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E-mail	cjmedicalresearch@gmail.com
Tel	+90(232) 386 08 88
Fax	+90(232) 386 08 88

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CONTENTS

Research Articles

The Impact of Breastfeeding on the Prognosis in Burns with 20% and Greater in Children Under 2 Years Old
The Role of Breastfeeding in Burns Under 2 Years of Age
Asya Eylem BOZTAS DEMIR, Ayse Demet PAYZA .... **1 - 8**

Retrospective Evaluation of Surgical Indications in Patients Presenting with Asymptomatic Primary Hyperparathyroidism: Single-Center Experience
Surgery Indications in Asymptomatic PTH Elevation
Derya Sema YAMAN KALENDER, Mehmet Sercan ERTURK .... **9 - 16**

Quality of Cardiopulmonary Resuscitation Depictions in Movies
Quality of CPR Depictions in Movies
Ibrahim SARBAY, Goksu BOZDERELI BERIKOL, Ibrahim Ulas OZTURAN, Ismail SARBAY .... **17 - 26**

Case Report

Cognitive Behavioral Therapy for Test Anxiety and Generalized Anxiety Disorder: Case Report
Test Anxiety and Generalized Anxiety Disorder
Ahmet OZBAY, Oguzhan MOLLA, Melisa Sevi KOC .... **27 - 31**

An Unconventional Treatment: Kyphoplasty as an Indirect Decompression Technique for Posterior Wall Retropulsion of Fractured Vertebral Body
Kyphoplasty as an Indirect Decompression Technique
Selin BOZDAG, Ismail Ertan SEVIN .... **32 - 38**

İZMİR KÂTİP ÇELEBİ ÜNİVERSİTESİ
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The Impact of Breastfeeding on the Prognosis in Burns with 20% and Greater in Children Under 2 Years Old

The Role of Breastfeeding in Burns Under 2 Years of Age

Asya Eylem BOZTAS DEMIR *[1], Ayse Demet PAYZA [1]

[1] Health Sciences University Dr. Behcet Uz Child Diseases and Surgery Training and Research Hospital, Pediatric Surgery Clinic, Izmir, Türkiye.

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ABSTRACT

Objective: Burn injuries are a significant cause of worldwide mortality and morbidity. Most of the cases have severe burns (>15% Total Body Surface Area (TBSA)), and 48% of cases require surgery (debridement and/or grafting). Burns induce a hypermetabolic state in the patient, leading to rapid malnutrition development. Studies have demonstrated the regenerative potential of breast milk on the proliferative signaling pathways of skin fibroblasts.
Materials and Methods: A hundred and twenty-five patients under age two with acutely burned lesions of 20% TBSA or greater who were admitted to the pediatric burn clinic were enrolled between 2013-2023. Data of patients were collected retrospectively. Patients were divided into two groups based on breastfeeding: those who breastfed during the treatment (65/125) and those who did not (60/125).
Results: There wasn't any statistically significant difference between groups in terms of operation need, infectious status, blood product and albumin transfusion, and length of hospital stay. The overall mortality rate was 4.8% (6/125). There was no statistically significant difference in mortality rates in both groups.
Conclusion: Although statistical evidence may not directly show that oral breast milk intake has a significant impact on the wound healing process and mortality in major burn patients, it has been observed to assist in maintaining the nutritional status and preserving total body mass in these patients.

2 Yaş Altında %20 ve Üzeri Yanık Olgularında Anne Sütü ile Beslenmenin Prognoza Etkisi

Kovid-19 sırasında Kas-iskelet Sağlığı

2 Yaş Altı Ciddi Yanıklarda Anne Sütünün Prognozdaki Yeri

Makale Bilgisi

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Anne sütü,
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Çocuk cerrahisi

ÖZET

Amaç: Yanık yaralanmaları dünya çapında önemli bir mortalite ve morbidite nedenidir. Vakaların büyük çoğunluğunu yüzey alanı geniş ve derin yanıklar oluşturmaktadır (>%15 Toplam Vücut Yüzey Alanı (TVYA)) ve vakaların %48'i ameliyat gerektirir (debridman ve/veya greftleme). Yanık travması hastalarda hipermetabolik bir durum oluşturarak hızla malnütrisyon gelişimine neden olur. Yapılan çalışmalar, anne sütünün cilt fibroblastlarının proliferatif sinyal yolları üzerindeki rejeneratif potansiyelini göstermiştir.
Gereç ve Yöntemler: 2013-2023 yılları arasında pediatrik yanık kliniğine başvuran, TVYA'nı %20 ve üzerinde akut yanık travması olan, iki yaş altı 125 hasta çalışmaya alındı. Hastaların verileri retrospektif olarak incelendi. Hastalar anne sütü ile beslenme durumuna göre tedavi sırasında anne sütüyle beslenenler (65/125) ve beslenmeyenler (60/125) olmak üzere iki gruba ayrıldı.
Bulgular: Gruplar arasında operasyon ihtiyacı, enfeksiyon durumu, kan ürünü ve albumin transfüzyonu ihtiyacı ve hastanede kalış süresi açısından istatistiksel olarak anlamlı fark görülmedi. Mortalite oranı %4,8 (6/125) idi. Her iki grupta da mortalite oranlarında istatistiksel olarak anlamlı bir fark görülmedi.
Sonuç: TVYA'sı %20 ve üzerinde akut yanık travması olan iki yaş altı hastalarda anne sütüyle beslenmenin yara iyileşme süreci ve mortalite üzerinde istatistiksel olarak anlamlı bir etkiye sahip olduğunu doğrudan göstermese de, bu hastalarda nutrisyonun desteklenmesine ve toplam vücut kütlesinin korunmasına yardımcı olduğu gözlemlenmiştir.

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***Corresponding Author:** Ayse Eylem Boztas Demir,
Health Sciences University Dr. Behcet Uz Child Diseases and Surgery Training and Research Hospital, Pediatric Surgery Clinic, Izmir, Türkiye.
asyaeylem@gmail.com

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Introduction

Burn injuries are a significant cause of worldwide mortality and morbidity. 62% of pediatric burn cases are in the infant period, scald burns are the most common, accounting for 80%, followed by flame burns at 14% (1,2). Research has shown that pediatric burns are more common in low and middle-income societies. Most of the cases have severe burns (>15% Total Body Surface Area (TBSA)), and 48% of cases require surgery (debridement and/or grafting) (3). Managing pediatric burns is challenging even in the most advanced centers. Burn wounds cause both physiological and psychological pain. Burns induce a hypermetabolic state in the patient, leading to rapid malnutrition development. It is crucial for burn patients to receive adequate nutrition with calorie and content calculations as early as possible (4). Studies have demonstrated the regenerative potential of breast milk on the proliferative signaling pathways of skin fibroblasts. Directly exposure to breast milk has shown an upregulation of Bcl-2 in dermal fibroblast cell lines. L-arginine, a semi-essential amino acid in intra and intercellular pathways, plays a fundamental role in upregulating Erk1/2, pErk1/2, JNK, and pJNK kinases, and inducing and sustaining the proliferative period in skin repair through the anti-apoptotic pathway Bcl-2/Bax ratio increase (5). Based on this information, we aimed to investigate the impact of oral intake of breast milk on the clinical course of patients under age two with severe burns (>20% TBSA) in this study.

Materials and Methods

The study was approved by the ethical committee of the hospital. Informed consent was obtained from each patient's parent. A hundred and twenty-five patients under age two with acutely burned lesions of 20% TBSA or greater who were admitted to pediatric burn clinic were enrolled between 2013-2023. Data of patients were collected retrospectively.

All patients were resuscitated according to either Parkland or Galveston Formula with lactated Ringer's solution and burn lesions covered with optimal wound dressings. Admission criteria were based on American Burn Association guidelines. All patients consulted with a nutritionist and personalized calorie intake was calculated specifically for each patient. Patients were fed accompanied by their mother and ICU nurse, provided they did not fall below the calorie intake calculated specifically for them. Both enteral and intravenous nutrition were provided starting from the first day of hospitalization, except for preoperative 6-hour fasting periods. Although patients were especially encouraged for total enteral nutrition, enteral nutrition was provided by giving breast milk and necessary formula supplements through a nasogastric tube in cases that could not tolerate oral nutrition. Demographics, burn characteristics, breast milk intake, operations, blood and albumin transfusion requirements, hospital duration, and mortality data were obtained and analyzed.

Statistical analysis

The data were analyzed using the IBM SPSS Statistics Standard Concurrent User V 26 (IBM Corp., Armonk, New York, USA) statistical package program. Descriptive statistics were provided as the number of units (n), percentage (%), and mean ± standard deviation values. The normal data distribution for numerical variables was assessed using the Shapiro-Wilk normality test. In the comparison of the two groups, if the data showed a normal distribution, the independent samples t-test was used; if the data did not have a normal distribution, the Mann-Whitney U Test was employed. Relationships between categorical variables were assessed using Pearson chi-square and Fisher's exact test. A p-value <0.05 was considered statistically significant.

Results

The study included a total of 125 patients. 43.2% of the patients were female, and 56.8% of them were male. Median burn size was 26.3% TBSA and scald burn was the most common cause (96.8%). Detailed demographic and descriptive data are shown in Table 1.

Patients were divided into two groups based on breastfeeding: those who were still breastfeeding during the treatment period (65/125) and those who did not (60/125). Demographic data were similar between groups. TBSA (%) was higher in the breastfed group.

There wasn't any statistically significant difference between groups in terms of operation need, infectious status, blood product and albumin transfusion, and length of hospital stay (Table 2).

The overall mortality rate was 4.8% (6/125). There was no statistically significant difference in mortality rates in both groups (Table 3).

Discussion

Many studies focus on the role of breast milk on children both health and development (6). The main concerns about wound healing are reducing inflammation and improving regeneration. According to the study that shows skin wrinkles were treated with implanted autologous fibroblasts, cutaneous treatment with milk can induce wound healing (7).

Since there has been no other study investigating the effects of breastfeeding in pediatric burn patients, we think that this study will contribute to the literature. Although it is known that breast milk is beneficial in many ways, in our study, no statistical difference was observed between the groups in terms of wound epithelialization time, infectious status, and hospital stay due to breast milk feeding in burn patients.

In a study that reviews research conducted between 1995 and 2021, it has been observed that studies related to the therapeutic use of breast milk are generally concentrated in various areas. These studies

have often investigated the use of breast milk in the treatment and prevention of diseases in infants, improvement of the mother's own health issues, treatment of other individuals (such as skin infections), experimental animal studies, and in vivo/in vitro studies (8).

Adequate nutritional support for burn patients is mandatory. The burn itself triggers a hypermetabolic process in the patient, and lesions lead to fluid loss (4). Weight loss in these patients causes impaired wound epithelization, immune deficiency, infections, and mortality (9). Early enteral feeding is important for the maintenance of body mass (4).

Studies on milk show that breast milk-derived exosomes improve endothelial cell function and promote wound healing (10). Exosomes promote wound healing via microRNA (11).

Breastfeeding increases the Expression of TLR4, TNF-α, CCL2, and CCL3 may improve wound healing (12).

Various bioactive molecules in breast milk protect infants against infection, reduce inflammation, and contribute to immune maturation, and organ development. Lactoperoxidase, lactoferrin, immunoglobulin A, and lysozyme have bactericidal effects. Fibronectin, Interleukin-6, EGF, and TNF-α enhance the phagocytosis of microorganisms and cell migration in damaged tissues, and TGF-β, IGF-1, lipids, and vitamins in human milk have a role in wound healing (13).

Lacto-N-neotetraose (LNnT) is an oligosaccharide found in human milk. It has been reported that it induces type 2 immune response (Th2 immunity) which promotes re-epithelialization, angiogenesis, and wound contraction by recruiting cells producing associated cytokines (14).

When the topical use of breast milk was investigated in cases with corneal epithelial damage; in studies conducted on mice, it was demonstrated that it facilitated wound healing and epithelialization without causing side effects (13).

In addition to the anti-inflammatory contents of breast milk, it has been observed that in breastfed infants, the regenerative healing pattern that is evident in the intrauterine period continues, unlike wounds that heal by developing scar tissue in adulthood (15).

The positive effects of breast milk on the treatment of conjunctivitis, cracked nipple tips, skin, and soft tissue infections have been demonstrated in many studies. Studies have shown that topical application of breast milk, containing growth factors, cytokines, stem cells, probiotic bacteria, and the HAMLET complex (human alpha-lactalbumin made lethal to tumor cells), serves as a treatment modality for atopic eczema, diaper dermatitis, and separation of the umbilical cord (16).

The protective effect of breast milk against skin infections has been demonstrated due to its containing IgA. In the prevention of umbilical cord infections, which are one of the most common causes of neonatal sepsis, the topical application of breast milk has been proposed as an alternative to povidone-iodine due to its easy accessibility and low cost (17).

