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Original Article

Has the Pandemic Changed the Effectiveness of Pressure Ulcer Care in non-COVID Intensive Care Units? A Single-Center Retrospective Study

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ABSTRACT

Objective: Critically ill patients, such as intensive care patients, are highly vulnerable to pressure ulcers (PUs). Due to the increased workforce brought by the COVID-19 pandemic, there have been changes in the number of patients and the quality of follow-up. The primary aim of our study is to examine the effects of the first year of the pandemic on pressure ulcer follow-up and treatment strategies for patients hospitalized in non-COVID intensive care units (ICU). The secondary aim is to examine the effect of nutritional support.

Methods: The data of 120 patients who were followed up in the non-COVID ICU for at least 2 weeks between January–March 2021(Group 1) and January–March 2020 (Group 2) and followed up with PUs were retrospectively analyzed. In addition to the demographic data and comorbidities of the patients, admission from the nursing home, stages of PUs at admission, changes in stages, and nutritional parameters were recorded.

Results: While an increase in the PU stage was detected in 24 patients in Group 1, no increase in the stage of the wound was observed in Group 2 (32.0 vs 0, p=0.000). The transferrin value measured during hospitalization was found to be lower in Group 1 (1.23 vs 1.43, p=0.008). In Group 1, the prealbumin value decreased (0.9 vs 0.2, p=0.008) on day 15 compared with the hospitalization and C-reactive protein value increased. In Group 2, the albumin value was found to be lower (2.5 vs 2.3, p=0.047) on day 15 compared with the day of hospitalization.

Conclusion: In the first year of the pandemic, there was an increase in the existing pressure ulcer stage and a decrease in the nutritional status in patients hospitalized in the ICU for non-COVID reasons. We believe that this might be due to the increased patient care needs and the burnout of healthcare staff due to the COVID pandemic.

INTRODUCTION

Critically ill patients, such as intensive care patients, are highly vulnerable to pressure ulcers (PUs) due to long hospital stays, comorbid diseases, and other factors.[1,2] However, it is possible to prevent PUs with care and nursing services. While the primary aim is to prevent the development of PUs, the other aim is to heal the wounds of patients.[1] In particular, positioning of immobile patients in the bed, repeating these positionings every 2–3 h, and appropriate nutritional support and follow-up are of great importance in preventing PUs.[3] Although they are not considered to be direct predictors of mortality during hospitalization, PUs may be associated with intensive care unit (ICU) morbidity and mortality. The increased risk of infection causes adversities such as prolonged ICU and invasive mechanical ventilation (IMV) stay, increased antibiotic resistance, increased burden of nursing care, and higher health costs.[4]

Having started in Wuhan, China, at the end of 2019 and turned into a global epidemic in a short time, SARS-COV-2, i.e., COVID-19 infection, was declared a pandemic by the World Health Organization[5] and still continues to be an important health problem.

Due to the COVID-19 pandemic, there have been changes in the number and quality of patients followed up in ICUs.[6] Although much of the ICU bed capacity of hospitals was reserved for pandemic patients, health service continued to be provided to patients admitted to ICUs for non-COVID

reasons. However, many survey studies conducted both in our reanimation unit and in different centers around the world show that ICU healthcare workers, in particular, experience loss of motivation and burnout due to the increased workload caused by the pandemic.[7–11]

The primary aim of our study is to examine the effects of increasing healthcare needs in the first year of the pandemic on the PU follow-up and treatment strategies aimed at patients in non-COVID ICUs, and the secondary aim is to determine how nutritional support, which indirectly affects PU formation, is affected in this process.

MATERIALS AND METHODS

After obtaining approval from the local ethics committee of our hospital (Date: April 28, 2021, Protocol no: 2021/514/200/32), the study was designed retrospectively. Following the onset of the COVID-19 pandemic, the first case was admitted to our ICU in March 2020, and pandemic ICUs with a capacity of 70 beds were established and patient admission started. In this process, an ICU with a capacity of 64 beds continued to serve non-COVID patients. All patients in our ICU were visited by the professional PU follow-up team serving in our hospital, and the records of the patients with PU were kept. Static air mattresses (SNS 8000 T, USA) were used in all patients followed up in the ICUs.

