis longus; APL: Abductor pollicis longus; ECRL: Extensor carpi radialis longus; EDM: Extensor digiti minimi; EI: Extensor indicis; EPL: Extensor pollicis longus; MHISS: Modified Hand Injury Severity Score.

In this study, most patients with mole gun injuries were older male farmers (mean age, 63 years). A higher mean age in our patients was because most of our patients engaged in farming after retirement. Dadaci et al.[2] stated that older farmers

Table 3. Comparison of the DASH scores and hand strength measurements of the injured hands and controls (mean±SD)

Measurement	Dominant			Non-dominant		
	Injured hand (n=7)	Control (n=19)	p-value	Injured hand (n=6)	Control (n=10)	p-value
DASH	30.48±22.27	6.14±8.60	<0.001	28.05±23.34	10.08±29.87	0.230
Grip (kg)	17.65±10.00	41.80±10.40	<0.001	14.30±7.66	41.05±6.57	<0.001
Palmar pinch (kg)	3.72±2.02	7.94±2.21	<0.001	3.45±2.48	7.08±1.99	0.006
Lateral pinch (kg)	5.64±3.21	7.30±1.53	0.085	5.59±2.86	6.67±1.33	0.316

DASH: Disabilities of arm, shoulder, and hand; SD: Standard deviation.

were more exposed to mole gun injuries and age-related incaution might be a reason for this. In the previous studies, the mean age of the patients was usually reported as over 50.[1,3,4,6,9] However, even children are exposed to these mole gun injuries.[1,5]

Such dangerous, primitive, and hand-made tools are commonly used because they are easy and cheap to obtain. Unfortunately, they are not considered within the scope of firearms law, although they contain barrels and cartridges.[1,3,4] The fact that mole guns are fired only with cartridge ammunition, the maximum energy value of the cartridges is limited to 700 joules, and their use in agricultural areas prevents them from being evaluated within the scope of firearms.[8,9] Although mole gun injuries are low-energy injuries, they cause close-range and contaminated injuries. Like ballistic trauma, they cause severe deep tissue damage, including tendon ruptures, fractures, vascular and nerve injuries, and avulsions. Mole guns used around the world have similar mechanisms, but some technical differences can be seen.[1,3,4] The predominantly injured sites of hands, injured fingers, and tissues due to mole guns vary in different studies.[3,4,7] This difference may be due to the different working mechanisms of the gun used. The important difference of the mole guns used in our region is the presence of a barrel.

Most of our patients had a dominant hand injury. This result is in line with the case series of mole gun injuries that reported dominant hand injury dominance.[2,4,5,7] This is due to stretching the mechanism of the mole gun with the dominant hand. Unlike the mole gun, hand injuries with other firearms or power tools are predominantly seen in the non-dominant hand.[14,16,17] Most of our patients had mutilation-type injuries, including multiple tissue injuries and a combination of various injury patterns. Only three patients had isolated bone injuries when skin tissue was ruled out, and no patients had isolated tendon injuries. The vast majority of patients in studies examining mole gun injuries had multiple-structural damage like in our study.[3,4,5,7] Although the injured tissues were described in detail in these studies, the severity of the injury was not evaluated objectively. This study showed that more than half of the patients had very severe injuries.

All of our patients who required surgery were operated on within the first 24 h, and more than half of our patients underwent repetitive surgery. The patients in our study who underwent recurrent hand surgery had major hand injuries (mean MHISS score = 158.8). Similar to our findings, severe hand injuries with high initial Hand Injury Severity Score (iHISS) were associated with recurrent surgical operations, long operation times and long treatment intervals, and a prolonged total treatment period.[18]

The importance of early and individualized rehabilitation programs for such mutilating injuries has been emphasized before.[2,6,7] Early and individualized treatment protocols were planned for all our patients within 3 days after surgery. However, not all of our patients attended or continued the rehabilitation program because some could not provide transportation, some could not leave their jobs, and some with severe injuries had no hope of recovery. A program with a mean duration of approximately 1 month was applied to our patients who participated in the advanced rehabilitation program. Nevertheless, our patients had upper extremity disability and low hand muscle strength even 4 years after the injury. Low functional disability scores in non-dominant hand injuries are most likely due to the use of the dominant hand in daily activities. The mean palmar grip strength was significantly reduced in our patients because the third finger was most affected, and the mean lateral grip strength was less affected due to the low rate of a thumb injury. In another study, it was stated that the mean physical therapy duration of the patients was shorter than in our study. The severity of the injury was not measured, but more than half of the patients had complications and sequelae at varying rates.[2] It was determined that increased hand injury severity in our patients caused an increase in functional disability and a decrease in hand grip strength. This study is the first to evaluate upper extremity disability and hand strength in the long-term in patients with mole gun injuries. Half of all patients could not return to work again, and the time to return to work was too long (mean, 102 days) for patients who were able to return to work. In a study of 84 patients, the severity of injury measured using MHISS was suggested as an important predictor of returning to work.[6] In our study, those with a more severe injury had a longer time to return to work.