Conclusion

Although statistical evidence may not directly show the oral intake of breast milk has a significant impact on the wound healing process and mortality in major burn patients, it has been observed to assist in maintaining the nutritional status and preserving total body mass in these patients.

Future studies should investigate the wound healing process by topically applying breast milk directly to the wound and obtaining, pasteurization, reducing the risk of disease contamination and proper preservation and dosing of breast milk.

Limitations

This study has a few limitations. First of all, due to the small number of patients included in the study, it is necessary to conduct studies with a large number of patients in order to generalize the study results to the pediatric burn population. The second limitation of the study is the subjective effect on the results because not every patient received equal amounts of breast milk.

Ethics Approval: The study was approved by the Clinical Research Ethics committee of the Health Sciences University Dr. Behcet Uz Child Diseases and Surgery Training and Research Hospital (Approval Date: 25/05/2023, Decision No: 855). Informed consent was obtained from each patient's parent.

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Author contributions
Concept: A.D.P., A.E.B.D
Design: A.D.P., A.E.B.D
Supervision: A.E.B.D, A.D.P
Resources: A.E.B.D, A.D.P
Data Collection and Procesing: A.E.B.D, A.D.P
Analysis and Interpretation: A.E.B.D, A.D.P
Literature Search: A.E.B.D, A.D.P
Writing Manuscript: A.E.B.D
Critical Review: A.E.B.D, A.D.P

References

1. Jordan KC., Di Gennaro JL., von Saint André-von Arnim A., Stewart BT. Global trends in pediatric burn injuries and care capacity from the World Health Organization Global Burn Registry. Front Pediatr 2022; 10:954995. Doi: 10.3389/fped.2022.954995.

2. Forjuoh SN. Burns in low- and middle-income countries: a review of available literature on descriptive epidemiology, risk factors, treatment, and prevention. Burns 2006; 32(5):529–37. Doi: 10.1016/j.burns.2006.04.002.

3. Atiyeh BS., Costagliola M., Hayek SN. Burn prevention mechanisms and outcomes: Pitfalls, failures and successes. Burns 2009; 35(2):181–93. Doi: 10.1016/j.burns.2008.06.002.

4. Clark A., Imran J., Madni T., Wolf SE. Nutrition and metabolism in burn patients. Burns Trauma 2017; 5:11. Doi: 10.1186/s41038-017-0076-x.

5. Kocic H., Arsic I., Stankovic M., Tiodorovic D., Ciric V., Kocic G. Proliferative, anti-apoptotic and immune-enhancing effects of L-arginine in culture of skin fibroblasts. J Biol Regul Homeost Agents 2017; 31(3):667–72. Doi: 10.1155/2020/5618127

6. Ballard O., Morrow AL. Human milk composition: nutrients and bioactive factors. Pediatr Clin North Am 2013; 49–74. Doi: 10.1016/j.pcl.2012.10.002.

7. Kocic H., Langerholc T., Kostic M., et al. The regenerative potential of donkey and human milk on the redox-sensitive and proliferative signaling pathways of skin fibroblasts. Oxid Med Cell Longev 2020; 2020: 5618127. Doi: 10.1155/2020/5618127.

8. Demirtaş MS., Yalçın SS. The use of human milk for therapeutic purposes other than nutrition. Turk Arch Pediatr 2022; 57(3):255–66. Doi: 10.5152/TurkArchPediatr.2022.22075.

9. Chang DW., DeSanti L., Demling RH. Anticatabolic and anabolic strategies in critical illness: a review of current treatment modalities. Shock 1998; 10(3):155–60. Doi: 10.1097/00024382-199809000-00001.

10. Yan C., Chen J., Wang C., et al. Milk exosomes-mediated miR-31-5p delivery accelerates diabetic wound healing through promoting angiogenesis. Drug Deliv 2022; 29(1):214–28. Doi: 10.1080/10717544.2021.2023699.

11. Kuang L., Zhang C., Li B., Deng H., Chen R., Li G. Human keratinocyte-derived exosomal MALAT1 promotes diabetic wound healing by upregulating MFGE8 via microRNA-1914-3p. Int J Nanomedicine 2023; 18:949–70. Doi: 10.2147/ijn.s399785.

12. Behfar S., Nazari A., Yousefi-Ahmadipour A., Pourmasoumi S., Sayadi A., Kazemi Arababadi M. Breastfeeding increases the expression of TLR4, TNF-α, CCL2, and CCL3 in the prepuce tissue of neonates. Arch Med Res 2022; 53(7):688–93. Doi: 10.1016/j.arcmed.2022.10.001.

13. Asena L., Suveren EH., Karabay G., Dursun Altinors D. Human breast milk drops promote corneal epithelial wound healing. Curr Eye Res 2017; 42(4):506–12. Doi: 10.1080/02713683.2016.1223318.

14. Farhdihosseinabadi B., Salimi M., Kazemi B., et al. Inducing type 2 immune response, induction of angiogenesis, and anti-bacterial and anti-inflammatory properties make Lacto-n-Neotetraose (LNnT) a therapeutic choice to accelerate the wound healing process. Med Hypotheses 2020; 134:109389. Doi: 10.1016/j.mehy.2019.109389.

15. Stephen Buescher E. Anti-inflammatory characteristics of human milk how, where, why. Exp Med Biol 2001; 501:207-2. Doi: 10.1007/978-1-4615-1371-1_27

16. Witkowska-Zimny M., Kamińska-El-Hassan E., Wróbel E. Milk therapy: unexpected uses for human breast milk. Nutrients 2019; 11(5):944. Doi: 10.3390/nu11050944.

17. Vural G., Kisa S. Umbilical cord care: a pilot study comparing topical human milk, povidone-iodine, and dry care. J Obstet Gynecol Neonatal Nurs 2006; 35(1):123–8. Doi: 10.1111/j.1552-6909.2006.00012.x.

Table 1. Demographic and descriptive datas

	Statistics
Age*(Year)*	1.48±1.92
Gender	
F	54 (43.2)
M	71 (56.8)
Breastfeeding	
Breastfed	65 (52)
Not breastfed	60 (48)
Cause of burn	
Scald	121 (96.8)
Flame	4 (3.2)
TBSA (%)	26.36±9.49
Need for operation (debridement-grafting)	
No	78 (62.4)
Yes	47 (37.6)
Infection	
None	75 (60)
Wound infection	28 (22.4)
Blood culture positive	15 (12)
Both	7 (5.6)
Blood product transfusion	
Not recieved	35 (28)
Recieved	90 (72)
Albumin	
Not recieved	68 (54.4)
Recieved	57 (45.6)
LOHS (length of hospital stay) (days)	25.82±16.67
Mortality	
Survivor	119 (95.2)
Exitus	6 (4.8)

n: Number of patients, %: Column percentage, Numerical variables are given as mean ± standard deviation

Table 2. Statistical analysis of parameters between groups

	Breastfed	Not breastfed	Statistics	p-value
Age *(Year)*	1.66±2.62	1.29±0.47	-0.482	0.630†
Gender				
F	27(%50)	27(%50)	0.152	0.696&
M	38(%53.5)	33(%46.5)		
Cause of burn				
Scald	61(%50.4)	60(%49.6)	3.814	0.051η
Flame	4(%100)	0(%0)		
TBSA (%)	28.45±11.57	24.1±5.85	-2.415	**0.016†**
Need for operation (debridement-grafting)				
No	50(%51.3)	38(%48.7)	0.043	0.836&
Yes	25(%53.2)	22(%46.8)		
Infection				
None	36(%48)	39(%52)	1.952	0.582&
Wound infection	15(%53.6)	13(%46.4)		
Blood culture positive	9(%60)	6(%40)		
Both	5(%71.4)	2(%28.6)		
Blood producttransfusion				
Not recieved	19(%54.3)	16(%45.7)	0.102	0.750&
Recieved	46(%51.1)	44(%48.9)		
Albumin				
Not recieved	31(%45.6)	37(%54.4)	2.456	0.117&
Recieved	34(%59.6)	23(%40.4)		
LOHS(days)	25.57±14.87	26.1±18.56	-0.064	0.949†

Numerical variables are given as mean ± standard deviation. ‡: Independent samples t-test, †Mann-Whitney U test, &: Chi-square analysis, η: Fisher's exact test

Table 3. Mortality rates

	Breastfed	Not breastfed	Statistics	p-value
Mortality				
Survivor	60(%50.4)	59(%49.6)	2.479	0.115η
Exitus	5(%83.3)	1(%16.7)		

&: Chi square test, η: Fisher exact test

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Retrospective Evaluation of Surgical Indications in Patients Presenting with Asymptomatic Primary Hyperparathyroidism: Single-Center Experience Surgery Indications in Asymptomatic PTH Elevation

Derya Sema YAMAN KALENDER *[1], Mehmet Sercan ERTURK [1]

[1] Izmir Katip Celebi University School of Medicine, Ataturk Training and Research Hospital, Department of Endocrinology and Metabolism, Izmir, Türkiye.

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ABSTRACT

Objective: Primary hyperparathyroidism (PHPT) has evolved from a historically symptomatic disease to a predominantly asymptomatic condition, owing to advances in biochemical screening. This study delves into the retrospective evaluation of surgical indications and outcomes in asymptomatic PHPT patients, exploring the shift in disease presentation and the increasing incidence attributed to varied factors.
Materials and Methods: A review of asymptomatic PHPT cases diagnosed between January 2017-2022 was conducted at the Department of Endocrinology and Metabolism in Izmir Katip Celebi University, Atatürk Training and Research Hospital; surgical indications were assessed based on criteria outlined in the 4th International Workshop Asymptomatic PHPT guidelines.
Results: Among 48 patients (98% female, mean age 54.9 ± 5.9), 56.2% exhibited at least one surgical indication, with osteoporosis and renal complications being the most prevalent.
Conclusion: The study addresses the cautious approach to recommending parathyroidectomy in mild PHPT cases, emphasizing the criteria established by the 4th International Workshop. Contrary to the absence of long-term randomized research, recent meta-analyses and observational studies reveal limited changes in fracture rates, bone mineral density, nephrolithiasis, cardiovascular events, and quality of life. The debate over surgery benefits in non-surgical long-term follow-up remains to be conclusive. The study contributes valuable insights into the evolving landscape of surgical decision-making, emphasizing the need for further research on the long-term benefits and risks associated with surgery in this patient population. This retrospective analysis seeks to enhance our understanding of surgical interventions for asymptomatic PHPT and guide future clinical practices.

Asemptomatik Primer Hiperparatiroidili Hastaların Cerrahi Endikasyonlarının Retrospektif Olarak Değerlendirilmesi: Tek-Merkez Deneyimi

Asemptomatik PTH Yüksekliğinde Cerrahi Endikasyonları

Makale Bilgisi

Makale Geçmişi
Geliş Tarihi: 20/02/2024
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Anahtar Kelimeler:
Primer hiperparatiroidi,
Hiperkalsemi,
Paratiroid

ÖZET

Amaç: Primer hiperparatiroidizm (PHPT), biyokimyasal taramalardaki ilerlemeler sayesinde tarihsel olarak semptomatik bir hastalıktan ağırlıklı olarak asemptomatik bir duruma dönüşmüştür. Bu çalışma, asemptomatik PHPT hastalarında cerrahi endikasyonların ve sonuçların retrospektif değerlendirilmesini, hastalık prezantasyonundaki değişimi ve çeşitli faktörlere dayandırılan artan insidansı araştırmaktadır.
Gereç ve Yöntemler: Ocak 2017 ile Ocak 2022 arasında tanısı konulan asemptomatik PHPT olguları İzmir Katip Çelebi Üniversitesi, Atatürk Eğitim ve Araştırma Hastanesi Endokrinoloji ve Metabolizma Anabilim Dalı'nda detaylı olarak incelendi; olguların cerrahi endikasyonları 4. Uluslararası çalıştay asemptomatik primer hiperparatiroidizm kılavuzlarında belirtilen kriterlere göre değerlendirildi.
Bulgular: 48 hastanın (%98'i kadın, ortalama yaş 54,9 ± 5,9) %56,2'sinde en az bir cerrahi endikasyon mevcuttu; en yaygın olanları ise osteoporoz ve böbrek komplikasyonlarıydı
Sonuç: Çalışma, 4. Uluslararası çalıştay tarafından belirlenen kriterleri vurgulayarak, hafif PHPT vakalarında paratiroidektomiyi önerme konusundaki ihtiyatlı yaklaşımı ele almaktadır. Uzun dönemli randomize araştırmaların bulunmamasına karşın, yeni meta-analizler ve gözlemsel çalışmalar fraktür oranlarında, kemik mineral yoğunluğunda, nefrolitiaziste, kardiyovasküler olaylarda ve yaşam kalitesinde sınırlı değişiklikler olduğunu ortaya koymaktadır. Cerrahi olmayan hastalarda uzun vadeli takipte cerrahinin faydaları konusundaki tartışma henüz kesinlik kazanmamıştır. Çalışmamız, cerrahi operasyona karar verme aşaması için değerli bilgiler katıyor ve bu hasta popülasyonunda cerrahinin uzun vadeli yararları ve riskleri hakkında daha fazla araştırma yapılması ihtiyacını vurguluyor. Bu retrospektif analiz, asemptomatik PHPT'ye yönelik cerrahi müdahalelere ilişkin anlayışımızı geliştirmeyi ve gelecekteki klinik uygulamalara rehberlik etmeyi amaçlamaktadır.