The stage of the existing wound was determined according to the Braden Scale.[12] Nutritional support 2 days a week was offered to all patients hospitalized in the ICUs by the professional team of nutritional follow-up, and all patients were followed up weekly in line with laboratory parameters,[13,14] which are indicators of nutrition.

Braden Scale for pressure ulcer

Stage 1 Wound with a localized area not turning white in which the skin is intact

Stage 2 Dermis becoming pink or red, and partial loss of skin thickness, which may show intact blisters in the wound bed, occurs

Stage 3 Loss of a full skin layer, involvement of subcutaneous tissues, and irregular skin edges

Stage 4 Loss of skin, loss of tissue, and exposure of underlying muscles, bones, or tendons.

Patient Selection, Planning, and Inclusion Criteria

Study Groups

The data of patients who were followed for at least 2 weeks in the non-COVID ICU between January–March 2020 before the pandemic and January–March 2021 during the pandemic and who had PU at admission were retrospectively analyzed.

Inclusion criteria

- Having regular pressure ulcer follow-up reports and accessible data,
- At least 2 weeks of non-COVID ICU stay,
- Having at least Grade 1 pressure ulcer according to the Braden Scale at the time of admission to the ICU,
- Patients over the age of 18 years.

Exclusion criteria

- Pressure ulcer records cannot be accessed,
- Missing laboratory data,
- Less than 2 weeks in intensive care,
- During intensive care follow-up, COVID positivity was detected and transferred to the COVID ICU,
- Patients under the age of 18 years.

Patients followed in the ICU during the pandemic period constituted Group 1. The patients followed in the pre-pandemic period formed Group 2.

The patients' age, gender, comorbid diseases (malignancy, diabetes mellitus, hypertension, and chronic renal disease), ICU stay duration, need for IMV, ICU mortality, change in PU stage during ICU hospitalization, and albumin, prealbumin, transferrin, C-reactive protein (CRP), and procalcitonin (PRC) values during hospitalization and in the second week were recorded. The patients who were living at a nursing home and admitted to our ICU were also identified. When evaluating the progression in the PU stage, skipping one or more stages from the existing wound stage at the time of hospitalization was taken into account.

Statistics

Statistical analyses were made with the SPSS 21 program. The Kolmogorov–Smirnov test was used to show the normal distribution of continuous variables. Quantitative variables, expressed as mean ± standard deviation, were compared using the One-way ANOVA test. The qualitative variables were expressed in frequencies (percentages) and compared using either the Chi-squared test or Fisher's exact test. Changes of laboratory values in two different

Table 1. Demographic data of the patients

	Group 1 (n=75)	Group 2 (n=45)	p
	n (%)	n (%)	
Age, Mean±SD	73.95±13.07	69.16±17.61	0.091[a]
Gender			
Male	37 (49.3)	22 (48.9)	0.556[b]
Comorbidity	65 (86.7)	41 (91.1)	0.336[b]
Malignancy	18 (24.0)	9 (20.0)	0.393[b]
Diabetes mellitus	18 (24.0)	11 (24.4)	0.562[b]
Hypertension	42 (56.0)	19 (42.2)	0.101[b]
Chronic renal disease	7 (9.3)	6 (13.3)	0.346[b]
Nursing home patient	31 (41.3)	10 (22.2)	0.025[b]

[a]One-way ANOVA; [b]Fisher's exact test. SD: Standard deviation.

times were made with Paired t-test. A p-value of <0.05 was considered significant.

RESULTS

A total of 120 patients, 75 in Group 1 and 45 in Group 2, were included in the study. The mean age was 72.1±15.1 years, and the two groups were similar in terms of age distribution, length of ICU stay, need for IMV, and ICU mortality. The groups were similar in terms of comorbid diseases, but there were more follow-up patients in Group 1 (41.3% vs 22.2%, p=0.025). Demographic characteristics of the patients are given in Table 1.