Our study had some limitations. We included only the patients with mole gun hand injuries; that is why the number of samples was small. Not all of our patients came for control. However, since we are the only center in the region that provides hand surgery and rehabilitation, patients who applied to our center from a wide distance could not provide transportation.

Conclusion

Mole gun injuries cause severe hand injuries, and management of deep tissue injuries caused by mole guns is challenging. Repetitive surgeries and long-term physiotherapy may not have satisfactory results. Even 4 years after the injury, our patients had hand disabilities, and their hand strength was lower than the controls.

Information campaigns on these guns should be carried out in agricultural areas, and public awareness should be raised. Mole guns should be considered in the scope of firearms and must be prohibited to prevent future injuries and hand disabilities. Effective and safer tools that remove moles with the effect of ultrasonic waves without subjecting them to torture should be encouraged.

Ethics Committee Approval: This study was approved by the Süleyman Demirel University Faculty of Medicine Clinical Research Ethics Committee (Date: 27.05.2021, Decision No: 12/210).

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: T.B., D.D.Y., S.S., R.U., S.H.A.; Design: T.B., D.D.Y., S.S.; Supervision: T.B., D.D.Y., S.S., R.U., M.A.A.; Data: T.B., D.D.Y., S.S., R.U., S.H.A., M.A.A.; Analysis: T.B., S.S.; Literature search: T.B., D.D.Y., S.S., R.U., S.H.A., M.A.A.; Writing: T.B., S.S.; Critical revision: T.B., D.D.Y., S.S., R.U., S.H.A., M.A.A.

Conflict of Interest: None declared.

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

REFERENCES

1. Demirci Ş, Doğan KH, Gülmen MK, Erkol Z, Koç S. Injuries and deaths caused by mole guns. Turk Klin J Med Sci 2009;29:445–50.
2. Dadaci M, Ismayilzade M, Zuhour M, Uyanık O, Ince B, Altuntaş Z. Management of mole gun injuries: Review of 19 cases with proposed treatment algorithm. Hand Surg Rehabil 2021;40:319–25. [CrossRef]
3. Frank M, Schmucker U, Zach A, Hinz P, Stengel D, Ekkernkamp A, et al. Harm set, harm get: Hand injuries caused by vole captive bolt devices. Forensic Sci Int 2008;176:258–62. [CrossRef]
4. Pistré V, Rezzouk J. Mole gun injury. Chir Main 2013;32:235–9. [CrossRef]
5. Keskin M, Beydes T, Tosun Z, Savacı N. Close range gun shot injuries of the hand with the "mole gun". J Trauma 2009;67:139–42. [CrossRef]
6. Lahiri A. Managing mutilating hand ınjuries. Clin Plast Surg 2019;46:351–7. [CrossRef]
7. Düzgün S, Alpay D. Severe hand injuries caused by a mole gun. Turk J Plast Surg 2017;25:120–5. [CrossRef]
8. Law No. 6136 on firearms, knives and other tools. Official Newspaper 1953;34(8458):2463-2480 (last approval date 05.10.2021)]. Turkish.
9. Weapons Act of October 11, 2002 (BGBl. I p. 3970, 4592; 2003 I p. 1957) was last amended by Article 228 of the Ordinance of June 19, 2020 (BGBl. I p. 1328)]. Germany. Available from: https://www.gesetze-im-internet.de/waffg_2002/BJNR397010002.html. Accessed Feb 16, 2023.
10. Arcury TA, Cartwright MS, Chen H, Rosenbaum DA, Walker FO, Mora DC, et al. Musculoskeletal and neurological injuries associated with work organization among immigrant Latino women manual workers in North Carolina. Am J Ind Med 2014;57:468–75. [CrossRef]
11. Urso-Baiarda F, Lyons RA, Laing JH, Brophy S, Wareham K, Camp D. A prospective evaluation of the Modified Hand Injury Severity Score in predicting return to work. Int J Surg 2008;6:45–50. [CrossRef]
12. Campbell DA, Kay SP. The hand ınjury severity scoring system. J Hand Surg Br 1996;21:295–8. [CrossRef]
13. Hudak PL, Amadio PC, Bombardier C. Development of an upper extremity outcome measure: The DASH (disabilities of the arm, shoulder and hand). The Upper extremity collaborative group (UECG). Am J Ind Med 1996;29:602–8. [CrossRef]
14. Hutchinson AJ, Kusnezov NA, Dunn JC, Rensing N, Prabhakar G, Pirela-Cruz MA. Epidemiology of gunshot wounds to the hand. Hand Surg Rehabil 2019;38:14–9. [CrossRef]
15. Mathiowetz V, Weber K, Volland G, Kashman N. Reliability and validity of grip and pinch strength evaluations. J Hand Surg Am 1984;9:222–6.
16. Anantavorasakul N, Westenberg RF, Serebrakian AT, Zamri M, Chen NC, Eberlin KR. Gunshot injuries of the hand: incidence, treatment characteristics, and factors associated with healthcare utilization. Hand (N Y) 2023;18:158–66. [CrossRef]
17. Roushdi I, Cumberworth J, Harry LE, Rogers BA. Power tool injuries to the hand and wrist. Br J Hosp Med (Lond) 2015;76:148–53. [CrossRef]
18. Alawi SA, Werner D, Könneker S, Vogt PM, Jokuszies A. Quality of life and reconstructive surgery efforts in severe hand injuries. Innov Surg Sci 2018;3:147–56. [CrossRef]