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***Corresponding Author:** Derya Sema Yaman Kalender ,
Izmir Katip Celebi University School of Medicine, Atatürk Training and Research Hospital, Department of Endocrinology and Metabolism, Izmir, Türkiye.
derya.sema@gmail.com

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Introduction

Primary hyperparathyroidism (PHPT) occurs from excessive parathyroid hormone (PTH) release from one or more parathyroid glands, making it a prevalent endocrine disorder. PHPT was generally recognized as a symptomatic disease with significant skeletal and renal complications between 1930 and 1970 (1). In recent years, asymptomatic hyperparathyroidism has increased because of the development of automated serum calcium measurement in the early 1970s and the determination of serum calcium levels in routine biochemical screening. A normocalcemic type of PHPT was discovered during the early 2000s (2). Epidemiological studies show that the annual incidence of hypercalcemia increases. The increasing occurrence of PHPT can be attributed to the phenomenon known as the "catch-up effect." However, several causes (such as environmental, dietary, or iatrogenic factors) that can lead to variations in PHPT incidence have been found (3,4). The diagnosis of asymptomatic PHPT is mainly based on the assessment of serum calcium and parathyroid hormone (PTH) levels, which can vary significantly across different countries and healthcare systems. The occurrence of PHPT is three to five times higher in postmenopausal women. Although the reason for this is not fully understood, it may be due to screening blood calcium and parathormone performed with the preliminary diagnosis of osteoporosis in postmenopausal women or routine calcium measurements (5).

Mostly, PHPT is due to a benign overgrowth of one parathyroid gland (80% of cases) or a multiple gland disease (15–20% of cases) and rarely parathyroid carcinomas (<1%). Early diagnosis has resulted in a reduced occurrence of renal and skeletal diseases in addition to PHPT. In countries where biochemical screening is often conducted to diagnose osteoporosis or bone mass problems, the most prevalent manifestation of PHPT is the absence of symptoms. For the diagnosis of normocalcemic PHPT, secondary causes that increase PTH (vitamin D deficiency, renal insufficiency, malabsorption, medications such as lithium, biphosphonates, diuretics, and denosumab) must be excluded. The most common cause is vitamin D deficiency; PHPT may be underdiagnosed in areas where vitamin D deficiency is common (4,6).

General symptoms are due to target organ dysfunctions (bone cysts, Brown tumors, renal Stones and impairment, peptic ulcers, pancreatitis, proximal muscle weakness) (4). There are various opinions about which PHPT with only biochemical abnormalities should be operated on. Parathyroidectomy is the most proven approach for patients having symptomatic primary hyperparathyroidism (nephrolithiasis, pathological fractures, symptomatic hypercalcemia) (7).

However, there have also been reports of fatigue, anxiety, decreased ability to concentrate, cognitive decline, and worse quality of life, but they are not specific to PHPT. Asymptomatic PHPT is defined in

patients with definite primary hyperparathyroidism by laboratory tests and without clear signs of target organ manifestations. Asymptomatic PHPT can progress into symptomatic disease in one-third of the individuals during the follow-up (8). In asymptomatic PHPT, the DEXA measurement of bone, especially cortical bone, suggests osteopenia. Studies showed that not only cortical but also trabecular bone was affected, which explains the increased fracture risk (9). In a PHPT, bone involvement is usually obscure, and DEXA measurement and other bone imaging techniques may show the extent of the disease (10).

The most common clinical manifestation of primary hyperparathyroidism (PHPT) is asymptomatic PHPT detected by routine biochemical screening. In asymptomatic patients, PHPT may be clinically silent for years or may progress by creating a surgical indication.

This single-center observational, descriptive retrospective study aimed to evaluate the indications for surgery in patients with asymptomatic PHPT.

Materials and Methods

We examined the surgical criteria of patients diagnosed with asymptomatic PHPT at the Department of Endocrinology and Metabolism in Izmir Katip Celebi University School of Medicine, Ataturk Training and Research Hospital, from January 2017 to January 2022, using the hospital's information processing system. The study was approved by the Ethics Committee of Izmir Katip Celebi University Faculty of Medicine (2022/0567).

Asymptomatic patients with PHPT were defined as patients without clinical signs and symptoms specific to elevated PTH and/or hypercalcemia. Inclusion criteria in the study: 1. Osteoporosis (T-score <−2.5 at lumbar, spine, total hip, femoral neck, or distal 1/3 radius with DXA), 2. Renal complications (creatinine clearance <60 mL/min, 24-hour urine calcium >400 mg/day, and presence of nephrolithiasis or nephrocalcinosis with ultrasound or CT scan), 3. Age <50, 4. Serum calcium>1.0 mg/dL above the upper reference limit.

It was evaluated with four main criteria in accordance with the 4th International Workshop Asymptomatic Primary Hyperparathyroidism guidelines. Study exclusion criteria: 1.Patients with normocalcemic hyperparathyroidism, 2.Asymptomatic hyperparathyroidism patients who are recommended surgery without evaluating renal and bone complications, 3. Patients with symptomatic hyperparathyroidism. Demographic and laboratory data were also evaluated. SPSS version 22.0 software (Armonk, NY: IBM Corp) was used for statistical analysis. Results are reported as mean ± SD for continuous variables, percentage for categorical variables, and median (IQR) for numerical variables.

Results

Forty-eight patients were included in this study. 47 (98%) patients were female and 1 (2%) was male, with a mean age of 54.9 ± 5.9 (42-67). The mean calcium, phosphorus, vitamin D, and PTH levels were 11.3 ± 0.4 mg/dl, 3.0±0.4 mg/dl, 26±7 μg/L, and 111±35 ng/L, respectively. The mean parathyroid volumes of patients who underwent parathyroidectomy were measured as 0.78 ± 0.24 cc. Surgically localized parathyroid adenomas of operated patients were in the right lobe in 59% and the left lobe in 41%. The demographic and clinical characteristics of patients with asymptomatic hyperparathyroidism are shown in Table 1.

In this study, 27 (56.2%) patients had one or more surgical indication criteria. None of the patients had all surgical criteria categories. The most common surgical indication association was renal and bone complications in 7 (15%) patients. The proportions of other surgical indications are given in Table 2.

Discussion

Clinicians have been cautious in recommending parathyroidectomy in mild PHPT with moderate hypercalcemia and no known morbidities due to the absence of long-term randomized research. Most clinicians follow the criteria of the 4th International Workshop Asymptomatic Primary Hyperparathyroidism guideline published in 2014 until 2022 (10). This study was completed before 2022.

A recent meta-analysis of randomized clinical trials and observational studies in patients with asymptomatic and uncomplicated PHPT found no significant changes in bone fractures, BMD changes, nephrolithiasis, cardiovascular events, or even quality of life, neuropsychiatric symptoms comparing the efficacy of parathyroidectomy and active surveillance (11). There is an inadequate amount of observational data about patients with asymptomatic PHPT who have not undergone surgery, and some adverse effects can be observed in long-term observations. However, the complications of the operation should be evaluated in addition to the disease. The long-term data are needed to understand who benefits from surgery in the long term. Patients with normocalcemic hyperparathyroidism have more skeletal progression than typical in PHPT, according to Lowe and colleagues' study. However, the investigation was carried out exclusively on patients who underwent screening for osteoporosis, and this may affect the result (12). In other studies, fracture and cardiovascular diseases do not increase, and there is no progression to hypercalcemia (13,14). Although short-term follow-up and a minor patient group were performed, no significant disease progression was observed in the studies (13,14). Moreover, according to the guidelines, there is no evidence of progression in patients with normocalcemic PHPT (15). It is still controversial which patients will progress in non-surgical long-term follow-up and whether the predictions are sufficient. Most patients are diagnosed during osteoporosis screenings, and patients who are followed up without surgery may have

osteoporosis progression. During a 15-year follow-up study, 25% of non-surgical asymptomatic PHPT patients showed disease progression at 10 years and 37% at 15 years. It is essential to regularly monitor these patients who initially do not fit the surgical criteria (8). Fifteen years after the PHPT surgery, improvements were seen in the bone's cortical and cancellous regions, mainly in the cancellous region (16). Studies of mortality associated with asymptomatic PHPT are minimal. In one study, 19% of patients in the non-surgery group died during the 15-year follow-up, and most deaths were cardiovascular disease-related (8). However, other studies indicate that overall survival is not affected, but patients with severe PHPT have an increased mortality risk (17). In the most extended prospective clinical study to date, Pretorius et al., a total of 101 patients' morbidity events (cardiovascular events, cerebrovascular events, cancer, peripheral fractures, and kidney stones) were similar between groups. Moreover, 18% of the patients followed in their study, which extended to the second 10 years and gave the results, were transferred to the surgery group due to high calcium. Parathyroidectomy does not appear to reduce morbidity or mortality in mild PHPT. This study also showed no evidence of adverse effects of observation for at least ten years in terms of fractures, cancer, cardiovascular and cerebrovascular events, or renal morbidities (18). Yeh et al. In their first systematic evaluation, in which they investigated compliance with the consensus guidelines for the surgical treatment of PHPT, 20% of the patients with asymptomatic hyperparathyroidism had an elevated calcium level, 16% had 24-hour urinary calcium >400 mg/dl, and 17% were < 50 years old. They found it to be smaller than 6% and have the low bone density for age in 6% of them as surgical criteria. An additional surgical indication was found in 39% of the patients with Ca>11.5%. The same study found surgical criteria in 51% of asymptomatic patients (19). Within our analysis, osteoporosis and renal problems emerged as the prevalent surgical indications, with 27 patients (56.2%) meeting at least one requirement for surgical intervention.

In a prospective research involving 122 patients, it was shown that there was a notable rise in BMD after parathyroidectomy in the individuals who underwent surgery. In contrast, 21% of the patients who did not undergo surgery experienced a notable decline in their BMD during the 10-year follow-up period (7). In our study, following these data, osteoporosis was the most critical operation indication in asymptomatic patients.

In one study, 52 patients with PHPT who were asymptomatic and had similar baseline tests were followed for ten years, and progression was seen in 27% of the patients. 2 of the patients had hypercalcemia (serum calcium concentration of more than 12 mg per deciliter), 8 had hypercalciuria (urinary calcium excretion of more than 400 mg per day), and 6 had low cortical bone density (Z score for the distal third of the radius, less than -2), and none of them had fractures or

nephrolithiasis (20).

Conclusion

No study has been reported explicitly examining the indications for surgery in asymptomatic patients in our country in the literature. The clinical presentation of PHPT may differ according to vitamin D and geographical regions. In this single-center descriptive study, bone and renal complications were the most frequent indications for surgical criteria in asymptomatic PHPT patients.

Limitations

This study has potential limitations. Firstly, it was a retrospective study; therefore, there are no long-term observations. Moreover, the sample size is small and as this is a single-centered study. It can be corrected with a bigger sample size and multi-center study.

Ethics Approval: In compliance with the Declaration of Helsinki, our Institutional Non-Interventional Clinical Research Ethics Committee approved the study (Approval no:0567, 22/12/2022). Informed Consent: It is a retrospective study, so there isn't needed.

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Author contributions
Concept: M.S.E
Design: M.S.E
Supervision: M.S.E, D.S.Y.K.
Resources: M.S.E, D.S.Y.K.
Data Collection and Procesing: M.S.E, D.S.Y.K.
Analysis and Interpretation: M.S.E, D.S.Y.K.
Literature Search: M.S.E, D.S.Y.K.
Writing Manuscript: M.S.E, D.S.Y.K.
Critical Review: M.S.E, D.S.Y.K.

References

1. Albright F., Recfenstein EC. The parathyroid glands and metabolic bone disease. Ulster Med J 1950; 19(1):130-1.

2. Eastell R., Arnold A., Brandi ML., et al. Diagnosis of asymptomatic primary hyperparathyroidism: Proceedings of the third international workshop. J Clin Endocrinol Metab 2009; 94(2):340–50. Doi: 10.1210/jc.2008-1758.