Table 2. Laboratory values at baseline and on day 15 of the patients

	Group 1 (n=75)	Group 2 (n=45)	p
Albumin			
Baseline	2.56±0.51[a]	2.49±0.49[b]	0.320
15th day	2.42±0.53	2.33±0.47	0.327
Prealbumin			
Baseline	0.89±0.06[c]	0.11±0.06[d]	0.132
15th day	0.21±0.37	0.16±0.25	0.429
Transferrin			
Baseline	1.21±0.38[e]	1.43±0.49[f]	0.008
15th day	1.23±0.48	4.41±2.37	0.178
CRP			
Baseline	108.37±67.07[g]	125.75±84.69[h]	0.216
15th day	131.72±90.94	112.54±94.34	0.272
PRC			
Baseline	2.42±8.10[i]	4.76±15.44[j]	0.280
15th day	3.08±6.33	3.20±9.56	0.935

Paired t-test (baseline vs 15th day); [a]p=0.088; [b]p=0.047; [c]p=0.008; [d]p=0.208; [e]p=0.632; [f]p=0.330; [g]p=0.049; [h]p=0.244; [i]p=0.601; [j]p=0.535; ICU: Intensive care unit; CRP: C-reactive protein; PRC: Procalcitonin.

The laboratory values of the patients are presented in Table 2. While albumin, prealbumin, CRP, and PRC values on admission and those on day 15 were similar between the groups, the transferrin value measured during hospitalization was found to be lower in Group 1 (1.23 vs 1.43, p=0.008). It was found that the prealbumin value decreased (0.9 vs 0.2, p=0.008) significantly on day 15 compared with the day of hospitalization, and the CRP value increased (108.3 vs 131.7, p=0.049) significantly in the patients in Group 1. In the patients in Group 2, the albumin value was found to be significantly lower (2.5 vs 2.3, p=0.047) on day 15 compared with the one measured on the day of hospitalization.

PU status of the patients during ICU hospitalization, change in PU stage, IMV need, and mortality of patients are given in Table 3. The mean follow-up period of the patients in the ICU was 63.5 days. According to the Braden Scale for pressure ulcer measured on admission to the ICU, 37.6% of the patients had stage 1, 38.3% stage 2, 16.6% stage 3, and 7.5% stage 4 PUs. While an increase in the PU stage was detected in 24 patients in Group 1, no increase in the stage of the wound was observed in Group 2 (32.0 vs 0, p=0.000). In Group 2, 80% of patients had no change in the stage of the wound and 20% had a decrease in the PU stage (p=0.004 vs p=0.238). The mortality rate of all patients included in the study was 73.3%, and both groups were similar.

DISCUSSION

In our study, in which the data of 120 patients with non-COVID PU who applied to the ICU of our hospital before the pandemic and during the pandemic period were compared, it was found that the patients followed up during the pandemic period were mostly composed of patients in nursing homes, progressed in PU stages, and regressed in nutritional status.

Although parameters such as age distribution and comorbid diseases were similar in both groups, there were

Table 3. PU status of the patients during ICU hospitalization, change in PU stage, IMV need, and mortality

	Group 1 (n=75)	Group 2 (n=45)	p
	n (%)	n (%)	
Intensive care unit stay (days), Mean±SD	58.67±70.86	71.58±62.19	0.314[a]
Invasive mechanical ventilation need	69 (92.0)	43 (95.6)	0.364[b]
Stage of pressure ulcer at intensive care unit admission			
1	28 (37.3)	17 (37.8)	0.556[b]
2	26 (34.7)	20 (44.4)	0.386[b]
3	14 (18.7)	6 (13.3)	0.412[b]
4	7 (9.3)	2 (4.4)	0.167[b]
Increase in pressure ulcer stage	24 (32.0)	0	0.000[b]
Regression in the pressure ulcer stage	10 (13.3)	9 (20.0)	0.238[b]
No change in pressure ulcer stage	41 (54.7)	36 (80.0)	0.004[b]
Mortality	56 (74.7)	32 (71.1)	0.413[b]

[a]One-way ANOVA; [b]Fisher's exact test; ICU: Intensive care unit; IMV: Invasive mechanical ventilation; PU: Pressure ulcer; SD: Standard deiviation.

more nursing home patients in the during-pandemic group. There are studies indicating that nursing home patients are at risk of developing PU due to limitations in mobility, impaired collagen tissue and skin structure due to aging, coexisting comorbidities, lack of nutrition, and presence of incontinence.[15,16] As can be associated with this, a higher rate of progression in the PU stage was observed in our during-pandemic patients. In the study Khor et al.[17] conducted, the mortality rate was found to be 66% in advanced elderly patients followed up with PU, and it was reported that staying in a nursing home was an independent risk factor for mortality and increased mortality 2.3 times. In our study, the mortality rate in both groups was approximately 70%.