ORİJİNAL ÇALIŞMA - *ÖZ*

Köstebek tabancasıyla el yaralanmaları: Gizli tehlike

Dr. Tuba Baykal,[1] Dr. Dudu Dilek Yavuz,[2] Dr. Serpil Savaş,[1] Dr. Fuat Uslusoy,[2] Dr. Selman Hakkı Altuntaş,[2] Dr. Mustafa Asım Aydın[2]

[1]Süleyman Demirel Üniversitesi Tıp Fakültesi, Fiziksel Tıp ve Rehabilitasyon Anabilim Dalı, Isparta
[2]Süleyman Demirel Üniversitesi Tıp Fakültesi, Plastik ve Rekonstrüktif Cerrahi Anabilim Dalı, Isparta

AMAÇ: Köstebek tabancaları, tarım alanlarında zararlı kemirgenlerle mücadelede kullanılan, el yapımı ve harabiyete yol açabilen aletlerdir. Bu aletlerin kazara yanlış zamanda tetiklenmesi, majör el yaralanmalarına yol açarak el işlevselliğinde kalıcı bozukluğa neden olabilir. Bu çalışma, köstebek tabancası yaralanmalarının ciddi el fonksiyon kayıplarına yol açtığına ve bu aletlerin ateşli silahlar kapsamında değerlendirilmesi gerektiğine dikkat çekmeyi amaçlamaktadır.

GEREÇ VE YÖNTEM: Çalışmamız geriye dönük, gözlemsel bir kohort çalışmasıdır. Çalışmaya dahil edilen hastaların demografik özellikleri, yaralanmanın klinik özellikleri ve uygulanan cerrahi yöntemler kaydedildi. El yaralanmasının şiddeti, Modifiye El Yaralanması Ciddiyet Skoru (MEYCS) ile değerlendirildi. Hastanın üst ekstremiteye bağlı fonksiyonel yetersizliğinin belirlenmesinde Kol, Omuz ve El Dizabilite (DASH) Anketi kullanıldı. Hastaların el kaba kavrama kuvveti, palmar ve lateral çimdik kuvvetleri ve işlevsel özürlülük skorları sağlıklı kontrollerle karşılaştırıldı.

BULGULAR: Köstebek tabancasıyla el yaralanması olan 22 hasta çalışmaya dahil edildi. Hastaların yaş ortalaması 63.0±16.9 (22–86) idi ve bir tanesi hariç tümü erkekti. Hastaların yarısından fazlasında dominant el yaralanması (%63.6) ve majör el yaralanması (%59.1) saptandı. Hastaların işlevsel özürlülük skorları sağlıklı kontrollere göre istatistiksel olarak anlamlı derecede yüksek iken, kaba kavrama kuvvetleri ve palmar çimdik kuvvetleri istatistiksel anlamlılıkla düşüktü.

TARTIŞMA: Yaralanmanın üzerinden yıllar geçmesine rağmen hastalarımızın ellerinde işlevsel bozukluk vardı ve el güçleri kontrollere göre daha düşüktü. Kamuoyu köstebek tabancaları ve yıkıcı etkileri hakkında bilinçlendirilmeli, köstebek tabancaları ateşli silahlar kapsamında değerlendirilmeli ve yasaklanmalıdır.

Anahtar sözcükler: Ateşli silah; el yaralanma ciddiyet skoru; köstebek tabancası; özürlülük.

Ulus Travma Acil Cerrahi Derg 2023;29(3):402-408 doi: 10.14744/tjtes.2023.55484