3. Adami S., Marcocci C., Gatti D. Epidemiology of primary hyperparathyroidism in Europe. J Bone Miner Res 2002;17(Suppl 2):N18-23.

4. Bilezikian JP., Bandeira L., Khan A., Cusano NE. Hyperparathyroidism. Lancet 2018; 391(10116):168–78. Doi: 10.1016/S0140-6736(17)31430-7.

5. Minisola S., Arnold A., Belaya Z., et al. Epidemiology, pathophysiology, and genetics of primary hyperparathyroidism. J Bone Miner Res 2022; 37(11):2315-29. Doi: 10.1002/jbmr.4665.

6. Bilezikian JP., Cusano NE., Khan AA., Liu JM., Marcocci C., Bandeira F. Primary hyperparathyroidism. Nat Rev Dis Prim 2016; 2:1–16. Doi: 10.1038/NRDP.2016.33.

7. Mack LA., Pasieka JL. Asymptomatic primary hyperparathyroidism: A surgical perspective. Surg Clin North Am 2004; 84(3):803-16. Doi: 10.1016/j.suc.2004.01.004.

8. Rubin MR., Bilezikian JP., McMahon DJ., et al. The natural history of primary hyperparathyroidism with or without parathyroid surgery after 15 years. J Clin Endocrinol Metab 2008; 93(9):3462-70. Doi: 10.1210/jc.2007-1215.

9. Makras P., Anastasilakis AD. Bone disease in primary hyperparathyroidism. Metabolism 2018; 80:57–65. Doi: 10.1016/j.metabol.2017.10.003.

10. Bilezikian JP., Brandi ML., Eastell R., et al. Guidelines for the management of asymptomatic primary hyperparathyroidism: summary statement from the Fourth International Workshop. J Clin Endocrinol Metab 2014; 99(10):3561–9. Doi: 10.1210/JC.2014-1413.

11. Singh Ospina N., Maraka S., Rodriguez-Gutierrez R., et al. Comparative efficacy of parathyroidectomy and active surveillance in patients with mild primary hyperparathyroidism: A systematic review and meta-analysis. Osteoporos Int 2016; 27(12):3395–407. Doi: 10.1007/S00198-016-3715-3.

12. Lowe H., McMahon DJ., Rubin MR., Bilezikian JP., Silverberg SJ. Normocalcemic primary hyperparathyroidism: further characterization of a new clinical phenotype. J Clin Endocrinol Metab 2007; 92(8):3001–5. Doi: 10.1210/JC.2006-2802.

13. Kontogeorgos G., Trimpou P., Laine CM., Oleröd G., Lindahl A., Landin-Wilhelmsen K. Normocalcaemic, vitamin D-sufficient hyperparathyroidism - high prevalence and low morbidity in the general population: A long-term follow-up study, the WHO MONICA project, Gothenburg, Sweden. Clin Endocrinol 2015; 83(2):277–84. Doi: 10.1111/CEN.12819.

14. García-Martín A., Reyes-García R., Muñoz-Torres M. Normocalcemic primary hyperparathyroidism: one-year follow-up in one hundred postmenopausal women. Endocrine 2012; 42(3):764–6. Doi: 10.1007/S12020-012-9694-Z.

15. Silverberg SJ., Lewiecki EM., Mosekilde L., Peacock M., Rubin MR. Presentation of asymptomatic primary hyperparathyroidism: Proceedings of the third international workshop. J Clin Endocrinol Metab 2009; 94(2):351-65. Doi: 10.1210/jc.2008-1760.

16. Christiansen P., Steiniche T., Mosekilde L., Hessov I., Melsen F. Primary hyperparathyroidism: changes in trabecular bone remodeling following surgical treatment--evaluated by histomorphometric methods. Bone 1990; 11(2):75–9. Doi: 10.1016/8756-3282(90)90053-2.

17. Wermers RA., Khosla S., Atkinson EJ., et al. Survival after the diagnosis of hyperparathyroidism: A population-based study. Am J Med 1998; 104(2):115–22. Doi: 10.1016/S0002-9343(97)00270-2.

18. Pretorius M., Lundstam K., Heck A., et al. Mortality and morbidity in mild primary hyperparathyroidism: Results from a 10-year prospective randomized controlled trial of parathyroidectomy versus observation. Ann Intern Med 2022; 175(6):812–9. Doi: 10.7326/M21-4416.

19. Yeh MW., Wiseman JE., Ituarte PH., et al. Surgery for primary hyperparathyroidism: Are the consensus guidelines being followed? Ann Surg 2012 Jun; 255(6):1179-83. Doi:10.1097/SLA.0b013e31824dad7d.

20. Silverberg SJ., Shane E., Jacobs TP., Siris E., Bilezikian JP. A 10-year prospective study of primary hyperparathyroidism with or without parathyroid surgery. N Engl J Med 1999; 341(17):1249–55. Doi: 10.1056/NEJM199910213411701.

Table 1. Demographic and clinical characteristics of patients with asymptomatic hyperparathyroidism

Characteristics	Mean value (n:48)
Age (year)	54.9 ± 5.9(42-67)
Sex	
Male	1 (%2)
Female	47 (%98)
Parathyroid adenoma volume (cc)*	0.78 ± 0.24
Baseline level of serum Calcium (mg/dL)	11.3 ± 0.4
Baseline level of serum Phosphorus (mg/dL)	3.0±0.4
Baseline level of serum ALP (u/L)	87.21 ± 21.56
Baseline level of serum PTH (ng/L)	111±35
Vitamin D level (µg/L)	26 ± 7
Location of parathyroid adenoma*	
Left lobe inferior	9 (%41)
Right lobe inferior	16 (%59)

PTH: Parathyroid hormone; ALP: Alkaline phosphatase;*:Only underwent parathyroidectomy.

Table 2. Rates of surgical criteria in patients with asymptomatic hyperparathyroidism

Osteoporosis	%31
Renal Complications	%21
Renal and Bone Complications	%15
Age<50	%13
Calcium level>11.5 mg/dl	%10

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Quality of Cardiopulmonary Resuscitation Depictions in Movies
Quality of CPR Depictions in Movies

Ibrahim SARBAY *[1], Goksu BOZDERELI BERIKOL [2], Ibrahim Ulas OZTURAN [3], Ismail SARBAY [4]

[1] Department of Emergency Medicine, Istanbul Gaziosmanpasa Training and Research Hospital, Istanbul, Türkiye.
[2] Department of Emergency Medicine, Ufuk University, Ankara, Türkiye.
[3] Department of Emergency Medicine, Kocaeli University, Kocaeli, Türkiye.
[4] Department of Thoracic Surgery, Sinop State Hospital, Sinop, Türkiye.

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ABSTRACT

Objective: Cardiac arrest is a leading cause of mortality and morbidity worldwide. While outcomes of in-hospital cardiac arrest have improved, it was not observed for out-of-hospital cardiac arrest cases. Bystander cardiopulmonary resuscitation (CPR) can increase survival rates. Improving CPR knowledge among the general public is the center of attention to increase bystander CPR rates and improve outcomes. CPR depictions in movies may have positive or negative effects on public knowledge about CPR. We aimed to analyze the CPR depictions in movies and evaluate their medical accuracy.
Materials and Methods: This study included "Feature Films" released between 01/01/1990 and 01/01/2023 presented in the IMDb movie database using the search function with the following keywords: *"Cardiac arrest", "cardiopulmonary resuscitation" (CPR), "resuscitation" and "CPR"*. A total of 113 movies with 125 CPR scenes were analyzed. Basic characteristics for each movie and scene were recorded. Compression Quality Score (CQS) was calculated for each scene. Four researchers analyzed each CPR scene for medical accuracy using checklists. If the CPR is performed on the scene without any errors the scene is evaluated as "Accurate". All decisions were taken unanimously.
Results: Victims were mostly male (70.4%), adults (78.4%), and suffered trauma (70.4%). The CPR performer was a bystander in 92 cases (73.6%). CPR was performed outdoors in 52 cases (41.6%). Only 28 scenes were interpreted as "medically accurate" (20.8%).
Conclusion: In this study, we found that CPR scenes in movies often do not accurately reflect how to perform CPR and may hinder the public perception of CPR.

Filmlerdeki Kardiyopulmoner Resüsitasyon Tasvirlerinin Kalitesi
Filmlerdeki CPR Tasvirlerinin Kalitesi

Makale Bilgisi

Makale Geçmişi
Geliş Tarihi: 18/02/2024
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Yayın Tarihi: 31/08/2024

Anahtar Kelimeler:
Kardiyopulmoner resüsitasyon (CPR),
Resüsitasyon kalitesi,
Filmler

ÖZET

Amaç: Kardiyak arrest dünya çapında mortalite ve morbiditenin önde gelen nedenlerinden biridir. Hastane içi kardiyak arrest sonuçlarında yıllar içinde iyileşme görülürken, hastane dışı kardiyak arest vakalarında bu gelişme gözlenmemektedir. Halkın CPR bilgisini geliştirmek, olay yerinde bulunan kişilerin CPR uygulama oranını artıracağı ve sonuçları geliştirebileceği için odak noktasıdır. Filmlerdeki CPR tasvirlerinin halkın CPR hakkındaki bilgisi üzerinde olumlu veya olumsuz etkileri olabilir. Bu çalışmada, filmlerdeki CPR tasvirlerini analiz etmeyi ve tıbbi doğruluğunu değerlendirmeyi amaçladık.
Gereç ve Yöntemler: Bu çalışmaya, IMDb film veri tabanında yer alan, 01/01/1990 ile 01/01/2023 tarihleri arasında yayınlanan "Uzun Metrajlı Filmler" arasından "Kardiyak arrest", "kardiyopulmoner resüsitasyon" (CPR), "resüsitasyon" ve "CPR" anahtar sözcükleri ile etiketlenenler dahil edildi. 113 filmden toplam 125 CPR sahnesi analiz edildi. Her film ve sahnenin temel verileri kaydedildi. Her sahne için bir Bası Kalite Puanı (CQS) hesaplandı. Dört araştırmacı, kontrol listelerini kullanarak her bir CPR sahnesini tıbbi doğruluk açısından analiz etti. Sahnede CPR hatasız olarak yapılmışsa, sahne "tıbben doğru" olarak değerlendirildi. Tüm kararlar oybirliğiyle alındı.
Bulgular: CPR uygulananların çoğunluğu erkek (%70,4), yetişkin (%78,4) ve travma geçirmiş (%70,4) kişilerdi. CPR uygulayıcısı 92 vakada (%73,6) sağlık profesyoneli olmayan kişilerdi. Vakaların 52'sine (%41,6) açık alanda CPR uygulandı. Yalnızca 28 sahne "tıbbi açıdan doğru" (%20,8) olarak yorumlandı.
Sonuç: Bu çalışmada, filmlerdeki CPR sahnelerinin genellikle CPR uygulamasını doğru şekilde yansıtmadığını ve CPR'nin kamuoyu algısını olumsuz etkileyebileceğini bulduk.

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***Corresponding Author:** Ibrahim Sarbay,
Department of Emergency Medicine, Istanbul Gaziosmanpasa Training and Research Hospital, Istanbul, Türkiye.
ibrahimsar@gmail.com

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Introduction

Cardiac arrest is a leading cause of mortality and morbidity worldwide, with a poor survival rate in many countries (1,2). Out-of-hospital cardiac arrest (OHCA) occurs more than in-hospital cardiac arrest (IHCA). While outcomes of IHCA have improved in the past years, unfortunately, the same was not observed for OHCA cases (3).

Starting CPR early improves the chances of survival from cardiac arrest. Bystander cardiopulmonary resuscitation (CPR) can increase survival rates by two to three times (4). Studies have shown that the general public has a low level of CPR knowledge and lacks confidence in performing CPR (5). Therefore, it is important to improve public knowledge and awareness of CPR, and accurate portrayal of CPR in popular media such as movies and television can play an important role in improving OHCA outcomes (6). In a recent noninferiority trial study, it was concluded that online CPR training was not inferior to conventional training (7). In a study conducted among university students, the most common sources of information about CPR were television and movies (8). Inaccurate depictions of CPR in these mediums can lead to misunderstandings about the correct technique and effectiveness of CPR, which may deter bystanders from providing effective CPR in real-life situations (9).

The Internet Movie Database (IMDb) is one of the most popular online movie databases and hosts a wide variety of information about movies and television. The database contains user-generated keywords for movies, which number over ten million as of 2023 (10).

In this study, we aimed to analyze the CPR depictions in movies and evaluate their medical accuracy.

Materials and Methods

Study design

The IMDb movie database was used to select the movies for inclusion in the study. We searched the database using the keywords “cardiac arrest”, “cardiopulmonary resuscitation” (CPR), “resuscitation” and “CPR” for “Feature Films” released between 01/01/1990 and 01/01/2023. The flowchart of the study is presented in Figure 1.