It is also of great importance to provide appropriate nutritional support in the follow-up and treatment of PU in ICUs.[1,3,18–20] There is no ideal laboratory test to determine the adequacy of nutritional support. However, laboratory measurements such as serum albumin, prealbumin, and transferrin, which are recommended to be followed up in the literature, are also regularly performed in our clinic.[13,14] Montalcini et al.[21] reported that a serum albumin level of <3.1 g/dL is effective in predicting PU formation and mortality. Although there was no significant difference in albumin levels between the two groups, serum albumin levels of both groups were <3.1 g/dL, and mortality rates were similar in both groups.

Serum albumin level is affected by various factors unrelated to nutrition, such as liver dysfunction, acute infection, and protein-losing nephropathies. Therefore, in our clinic, we perform CRP and PRC follow-up simultaneously to distinguish between infection-related negative acute phase reactant response and nutritional deficiency. Although the serum albumin level was significantly lower at the end of the second week in the patients of the pre-pandemic period compared with their time of hospitalization, no significant increase was observed in the CRP and PRC values, which are infection parameters. Although this indicated a nutritional defect in this group, no significant increase was observed in the PU stages and infection.

The CRP level, which can be considered as an indicator of infection in the during-pandemic group, was significantly higher on day 15 than that during the time of hospitalization. An increase in the PU stage and an increased risk of infection are correlated.[4] Likewise, the presence of infection triggers the formation or progression of PU.[22] Our study also supports this statement. In the same patient group, there was a significant decrease between prealbumin values at the time of hospitalization and day 15, which supports nutritional deficiency.

Being another laboratory parameter in nutritional follow-up, the transferrin value at the time of hospitalization was also significantly lower in the during-pandemic group, and this was attributed to the fact that the number of patients admitted from nursing homes was higher in this group and that these patients might have received inadequate nutritional support.[23]

In addition, the fact that it was the first year of the pandemic, the increasing need for health services and high levels of burnout in the auxiliary staff responsible for duties such as ICU patient care and positioning may also be among the reasons. Although a burnout inventory was not conducted for auxiliary health staff within the scope of our study, in another study in which Maslach burnout inventory was applied to our intensive care staff in the first year of the pandemic, emotional burnout was observed in 65% of the participants.[10] There are many studies available in the literature on this topic that support our hypothesis.[7–9]

Limitation

The limitations of our study are that it was designed retrospectively and the stages of change in PU stages were not specified separately. On the other hand, the facts that our PU records were kept by a professional wound care team assigned by our hospital, which also serves as a wound treatment center, and that our nutritional support and follow-up was also conducted by a professional nutrition team add value to our study, helping us interpret our findings better.

CONCLUSION

In the first year of the pandemic, there was an increase in the existing PU stage and a decrease in the nutritional status in patients hospitalized in the ICU for non-COVID reasons. We believe that this might be due to the increased patient care needs and the burnout of healthcare staff due to the COVID pandemic.

Ethics Committee Approval

This study approved by the Kartal Dr. Lutfi Kirdar City Hospital Clinical Research Ethics Committee (Date: 28.04.2021, Decision No: 2021/514/200/32).

Informed Consent

Retrospective study.

Peer-review

Internally peer-reviewed.

Authorship Contributions

Concept: F.Ç., Y.B., E.A.D., E.B., K.T.S.; Design: F.Ç., Y.B., E.A.D., E.B., K.T.S.; Supervision: F.Ç., Y.B., E.A.D., E.B., K.T.S.; Fundings: Y.B., E.B.; Materials: F.Ç., Y.B., E.A.D.; Data: Y.B., E.A.D.; Analysis: Y.B., E.A.D., K.T.S.; Literature search: K.T.S., F.Ç., E.B.; Writing: F.Ç., Y.B., K.T.S.; Critical revision: K.T.S., E.B.