Institutional review board approval was not required due to the nature of this study.

Study protocol

CPR was defined as “any situation in which chest compressions were performed on a patient, a patient was said to be having an ‘arrest’, or an unconscious patient was defibrillated for ventricular fibrillation (VF) or ventricular tachycardia.(6)

Unavailable movies, movies with CPR not performed on humans, and movies that don’t have any scenes that meet the CPR definition were excluded.

A researcher analyzed all included movies for depictions of CPR and noted basic characteristics for each movie and scene (Runtime, Country of Origin, Genres, Release Year, Timestamp of the CPR scene, Patient's Sex, Age, Etiology (Trauma or non-trauma), Disease, Intention of Humor, Location, Performer (Bystander or medical professional), Survival After CPR, Compression Rate, Depth, Location of the Compression, Rhythm, Defibrillation, Drugs, Interventions, Relative Witnessing CPR?, Relative Informed about CPR?, Intubation, Airway & Breathing, Fixation, Monitoring - where the first four characteristics collected directly from IMDb).

Since it is not always possible to determine the age of a character in a movie, we have followed the American Medical Association's age designations to broadly classify the ages of CPR patients (Children (1-12 years), Adolescents (13-17 years), Adults (18-64 years), Older adults (65 and older)) (11).

Average compression rates were measured using a metronome in cases where the practitioner or the patient is visible and compressions can be counted. Compression depths were measured if the patient's chest was clearly visible (one finger equating to 1.5 cm depth of compression (6)), and interpreted dichotomously (Right/Wrong).

"Compression quality" was also evaluated using the following criteria: Correct hand placement, compression rate of 100 to 120/min, compression depth, chest recoil, and minimizing interruptions in compression. Each section was awarded 1 point for correct performance, and a Compression Quality Score was calculated for each scene (out of 5 points).

Four researchers analyzed each CPR scene for medical accuracy using AHA's Basic Life Support Adult CPR and AED Skills Testing Checklist (for adults) (12) and PEARS® Child CPR and AED Skills Testing Checklist (for children) (13). Since the primary objective of our study was to evaluate whether the CPR scenes in the movies mislead the audience about CPR practice or not, it was assumed that the CPR steps that were not shown to the audience for artistic purposes and therefore could not be evaluated were performed correctly. If the depiction of CPR is clearly against the checklists, the scene is interpreted as "Not Accurate", and if the CPR is performed on the scene without any errors the scene is evaluated as "Accurate" (Figure 1). All decisions were taken unanimously.

Statistical analysis

The data were analyzed with the IBM SPSS Statistics Standard Concurrent User V 26 (IBM Corp., Armonk, New York, USA) statistical package program. Descriptive statistics are given as the number of responses (n), percentage (%), and mean ± standard deviation values. Normal distribution of the data of numerical variables was evaluated with the Shapiro Wilk normality test. In comparing two groups, independent samples

t test was used if the data were normally distributed, and Mann Whitney U Test was used if not. For variables with more than two categories, one-way analysis of variance (ANOVA) was performed if the data were normally distributed, and Kruskal Wallis H Test was used if the data was not normally distributed. A value of $p<0.05$ was considered statistically significant.

Results

125 scenes were identified in 113 movies. Descriptive statistics are presented in Table 1. The United States of America was the country of origin of 71 scenes (56.8%). There was no statistically significant difference between the movie origin and the CQS (Table 2). 2018 was the most frequent release year (10 movies – 8.85%), followed by 2009 and 2021 (9 movies each). While a wide variety of genres (17 in total) were observed, the most common movie genre was Drama (73 – 64.6%), followed by Thriller and Action (59 and 34, respectively). 5 scenes (4%) were intended to be humorous, and 6 scenes were in a Science-Fiction environment (4.8%). 51 (40.8%) of all CPR scenes appeared in the third part, 40 appeared in the middle part and 34 appeared in the first part of the movie.

88 victims (70.4%) were male. 98 victims (78.4%) were adults, while 10 were children, 8 were adolescents, and 9 were older adults. Trauma was the main etiology in 88 cases (70.4%). By far the most common cause of cardiac arrest was drowning (34 cases), followed by heart attack (9 cases). The CPR performer was a bystander in 92 cases (73.6%). CPR was performed outdoors in 52 cases (41.6%), followed by house and hospital (21 and 17, respectively).

22 of 32 CPRs performed by medical professionals were successful (68.75%), while 68 of 90 CPRs performed by bystanders were successful (75.56%). There was no statistically significant difference between CPR performer type and CQS variables (Table 3).

CPR was successful in 90 cases (72%) and 61 of them were male (67.78%). There was no statistically significant association between ROSC and CQS variables (Table 4). No compressions were performed in 25 CPRs (20%). Chest compression rates varied from 40 to 160 compressions per minute with a median of 100. The mean CQS was 3.13 ±1.48. In 17 cases, rhythm analysis could be seen on the monitor during the initiation of CPR (13.6%). 10 had asystole, 3 had normal sinus rhythm, 3 had Ventricular Fibrillation (VF), and 1 had pulseless electrical activity. Defibrillation was performed in 24 CPRs (19.2%). Precordial thump was delivered in 17 cases (13.6%), mostly by bystanders (76.47%), and mostly many times in succession (70.59%). In just one of these cases, the patient was in VF. Bag-valve-mask ventilation was performed in 19 cases (15.2%), while endotracheal intubation was performed only in 8 cases (6.4%). A relative of the victim was present in 21 cases (16.8%). Epinephrine was administered in 11 cases

during CPR (8.8%). Atropine was administered in 3 cases (3.4%). Naloxone and sodium bicarbonate were both administered once.

Only 28 scenes were interpreted as “medically accurate” according to the CPR checklists (20.8%). CPR was not indicated in 35 CPR scenes (28%). Medications or interventions were used wrongly in 27 CPR scenes (21.6%).

Discussion

Cardiac arrest poses a significant threat to public health, ranking among the deadliest health concerns (14). Since it may occur anywhere and timely intervention is vital, CPR Basic Life Support courses were introduced in the 1960s to increase bystander CPR rates (3,15). But despite the ongoing global efforts in CPR education for non-medical professionals, there is still room for improvement (5,15).

Since the introduction of motion pictures, which were thought to have the ability to “make one see and grasp things which only the cinema is privileged to communicate”, there has been a desire in the medical community to use them for public education (16). Unfortunately, even productions designed to promote positive changes in public health were not always successful (17). A study conducted by Colwill et al. analyzed 30 episodes of 3 popular medical dramas and concluded that CPR was depicted inaccurately and these works may even hinder viewers’ CPR knowledge with wrong messages (6). We have found that CPR attempts shown in the evaluated movies were mostly medically inaccurate, with a wide variety of wrong actions, some of which were possibly harmful or even fatal. Wrong indications for performing or stopping CPR, wrong use of medication or interventions, and wrong compression quality metrics were the most common of them.

In a study by Bray et al. it was found that the majority of OHCAs occurred in adults (96%), males (66%), and in private residences (76%) (18). In the present study, 108 cases were OHCA, and occurred in adults (85.2%), males (69.4%), and outdoors (48%). Most of the cases presumed medical aetiology (83%) in the aforementioned study, while trauma was the common aetiology (74.1%) for OHCA cases in ours.

Compression depth had a median of 3 cm (3.15-4.31) in Colwill et al.’s study (6). Since it is hard to precisely measure the compression depth in each scene, we have interpreted the results as right or wrong, and it was considered right in 52.6% of the scenes.

Bray et al. showed a 28% ROSC rate for OHCA cases who received an EMS-attempted resuscitation (18). In Colwill et al.’s study, ROSC was achieved in 62% of patients, and the quality of CPR did not affect the survival outcome ($p=0.59$) (6). In the present study, ROSC was achieved in 72% of all patients and bystander CPR had a higher success rate than CPR by healthcare professionals (75.56% and 68.75%, respectively). ROSC was not associated with CQS ($p=0,058$). Also whether

the CPR performer is a professional or bystander was not associated with CQS (p=0.20).

Precordial thump frequently appears in movies, mainly because of its dramatic effect. It was first described in the 1920s, and today it is recommended only for witnessed cardiac arrest of a patient who was monitored and had unstable ventricular tachycardia while a defibrillator is not available (19). While the clinical significance is controversial, some studies showed benefits. Pellis et al. concluded that precordial thump resulted in ROSC in 25% of patients (19-20). Precordial thump was used in 17 scenes (13.6%) which was evaluated in this study, usually by bystanders (13 scenes - 76.8%). Only in 2 of the cases, the patient was monitored before the use of the precordial thump. 12 of these instances resulted in ROSC (70.6%). These may lead to misconceptions in viewers' minds about its indications and effectiveness.

A report by the American Heart Association states that initial cardiac rhythm was VF, VT, or shockable by an automated external defibrillator in 16.6% of EMS-treated adult OHCAs, and VF or VT in 12.9% of IHCAs (21). In the present study, a monitor was used in 17 scenes (13.6%). Even though only 3 of these patients had a shockable rhythm (VF), 7 others also received defibrillation.

Conclusion

In this study, we found that CPR scenes in movies often do not accurately reflect how to perform CPR. The country of origin of the movies, performer type, or ROSC was not associated with the quality of chest compressions depicted in the movies. We believe that accurately portraying CPR in this widely consumed medium has a high potential for social benefit.

Limitations

Since we have included feature films listed on IMDB.com and tagged with specific keywords, some movies with CPR scenes may have been missed. Some movies were not available and were excluded from the study.

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Author contributions
Concept: I.S, I.S[4].
Design: I.S, G.B, I.U.O.
Supervision: I.S, G.B, I.U.O.
Resources: I.S, G.B, I.U.O, I.S[4].
Data Collection and Procesing: I.S, G.B, I.U.O.
Analysis and Interpretation: I.S, I.S[4].
Literature Search: I.S.
Writing Manuscript: I.S, G.B, I.U.O, I.S[4].
Critical Review: I.S, G.B, I.U.O, I.S[4].

References

1. Perkins GD., Cooke MW. Variability in cardiac arrest survival: the NHS ambulance service quality indicators. Emerg Med 2012; 29(1):3-5. Doi: 10.1136/emermed-2011-200758.

2. Ong MEH., Shin SD., De Souza NNA., et al. Outcomes for out-of-hospital cardiac arrests across 7 countries in Asia: The pan asian resuscitation outcomes study (PAROS). Resuscitation 2015; 96:100-8. Doi: 10.1016/j.resuscitation.2015.07.026.

3. Merchant RM., Topjian AA., Panchal AR., et al. Part 1: Executive summary: 2020 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. Circulation 2020; 142(2):S337-57. Doi: 10.1161/CIR.0000000000000918.

4. Ong MEH., Perkins GD., Cariou A. Out-of-hospital cardiac arrest: prehospital management. Lancet 2018; 391(10124):980-8. Doi: 10.1016/S0140-6736(18)30316-7.

5. Dobbie F., MacKintosh AM., Clegg G., Stirzaker R., Bauld L. Attitudes towards bystander cardiopulmonary resuscitation: Results from a cross-sectional general population survey. PLoS One 2018; 13(3):e0193391. Doi: 10.1371/journal.pone.0193391.

6. Colwill M., Somerville C., Lindberg E., Williams C., Bryan J., Welman T. Cardiopulmonary resuscitation on television: are we miseducating the public? Postgrad Med J 2018; 94(1108):71-5. Doi: 10.1136/postgradmedj-2017-135122.

7. Ratanarojanakul S., Pangkanon W. Comparison of tele-education and conventional cardiopulmonary resuscitation training during COVID-19 pandemic. J Emerg Med 2022; 63(2): 309-16. Doi: 10.1016/j.jemermed.2022.02.002.

8. Al-Turki YA., Al-Fraih YS., Jalaly JB., et al. Knowledge and attitudes towards cardiopulmonary resuscitation among university students in Riyadh, Saudi Arabia. Saudi Med J 2008; 29(9):1306-9.

9. Mgbako OU., Ha YP., Ranard BL., et al. Defibrillation in the movies: a missed opportunity for public health education. Resuscitation 2014; 85(12):1795-8. Doi: 10.1016/j.resuscitation.2014.09.005.

10. IMDb. Press Room [Internet]. United States of America: Internet movie database; 2023 March [cited 2023 March 6]. Available from: https://www.imdb.com/pressroom/

11. National Institutes of Health (NIH). Age [Internet]. United States of America: NIH; 2023 March [cited 2023 March 6]. Available from: https://www.nih.gov/nih-style-guide/age

12. American Heart Association. AHA's basic life support adult cpr and aed skills testing checklist. [Internet]. United States of America: American Heart Association; 2023 March [cited 2023 March 6]. Available from: https://cpr.heart.org/-/media/CPR2-Files/Course-Materials/2020-BLS/2023-BLS-Prov-Virtual-Skills/ChecklistAdult_HeartCodeBLSVirtualSkills.pdf

13. American Heart Association. PEARS® child cpr and aed skills testing checklist. [Internet]. United States of America: American Heart Association; 2023 March [cited 2023 March 6]. Available from: https://cpr.heart.org/-/media/CPR2-Files/Course-Materials/PEARS/PEARS-Course-Info/BLS_Child_Skills_Checklist_ucm_495803.pdf

14. Meaney PA., Bobrow BJ., Mancini ME., et al. Cardiopulmonary resuscitation quality: Improving cardiac resuscitation outcomes both inside and outside the hospital. Circulation 2013; 128(4):417-35. Doi: 10.1161/CIR.0b013e31829d8654.

15. Eisenburger P., Safar P. Life supporting first aid training of the public--review and recommendations. Resuscitation 1999; 41(1):3-18. Doi: 10.1016/s0300-9572(99)00034-9.

16. Champoux J.E. Film as a teaching resource. JMI 1999; 8(2), 206–17. Doi: 10.1177/105649269982016

17. Cantor D. Uncertain enthusiasm: The American Cancer Society, public education, and the problems of the movie, 1921-1960. Bull Hist Med 2007; 81(1):39-69. Doi: 10.1353/bhm.2007.0002.

18. Bray J., Howell S., Ball S., et al. The epidemiology of out-of-hospital cardiac arrest in Australia and New Zealand: A binational report from the Australasian resuscitation outcomes consortium (Aus-ROC). Resuscitation 2022; 172:74-83. Doi:10.1016/j.resuscitation.2022.01.011.

19. Hutchison J., Hu EW. Precordial Thump. In: StatPearls [Internet]. United States of America: StatPearls Publishing; 2023 March [cited 2023 March 6]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK545174/

20. Pellis T., Kette F., Lovisa D., et al. Utility of pre-cordial thump for treatment of out of hospital cardiac arrest: A prospective study. Resuscitation 2009; 80(1):17-23. Doi: 10.1016/j.resuscitation.2008.10.018.

21. Tsao CW., Aday AW., Almarzooq ZI., et al. Heart disease and stroke statistics-2023 Update: A report from the American Heart Association. Circulation 2023; 147(8):e93-e621. Doi: 10.1161/CIR.0000000000001123.

Table 1: Descriptive Statistics

		Statistics	
Country of Origin, *n* (%)	Other Countries	54	43.2
	USA	71	56.8
Part of the Movie, *n* (%)	First	34	27.2
	Middle	40	32.0
	Last	51	40.8
Sex, *n* (%)	Male	88	70.4
	Female	37	29.6
Age Category, *n* (%)	Older Adult	9	7.2
	Adult	98	78.4
	Adolescent	8	6.4
	Child	10	8.0
Aetiology, *n* (%)	Trauma	88	70.4
	Non-trauma	37	29.6
Humorous Purposes, *n* (%)	No	120	96.0
	Yes	5	4.0
Science-Fiction, *n* (%)	No	119	95.2
	Yes	6	4.8
CPR Performer, *n* (%)	Bystander	92	73.6
	Medical Professional	32	25.6
	Bystander&Medical Professional	1	0.8
ROSC, *n* (%)	No	35	28
	Yes	90	72
Compression Rate, *n* (%)	Wrong	67	53.6
	Right	58	46.4
Compression Depth, *n* (%)	Wrong	55	47.4
	Right	61	52.6
Recoil, *n* (%)	Wrong	13	10.5
	Right	111	89.5
Hand Placement, *n* (%)	Wrong	31	25.6
	Right	90	74.4
Minimizing Compression Interruptions, *n* (%)	Wrong	54	43.2
	Right	71	56.8
Rhythm, *n* (%)	Not available	108	86.4
	Asystole	10	8.0
	PEA	1	0.8
	VF	3	2.4
	Sinus	3	2.4
Precordial Thump, *n* (%)	No	108	86.4
	Yes	17	13.6
Shocks, *n* (%)	No	101	80.8
	Yes	24	19.2
Epinephrine, *n* (%)	No	114	91.2
	Yes	11	8.8
Atropine, *n* (%)	No	122	97.6
	Yes	3	2.4
Naloxone, *n* (%)	No	124	99.2
	Yes	1	0.8
Saline, *n* (%)	No	124	99.2
	Yes	1	0.8
Sodium Bicarbonate, *n* (%)	No	124	99.2
	Yes	1	0.8
Vascular access, *n* (%)	No	119	95.2
	Yes	6	4.8
Performed Interventions, *n* (%)	None	123	98.4
	Needle Thoracostomy	1	0.8

	Thermoregulation	1	0.8
CPR Witnessed by the Patient's Relative, *n* (%)	No	104	83.2
	Yes	21	16.8
Patient's Relative Informed About CPR, *n* (%)	No	118	94.4
	Yes	7	5.6
Intubation, *n* (%)	No	117	93.6
	Yes	8	6.4
Airway/Breathing, *n* (%)	None	103	82.4
	Bag-valve-mask	19	15.2
	Pocket Mask	1	0.8
	Face Mask	1	0.8
	Nasal Cannula	1	0.8
Tube Fixation, *n* (%)	No	120	96.0
	Yes	5	4.0
Monitoring, *n* (%)	No	103	82.4
	Yes	22	17.6
EMS Activation, *n* (%)	No	108	86.4
	Yes	17	13.6
Transfer, *n* (%)	No	105	84.0
	Yes	20	16.0
Checking Response, *n* (%)	No	72	57.6
	Yes	53	42.4
Providing Breaths, *n* (%)	No	20	16.0
	Yes	105	84.0
Defibrillation, *n* (%)	No	34	27.2
	Yes	91	72.8
Medically Accurate, *n* (%)	No	99	79.2
	Yes	26	20.8
Wrong Indication for Performing CPR, *n* (%)	No	90	72.0
	Yes	35	28.0
Wrong Use of Medication or Interventions, *n* (%)	No	98	78.4
	Yes	27	21.6
Total		125	100.0

n: Number of responses, *%:* Percentage value, mean and standard deviation. ROSC: Return of spontaneous circulation, CPR: cardiopulmonary resuscitation, USA: United States of America, PEA: Pulseless Electrical Activity, VF: Ventricular Fibrillation, EMS: Emergency Medical Services

Table 2: Comparison of Movie Origin and Compression Quality Score variables

	Country of Origin		Test Statistic	p
	Other	USA		
CQS	3,26±1,33	3,03±1,58	-0,615	0,538£

Numerical variables are given as mean±standard deviation. £: Independent samples t test, £Mann-Whitney U test, CQS: Compression Quality Score

Table 3: Comparison of CPR performer type and Compression Quality Score variables

	CPR Performer			Test Statistic	p
	Bystander	Medical Professional	Bystander&Medical Professional		
CQS	3,20±1,49	2,88±1,43	5,0±0	3,222	0,200 €

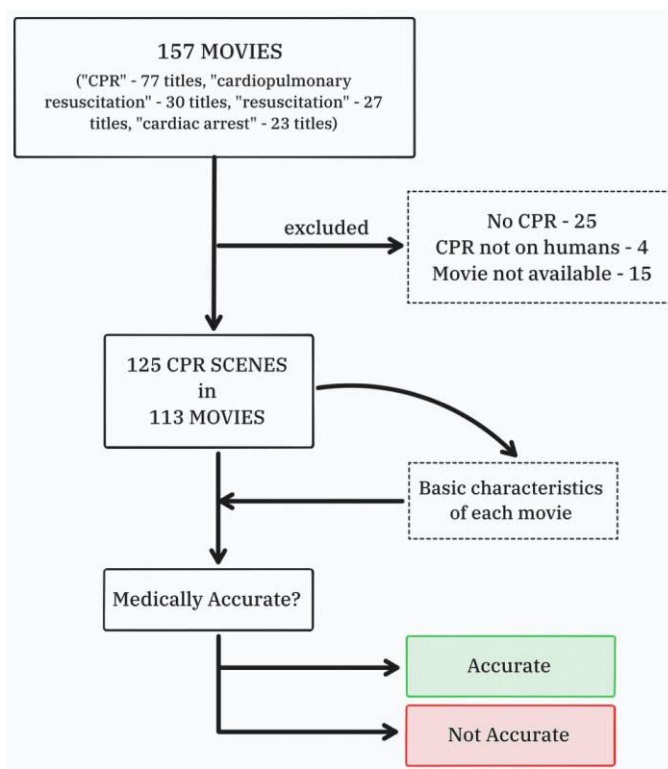
Numerical variables are given as mean±standard deviation. £: One-way ANOVA , € Kruskal-Wallis test, CQS: Compression Quality Score

Table 4: Comparison of ROSC and Compression Quality Score variables

	ROSC		Test Statistic	p
	No	Yes		
CQS	3,56±1,10	2,94±1,56	-1,896	0,058£

Numerical variables are given as mean±standard deviation. £: Independent samples t test. £Mann-Whitney U test, ROSC: Return of spontaneous circulation, CQS: Compression Quality Score

Figure 1. The flowchart of the study



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Cognitive Behavioral Therapy for Test Anxiety and Generalized Anxiety Disorder: Case Report
Test Anxiety and Generalized Anxiety Disorder

Ahmet OZBAY *[1], Oguzhan MOLLA[2], Melisa Sevi KOC[3]

[1] Istanbul Aydin University, Istanbul, Türkiye.
[2] Istanbul Aydin University, Institute of Graduate Education, Istanbul, Türkiye.
[3] Istanbul Aydin University, Faculty of Science and Literature, Psychology, Istanbul, Türkiye.

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ABSTRACT

Millions of young individuals in Turkey diligently prepare for annual exams that play a critical role in their academic and/or professional lives. During the rigorous exam preparation process, a significant hurdle emerges in the form of exam anxiety—a challenge that profoundly impacts their performance. These exams, designed to distinguish and evaluate individual aptitudes, have become an inherent part of our lives. While a moderate degree of anxiety can enhance exam performance, heightened levels of anxiety pose a serious psychological risk to individuals in these circumstances. Confronted by this risk, an array of negative thoughts, unpleasant emotions, and maladaptive behaviors can manifest among those immersed in exam preparation, particularly among young adults. Prior research has shown Cognitive Behavioral Therapy (CBT) as an effective approach for alleviating the symptoms of generalized anxiety disorder (GAD). In the present case study, we demonstrate the psychotherapeutic journey of a 24-year-old client who triumphed over anxiety through CBT. Notably, it became evident that this client's anxiety extended beyond exam-related concerns, encompassing a broader spectrum of challenges in her life. Thus, the therapeutic intervention in this case not only addressed exam-related anxiety but also encompassed a broader exploration of GAD. Post-therapy, a significant alleviation of the client's distressing symptoms became apparent.

Sınav Kaygısı ve Yaygın Anksiyete Bozukluğunda Bilişsel Davranışçı Terapi: Olgu Sunumu
Sınav Kaygısı ve Yaygın Anksiyete Bozukluğu

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ÖZET

Türkiye'de milyonlarca genç her yıl belirli dönemlerde yapılan birbirinden farklı sınavlara hazırlanmaktadır. Bu bireylerin sınava hazırlık sürecinde karşılaştıkları sınav başarılarını dahi etkileyen önemli sorunlarından biri sınav kaygısıdır. Sınavlar öğrencilerin bilgi düzeylerini ölçmek için kullanılan ülkelerde hayatın kaçınılmaz bir parçasıdır. Optimal düzeydeki kaygı düzeyleri sınavlardaki başarıyı olumlu etkilerken, yüksek kaygı karşımıza bu dönemdeki insanlar için ciddi bir tehdit oluşturmaktadır. Bu tehdit karşısında sınava hazırlanan özellikle genç ve genç yetişkin bireylerde çeşitli olumsuz düşünceler, kötü hissettiren duygular ve işlevsiz davranışlar oluşabilmektedir. Yapılan araştırmalarda Bilişsel Davranışçı Terapinin (BDT) yaygın anksiyete bozukluğunu azaltmada etkili bir yöntem olduğu saptanmıştır. Bu çalışmada, BDT uygulanması sonucunda iyileşen 24 yaşında bir olgu sunulmuştur. Olgunun, sınav kaygısının yanı sıra, yaşamının yoğun bir bölümünde farklı durumlarda da aslında kaygı duyması söz konusu olduğu anlaşılmıştır. Bu açıdan bakıldığında olguyla BDT kullanılarak sadece sınav kaygısı üzerine değil, yaygın anksiyete bozukluğu da çalışılmıştır. Terapi sonrasında yakınmalarda belirgin bir düzelme saptanmıştır.