Conflict of Interest

None declared.

REFERENCES

1. Tayyib N, Coyer F. Effectiveness of pressure ulcer prevention strategies for adult patients in intensive care units: a systematic review. Worldviews Evid Based Nurs 2016;13:432–44. [CrossRef]
2. Lima Serrano M, González Méndez MI, Carrasco Cebollero FM, Lima

Rodríguez JS. Risk factors for pressure ulcer development in Intensive Care Units: A systematic review. Med Intensiva 2017;41:339–46.
3. Avsar P, Moore Z, Patton D, O'Connor T, Budri AM, Nugent L. Repositioning for preventing pressure ulcers: a systematic review and meta-analysis. J Wound Care 2020;29:496–508. [CrossRef]
4. Jiang Q, Li X, Qu X, Liu Y, Zhang L, Su C, et al. The incidence, risk factors and characteristics of pressure ulcers in hospitalized patients in China. Int J Clin Exp Pathol 2014;7:2587–94.
5. WHO. WHO Director-General's opening remarks at the media briefing on COVID-19 – 11 March 2020. Available at: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020. Accessed Feb 18, 2022.
6. González-Gil MT, González-Blázquez C, Parro-Moreno AI, Pedraz-Marcos A, Palmar-Santos A, Otero-García L, et al. Nurses' perceptions and demands regarding COVID-19 care delivery in critical care units and hospital emergency services. Intensive Crit Care Nurs 2021;62:102966. [CrossRef]
7. Murat M, Köse S, Savaşer S. Determination of stress, depression and burnout levels of front-line nurses during the COVID-19 pandemic. Int J Ment Health Nurs 2021;30:533–43. [CrossRef]
8. Chen R, Sun C, Chen JJ, Jen HJ, Kang XL, Kao CC, et al. A large-scale survey on trauma, burnout, and posttraumatic growth among nurses during the COVID-19 pandemic. Int J Ment Health Nurs 2021;30:102–16. [CrossRef]
9. Caillet A, Coste C, Sanchez R, Allaouchiche B. Psychological impact of COVID-19 on ICU caregivers. Anaesth Crit Care Pain Med 2020;39:717–22. [CrossRef]
10. Bilir Y, Çabaklı GT, Danacı F, Haydarlar H, Saraçoğlu A, Saraçoğlu KT. How was the healthcare team, working in the COVID intensive care unit affected by the pandemic. Proceedings of the 1st International Health Science University, Anesthesiology and Reanimation Symposium; 2021 Dec 3-4. Istanbul: 2021. p. 67.
11. Saracoglu KT, Simsek T, Kahraman S, Bombaci E, Sezen Ö, Saracoglu A, et al. The psychological impact of COVID-19 disease is more severe on intensive care unit healthcare providers: a cross-sectional study. Clin Psychopharmacol Neurosci 2020;18:607–15.
12. Covinsky KE, Covinsky MH, Palmer RM, Sehgal AR. Serum albumin concentration and clinical assessments of nutritional status in hospitalized older people: Different sides of different coins? J Am Geriatr Soc 2002;50:631–7. [CrossRef]
13. Ferguson RP, O'Connor P, Crabtree B, Batchelor A, Mitchell J, Coppola D, et al. Serum albumin and prealbumin as predictors of clinical outcomes of hospitalized elderly nursing home residents. J Am Geriatr Soc 1993;41:545–9. [CrossRef]
14. Jansen RCS, Silva KBA, Moura MES. Braden Scale in pressure ulcer risk assessment. Rev Bras Enferm 2020;73:e20190413. [CrossRef]
15. Coleman S, Gorecki C, Nelson EA, Closs SJ, Defloor T, Halfens R, et al. Patient risk factors for pressure ulcer development: systematic review. Int J Nurs Stud 2013;50:974-1003. [CrossRef]
16. Hahnel E, Lichterfeld A, Blume-Peytavi U, Kottner J. The epidemiology of skin conditions in the aged: a systematic review. J Tissue Viability 2017;26:20–8. [CrossRef]
17. Khor HM, Tan J, Saedon NI, Kamaruzzaman SB, Chin AV, Poi PJ, et al. Determinants of mortality among older adults with pressure ulcers. Arch Gerontol Geriatr 2014;59:536–41. [CrossRef]
18. Tayyib N, Coyer F, Lewis P. Saudi Arabian adult intensive care unit pressure ulcer incidence and risk factors: a prospective cohort study. Int Wound J 2016;13:912–9. [CrossRef]
19. Kaitani T, Tokunaga K, Matsui N, Sanada H. Risk factors related to the development of pressure ulcers in the critical care setting. J Clin Nurs 2010;19:414–21. [CrossRef]
20. Saghaleini SH, Dehghan K, Shadvar K, Sanaie S, Mahmoodpoor A, Ostadi Z. Pressure ulcer and nutrition. Indian J Crit Care Med 2018;22:283–9. [CrossRef]
21. Montalcini T, Moraca M, Ferro Y, Romeo S, Serra S, Raso MG, et al. Nutritional parameters predicting pressure ulcers and short-term mortality in patients with minimal conscious state as a result of traumatic and non-traumatic acquired brain injury. J Transl Med 2015;13:305. [CrossRef]
22. Bluestien D, Jawaheri A. Pressure ulcers: prevention, evaluation, and management. Am Fam Physician 2008;78:1186–94.
23. Crogan NL, Shultz JA, Adams CE, Massey LK. Barriers to nutrition care for nursing home residents. J Gerontol Nurs 2021;27:25–31.