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***Corresponding Author:** Ahmet Ozbay,
Istanbul Aydın University, Esenyurt, Istanbul, Türkiye.
ahmetozbay@hotmail.com

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Introduction

Test anxiety has been identified as anxiety-provoking actions and thoughts triggered by test stimuli in academic environments (1). It has been observed that 71.2% of people preparing for an exam in our country have moderate to high levels of test anxiety, a type of anxiety that prevents candidates from preparing for the exam and performing well during the exam (2). Research suggests that lack of knowledge, lack of efficient study skills, lack of time management skills, expectations, and pressures especially from those closest to the individual, lack of confidence, parents' perfectionism, and too much focus on the outcome are the main causes of test anxiety (3).

Generalized anxiety disorder, as defined in the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5), is characterized by excessive worry about activities and difficulty controlling them most days for at least 6 months (4). According to the DSM-5, this anxiety is expected to be accompanied by at least three of the following symptoms: restlessness, nervousness, or a constant state of being on edge, getting easily tired, difficulty concentrating, getting tempered easily, muscle tension, and difficulty sleeping (4).

This study presents the treatment process of a client who has been experiencing test anxiety due to the Public Personnel Selection Examination (KPSS) for over six months and also meets the criteria for generalized anxiety disorder according to DSM-5, using cognitive-behavioral therapy (CBT) (4).

Case

Y.O is the first child of a family with two children. She is 25 years old and has a college degree. Her mother is a housewife, and his father works as a laborer in a factory. She lives with her parents and sibling. The client cited her intense anxiety about the KPSS exam as her chief complaint. The client stated that when she sits at her desk, thoughts such *as "I will not be able to succeed, and if I fail, I will have to work at a college with low pay and excessive workload for my whole life. I will never have time for myself, and I will never enjoy life"* come to her mind. The client reported that her distressing thoughts made it impossible for her to concentrate, that she realized that she could not remember the subjects she studied the next day, and that this situation decreased her motivation and caused her to experience physical symptoms such as heart palpitations.

She reported experiencing intense anxiety during the university entrance exam, which affected her performance. Sweaty hands, focus issues, and prolonged exam time were noted. Post-graduation work included challenging conditions and harassment. Early flirtation experience was in high school; none followed. Recent therapy coincided with her first flirtations. Sessions targeted her anxieties about these interactions.

Cbt Treatment Strategies

In the initial therapy session, a comprehensive evaluation of test anxiety occurred alongside psychoeducation about cognitive-behavioral therapy (CBT). A problem list was formed, including Y.O's concern about test anxiety and significant relationship issues.

In later sessions, Y.O's negative automatic thoughts were examined. She discovered that emotions are influenced by interpretations, not events themselves. Thought recording forms were used, followed by cognitive restructuring to challenge and replace negative thoughts with more balanced viewpoints. Contrary evidence was emphasized, including Y.O's previous accomplishments.

Y.O's overemphasis on success and her low tolerance for setbacks became the focus of later sessions. Socratic questioning was used to uncover the extent to which external pressures contributed to these thought patterns. She came to realize that her mother's expectations were influencing her and causing her distress. The goal of the therapeutic process was to reframe these thoughts so that Y.O could recognize her efforts and set realistic expectations.

Experiences with dating were also discussed. CBT techniques were used to address distorted thinking patterns, such as “mind reading” and “catastrophizing”. She was taught to challenge these thoughts, to promote a more balanced perspective on how others intend to act, and to cope with discomfort.

Homework assignments were given to help her monitor and challenge her negative thoughts. Y.O realized that not all moments have a negative aspect, which led to a more positive perspective on life. Her ongoing difficulty with maintaining focus while studying was also addressed in the therapy sessions. The White Bear Experiment showed that trying to force focus leads to more distractions, which led her to adopt a more flexible approach and use techniques such as the Pomodoro Technique (5).

Relationship issues were systematically addressed, with a particular focus on emotional aspects and uncertainties. By increasing her tolerance for uncertainty, Y.O worked on developing a more realistic approach to relationships and love.

As the sessions progressed, Y.O's self-confidence improved, and she confronted exam anxiety. A step-by-step approach to studying and handling expectations was established. In the final sessions, Y.O developed a more optimistic view of relationships. She accepted uncertainties and realized that love cannot be standardized. Realizing that the exam did not determine her future, Y.O's stress level regarding the exam decreased significantly.

Discussion

The study explores a ten-week application of CBT for GAD and test anxiety. The growing interest in CBT in Turkey has facilitated work with such cases. Nevertheless, despite its widespread adoption, its implementation suffers from limitations acknowledged by practitioners.

According to Turkcapar, the suitability of the case for CBT is a key factor that facilitates the process and enhances the outcome (6). In this context, the most significant factor that emerges is the suitability of the case for therapy. Another critical factor, as noted by Turkcapar and Sargın is the establishment of trust and a therapeutic alliance between the client and the therapist (7). The client's cooperation by actively participating in therapy, attending sessions punctually, and refraining from disruptive behavior confirms the development of the therapeutic alliance and established trust with the therapist.

One limitation of the study is the short follow-up period and the lack of quantitative pre-test/post-test data for symptom reduction. Future research could assess the long-term effects of CBT by including follow-up and anxiety scales.

Conclusion

In conclusion, cognitive behavioral therapy is effective on test anxiety and generalized anxiety.

Limitations

Since our study is based on a single case, it has limitations in making generalizations.

Ethics Approval: All procedures performed in studies involving human participants comply with the ethical standards of the institutional and/or national research committee and the 1964 Helsinki declaration and subsequent amendments or comparable ethical standards. Ethical approval for this study was obtained from the Istanbul Aydin University Publication Ethics Committee for Social Sciences and Humanities (Approval Date: 07/07/2023, Decision No: 2323/06).

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Author contributions
Concept: A.O, O.M, M.S.K.
Design: A.O, O.M, M.S.K.
Supervision: A.O, O.M, M.S.K.
Resources: A.O, O.M, M.S.K..
Data Collection and Procesing: A.O, O.M, M.S.K.
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Literature Search: A.O, O.M, M.S.K.
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References

1. Szafranski DD., Barrera TL., Norton PJ. Test anxiety inventory: 30 years later. anxiety, stress and coping. An Int J 2012; 25(6): 667– 77. Doi: 10.1080/10615806.2012.663490.

2. Unalan PC., Ciftcili S., Dins D., Akman M., Topcuoglu V. Test anxiety level, social activities and utilization of counselling services among the students who will take the university entrance exam. Nobel Med 2017; 13(1): 61–9.

3. Turkan S., Turkcan A., Uygur N. Personal and familial expectations affecting psychiatric symptomatology before and after university entrance exams in final year high school students. In: Proceedings of the Child and Adolescent Psychiatry Days. Izmir: Saray Medical Bookstore; 1992.

4. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Washington: APA; 2022.

5. Wegner DM., Schneider DJ., Carter SR., White TL. Paradoxical effects of thought suppression. J of Per and Soc Psy 1987; 53(1): 5–13. Doi: 10.1037//0022-3514.53.1.5.

6. Turkcapar H. Depression - Cognitive Behavioral Therapy in Clinical Practice. Istanbul: Epsilon Publishing; 2018.

7. Turkcapar MH., Sargın AE. Cognitive-behavioral psychotherapies: history and development. J Cogn Behav Psychother Res 2012; 1(1): 7-14.

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An Unconventional Treatment: Kyphoplasty as an Indirect Decompression Technique for Posterior Wall Retropulsion of Fractured Vertebral Body Kyphoplasty as an Indirect Decompression Technique

Selin BOZDAG *[1], Ismail Ertan SEVIN [2]

[1] Kastamonu Education and Research Hospital, Department of Brain and Nerve Surgery, Kastamonu, Türkiye.
[2] Izmir Katip Celebi University, Ataturk Training and Research Hospital, Department of Brain and Nerve Surgery, Izmir, Türkiye.

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ABSTRACT

There is no clear consensus on how to manage burst fractures that involve retropulsion of bony fragments of the posterior wall of the vertebral body. Many surgeons consider kyphoplasty relatively contraindicated due to technical challenges, increased risk of epidural cement leakage, and potential for further displacement of fragments into the central canal, which could potentially worsen the neurologic condition. We present the case of a neurologically intact 45-year-old man with a burst fracture at the T8 level and ≈50% compromised spinal canal with RWR. Kyphoplasty was performed. There was no cement leakage during the procedure. Pain relief is achieved immediately after surgery (VAS decreased from 7 to 2), and no neurological deterioration occurred. He could go back to work without pain within one week. Significant postoperative correction of kyphosis (wedge angle decreased from 22.6 to 6.9) and restoration of vertebral height (Beck index increased from 37.84% to 72.62%) was observed and was not lost during follow-up for a year (wedge angle 9.4, Beck index 75.81%). Retropulsion decreased from 7.8 mm (46,43% canal compromise) to 5.57 mm (33.15% canal compromise). At 1-year follow-up, the posterior wall appeared intact and there was almost no retropulsed fragment. Kyphoplasty for burst fractures with PWR can be an effective option for selected patients.

Alışılmadık Bir Tedavi: Arka Duvar Retropülsiyonu Varlığında Dolaylı Dekompresyon Tekniği Olarak Kifoplasti Dolaylı Dekompresyon Tekniği Olarak Kifoplasti

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Kifoplasti, Dekompresyon.

ÖZET

Vertebra gövdesinin arka duvarında kırık kemik parçaların retropulsiyonu (PWR) bulunan patlama kırıklarının yönetimi konusunda kesin bir fikir birliği sağlanamamıştır. Teknik zorluk, epidural sement sızıntısı riski ve kemik fragmanlarının santral kanalda daha fazla yer değiştirerek nörolojik durumun kötüleşmesine yol açabilme riski nedeniyle birçok cerrah kifoplastiyi nispeten kontrendike olarak değerlendirmektedir. Bu yazıda, T8 seviyesinde burst kırığı olan ve spinal kanalda ≈%50 oranında RWR ile basısı bulunan, nörolojik olarak sağlam 45 yaşında erkek hasta sunuldu. Kifoplasti uygulandı ve işlem sırasında çimento sızıntısı olmadı. Ameliyattan hemen sonra ağrı azalması sağlandı (VAS 7'den 2'ye düştü) ve nörolojik bozulma meydana gelmedi. Hasta bir hafta içinde ağrısız bir şekilde işine dönebildi. Ameliyat sonrası kifozda belirgin düzelme (kama açısı 22.,6'dan 6,9'a düşmüştür) ve vertebra yüksekliğinde restorasyon (Beck indeksi %37,84'ten %72,62'ye yükselmiştir) gözlenmiş ve bir yıllık takip sırasında kaybolmamıştır (kama açısı 9,4, Beck indeksi %75,81). Retropulsiyon 7.8 mm'den (%46,43 kanal basısı) 5.57 mm'ye (%33,15 kanal basısı) düştü. Bir yıllık takipte, arka duvar sağlam görünüyordu ve neredeyse hiç retropulse fragman yoktu. PWR'li patlama kırıkları için kifoplasti, seçilmiş hastalar için etkili bir seçenek olabilir.

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***Corresponding Author:** Selin Bozdag,
Kastamonu Education and Research Hospital, Department of Brain and Nerve Surgery, Kastamonu, Türkiye.
selin.bzdg@gmail.com

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Introduction

Burst fractures (BFs) occur when the anterior and middle columns collapse, caused by severe axial forces applied. Though common (17% of all spinal injuries), BFs present several important treatment challenges (1, 2). Middle column disruption may lead to retropulsion of bone into the spinal canal and compression of neural elements (3). There is no definitive consensus on managing BFs with posterior wall retropulsion (PWR) of the fractured vertebral body (4). Many surgeons consider kyphoplasty relatively contraindicated due to the technical challenges, high risk of leakage, and further displacement of bone fragments into the central canal, which could worsen the neurologic condition. Here, we report on our experience of a BF case with PWR, which was successfully treated by kyphoplasty as an alternative decompression technique.

Case

A thoracic burst fracture was diagnosed in a 45-year-old patient who presented with severe localized pain in his back that prevented movement after a fall from a height. The examination was neurologically intact. Computerized tomography showed involvement of the posterior wall of the fractured vertebral body and no fractures of facet joints. The spinal canal was 46.43% compromised with PWR at the T8 level (Figure-1). Edema of the bone on STIR sequence (fat suppression technique) of magnetic resonance imaging indicated a fresh fracture. Luckily, there was no intramedullary T2-hyperintense signal suggestive of acute cord edema. We discussed the risks and benefits of different treatment options with the patient and decided on kyphoplasty since he was neurologically intact, even with PWR.

Surgical technique

The procedure was performed with sedo-analgesia in the prone position. The C arm was skewed at an appropriate angle so that vertebral endplates appeared parallel to each other. A bilateral transpedicular approach was used and the balloons were inserted and placed in the anterior one-third of the vertebral body in lateral view. The balloons were slowly and carefully inflated to avoid further displacement of bone fragments in the central canal. The inflation was stopped when the pressure of the balloons reached approximately 200 psi, then deflated and removed. PMMA (Polymethylmethacrylate) was injected under high viscosity and low pressure. We performed intermittent C-arm X-ray monitoring during the entire gradual injection process. We stopped immediately when PMMA neared the posterior wall. There was no cement leakage during the procedure.

Follow-up

We evaluated clinical and radiological data pre-operatively, post-operatively, and at first-year follow-up. Pain intensity was assessed using the visual analog scale (VAS). VAS score decreased from 7 to 2 immediately after surgery. No neurological deterioration occurred. He went back to work painlessly within one week. Post-operative correction of

kyphosis (adjacent bisegmental angle decreased from 23.1 to 18.0; calculated using the Cobb method) (5), wedge angle of fractured vertebra (decreased from 22.6 to 6.9) and restoration of vertebral height (Beck index (6) increased from 37.84% to 72.62%) was observed and was not lost during follow-up for a year (local kyphotic angle 18.5, wedge angle 9.4, Beck index 75.81%) (Figure-2). Retropulsion decreased from 7.8 mm to 5.57 mm and canal canal-occupying ratio of the fragment decreased from 46.43% to 33.15% postoperatively. After one year of surgery, the posterior wall remained intact and there was almost no retropulsed fragment (Figure-3).

Discussion

In this case, we introduce kyphoplasty as a safe and easy indirect decompression technique for BFs with PWR of bone fragments. According to current guidelines, treatment for burst fractures with PWR but without neurological impairment remains controversial. Some authors advocate for a conservative treatment approach in patients who have no neurological deficits, claiming possible spontaneous remodeling of the posterior wall, while others propose a range of surgical techniques, including decompressive laminectomy and stabilization with instrumentation. Whereas; discharging patients with canal compression for bed rest or performing major surgery are at the extreme points of the spectrum. Furthermore, many surgeons consider kyphoplasty relatively contraindicated due to technical challenges, the high risk of cement leakage, and the potential for further displacement of bone fragments into the central canal (7, 8). Kyphoplasty can achieve the desired mechanical stability in the anterior column by filling the vertebral body with cement (9). Therefore, following the three-column theory by Louis, we tried to fill the anterior two-thirds of the vertebra almost with cement to achieve good mechanical stability.

When we scrutinize kyphoplasty as an indirect decompression technique for BFs, it is crucial to attain partial height restoration and spontaneous reduction of the posterior fragment via ligamentotaxis (3, 7). Retropulsed fragments in the spinal canal are pushed back into their previous place partly by the posterior longitudinal ligament (PLL). As in distraction with the rod and pedicle screw in the instrumented ligamentotaxis, in the indirect decompression performed by kyphoplasty, PLL is distracted by the restored height of vertebrae, this continuous longitudinal force brings fracture fragments more closely together. As in our case, remaining bone fragments can also be resorbed gradually by a remodeling process by cerebrospinal fluid pulsations. Some studies have indicated that there was no notable difference in cement leakage between patients with fractures involving the posterior wall and those without such involvement (10). It is important to wait until the cement becomes highly viscous to avoid leakage. The viscosity we mention can be described as follows: it could stand at the tip of the cement inserter. Another essential trick is the slow injection of cement at low pressure. In current studies, no significant difference has been

shown between the unilateral and bilateral transpedicular approaches in terms of height restoration and cement leakage complications (11). We preferred to inflate the balloon cavity in a balanced way on both sides with two small 10 ml balloons. Thus, we thought we would be more controlled in fragment retropulsion.

Conclusion

The balloon inflation can distend the vertebral body to restore its height partially, and this distention can make the ligaments tense to retract protruded bone fragments. Kyphoplasty for BFs with PWR can be a safe and effective treatment option. Further large-scale prospective studies are required.

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Author contributions
Concept: S.B, I.E.S.
Design: S.B, I.E.S.
Supervision: S.B, I.E.S.
Resources: S.B, I.E.S.
Data Collection and Procesing: S.B, I.E.S.
Analysis and Interpretation: S.B, I.E.S.
Literature Search: S.B, I.E.S.
Writing Manuscript: S.B, I.E.S.
Critical Review: S.B.

References

1. Denis F. The three column spine and its significance in the classification of acute thoracolumbar spinal injuries. Spine 1983; 8(8):817-31. Doi: 10.1097/00007632-198311000-00003.

2. Rajasekaran S. Thoracolumbar burst fractures without neurological deficit: The role for conservative treatment. Eur Spine J 2010; 19(Suppl 1):40-7. Doi: 10.1007/s00586-009-1122-6.

3. Venier A., Roccatagliata L., Isalberti M., et al. Armed kyphoplasty: An indirect central canal decompression technique in burst fractures. AJNR Am J Neuroradiol 2019; 40(11):1965-72. Doi: 10.3174/ajnr.A6285.

4. Wang H., Zhang Z., Liu Y., Jiang W. Percutaneous kyphoplasty for the treatment of very severe osteoporotic vertebral compression fractures with spinal canal compromise. J Orthop Surg Res 2018; 13(1):13. Doi: 10.1186/s13018-018-0719-z.

5. Sadiqi S., Verlaan JJ., Lehr AM., et al. Measurement of kyphosis and vertebral body height loss in traumatic spine fractures: An international study. Eur Spine J 2017; 26(5):1483-91. Doi: 10.1007/s00586-016-4716-9.

6. Diel P., Röder C., Perler G., et al. Radiographic and safety details of vertebral body stenting: results from a multicenter chart review. BMC Musculoskelet Disord 2013; 14:233. Doi: 10.1186/1471-2474-14-233.

7. Krüger A., Zettl R., Ziring E., Mann D., Schnabel M., Ruchholtz S. Kyphoplasty for the treatment of incomplete osteoporotic burst fractures. Eur Spine J 2010; 19(6):893-900. Doi: 10.1007/s00586-010-1281-5.

8. Schwartz RH., Urits I., Shipon S., Viswanath O. Successful kyphoplasty in the presence of severe retropulsion of lumbar spine without neurological deficits. Pain Management Case Reports 2020; (4)4:127-29.

9. Teng MM., Wei CJ., Wei LC., et al. Kyphosis correction and height restoration effects of percutaneous vertebroplasty. AJNR Am J Neuroradiol 2003; 24(9):1893-900.,

10. Walter J., Haciyakupoglu E., Waschke A., Kalff R., Ewald C. Cement leakage as a possible complication of balloon kyphoplasty--is there a difference between osteoporotic compression fractures (AO type A1) and incomplete burst fractures (AO type A3.1)? Acta Neurochir (Wien) 2012; 154(2):313-9. Doi: 10.1007/s00701-011-1239-3.

11. Zhang J., Zhou Q., Zhang Z., Liu G. Comparison between unilateral and bilateral percutaneous kyphoplasty in the treatment of osteoporotic vertebral compression fracture: A meta-analysis and systematic review. Exp Ther Med 2023; 26(6):553. Doi: 10.3892/etm.2023.12252..

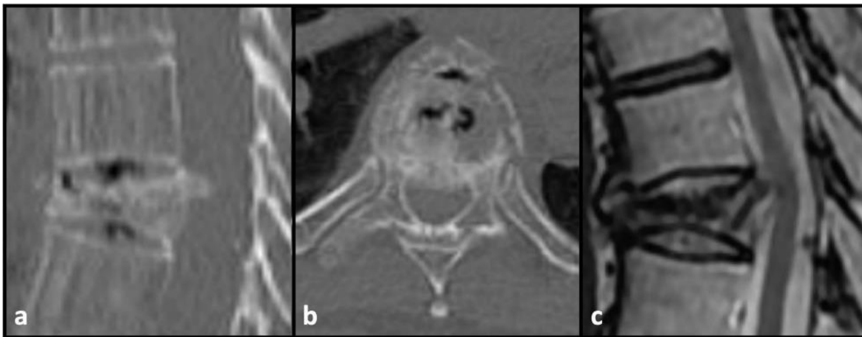

Figure 1. Preoperative CT and MRI findings: Burst fracture with posterior wall retropulsion with bone fragments and canal compression at the T8 level a. on midsagittal CT sequence and b. on the axial CT sequence, c. despite canal compression, there was no presence of an intramedullary T2-hyperintense signal suggestive of acute cord edema on MRI sagittal sequences.

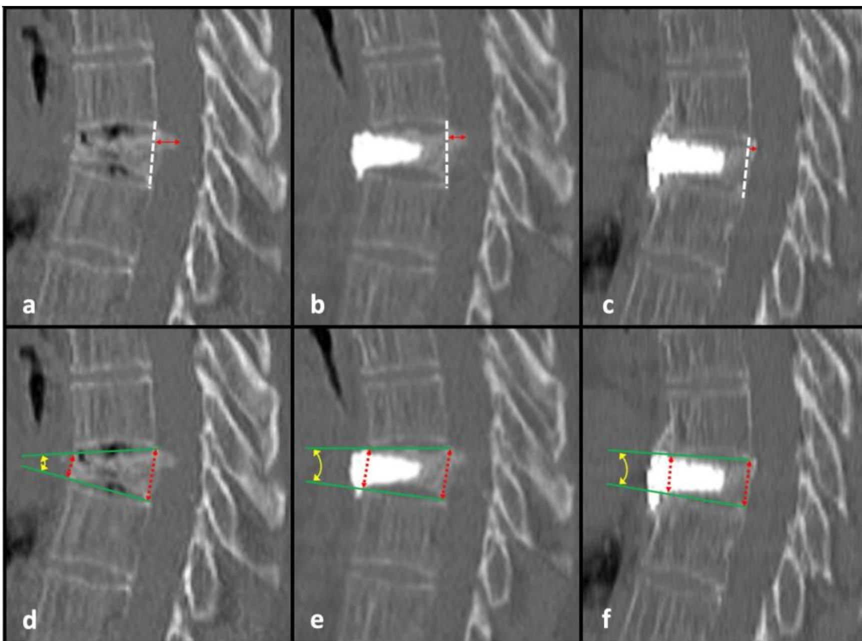

Figure 2. A straight line was drawn on the midsagittal sequence, extending from the posterior-inferior corner of the upper adjacent vertebral body to the posterior-superior corner of the lower adjacent vertebral body, to determine the normal position of the posterior wall at the target level before fracture is seen in the first row of pictures (white dashed lines). The PWR was subsequently measured perpendicularly from this line (red arrows), as seen in the first row of images. a. Preoperative PWR was 7.8 mm (with 46.43% canal compromise). b. Early postoperative PWR was 5.57 mm (with 33.15% canal compromise) c. At 1-year follow-up, the posterior wall appeared intact and there was almost no retropulsed fragment. The wedge angle (marked in yellow) measurement of the collapsed vertebra, along with the reference lines (green lines), can be seen in the second row of images. Beck index was calculated by dividing the anterior edge height by the posterior edge height (red dashed lines). Wedge angle and Beck index were found as follows, respectively: d. Preoperative 22.6 and 37.84%, e. Early postoperative 6.9 and 72.62%, f. Correction of kyphosis was not lost during follow-up for a year; 9.4 and 75.81%.

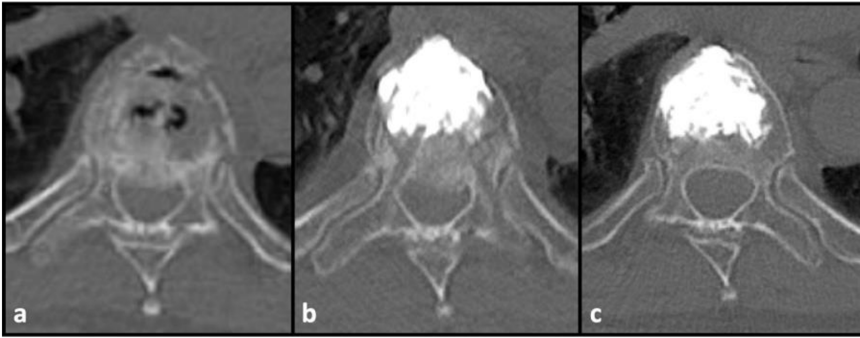

Figure 3. a. Burst fracture with posterior wall retropulsion with bone fragments and canal compression at the T8 level can be seen in the preoperative axial CT sequence. b. Early postoperative axial CT sequence shows spontaneous partial reduction of posterior fragment via ligamentotaxis. c. At the 1-year follow-up, the posterior wall appears to be almost intact, and the bone fragment has been resorbed, potentially through a process of remodeling facilitated by cerebrospinal fluid pulsations.