Pandemi, COVID Dışı Yoğun Bakım Ünitelerinde Bası Yarası Bakımının Etkinliğini Değiştirdi Mi?: Tek Merkezli Geriye Dönük Çalışma

Amaç: Yoğun bakım hastaları gibi kritik durumdaki hastalar, basınç ülserlerine karşı oldukça savunmasızdır. COVID-19 pandemisinin getirmiş olduğu artmış iş gücü nedeniyle yoğun bakım ünitelerinde takip edilen hasta sayısında ve takip kalitesinde değişiklikler olmuştur. Çalışmamızın birincil amacı, pandeminin ilk yılında artan sağlık ihtiyaçlarının, COVID dışı yoğun bakım ünitelerinde (YBÜ) yatan hastalara yönelik basınç ülseri takip ve tedavi stratejileri üzerindeki etkilerini incelemek, ikincil amacı ise beslenme desteğinin basınç ülserleri üzerine olan etkisini ve bu süreçteki seyrini incelemektir.

Gereç ve Yöntem: Ocak–Mart 2021 (Grup 1) ve Ocak–Mart 2020 (Grup 2) tarihlerinde en az iki hafta COVID dışı YBÜ'de izlenen ve basınç ülseri ile takip edilen 120 hastanın verileri geriye dönük olarak incelendi. Hastaların demografik verileri ve komorbiditelerinin yanı sıra bakım evinden kabul edilmiş olması, kabuldeki basınç ülserlerinin evreleri, evrelerdeki değişiklikler, ve beslenme parametreleri kaydedildi. Profesyonel yara bakım ekibi tarafından yara evreleri ve değişimleri kayıt edildi.

Bulgular: Grup 1'de 24 hastada bası yarası evresinde artış saptanırken, Grup 2'de yara evresinde artış izlenmedi (32.0'a 0, p=0.000). Hastanede yatış sırasında ölçülen transferrin değeri Grup 1'de daha düşük bulundu (1.23'e karşı 1.43, p=0.008). Grup 1'de yatışa göre 15. günde prealbümin değeri azaldı (0.9'a 0.2; p=0.008), CRP değeri arttı. Grup 2'de albumin değeri yatış gününe göre 15. günde (2.5'e 2.3; p=0.047) daha düşük bulundu.

Sonuç: Pandeminin ilk yılında, COVID dışı nedenlerle yoğun bakım ünitesinde yatan hastalarda mevcut basınç ülseri evresinde artış ve beslenme durumunda azalma oldu. Bunun, COVID pandemisi nedeniyle artan hasta bakım ihtiyaçları ve sağlık personelinin tükenmişliğinden kaynaklanabileceğini düşünüyoruz.

Anahtar Sözcükler: Basınç ülseri; beslenme COVID olmayan hastalar; COVID pandemi; yoğun bakım üniteleri.