Abstract

Background: Intensive Care Units (ICUs) are places where critically ill patients are managed. Aim: We aimed to investigate skin disorders that developed in critically ill surgical patients during their stay in the ICU. Methods: The prevalence of dermatological disorders and factors affecting their clinical features was prospectively analyzed in surgical ICU patients. We recorded age, sex, type of ICU, comorbidities, skin disorders, time to consultation, duration of ICU stay, and mortality rate. Results: Our study included 605 patients (mean age of 60.1 ± 20.2 years; 56.4% males). Seventy-three (12.1%) patients were consulted with the Dermatology Department, among which 28.8% had infectious dermatological lesions, 26% dermatoses, and 45.2% drug reactions. The most common infectious dermatological disorder was wound infection (55.6%), the most common drug reaction was maculopapular drug eruption (75.8%), and the most common dermatosis was frictional blisters (47.4%). Multiple comorbidities, hypertension, diabetes mellitus, coronary artery disease, Parkinson disease, and stroke increased dermatological disorders (P < 0.05). The consulted patients had a median ICU stay of 7 days (range 2–53 days); consultation was significantly more common when it exceeded 10 days (74% vs. 26%, P < 0.05). The consulted patients died more commonly (P < 0.05). Infectious dermatological disorders and dermatoses were more common in patients older and younger than 50 years, respectively (P < 0.05). Dermatoses were more common among women (P < 0.05). The median time to consultation was 6 (2–30) days; it was longest for dermatological infections and shortest for dermatoses (P < 0.05). Infectious dermatological disorders were significantly more common among the deceased patients (P < 0.05). Conclusion: Multiple factors including multiple comorbidities, duration of ICU stay, time to consultation, and mortality increase dermatological disorders among surgical ICU patients.

Key Words: Dermatology consultation, dermatological disorders, comorbidity, subtype of dermatological disorders, Surgical Intensive Care Unit

Introduction

Intensive Care Units (ICUs) are places where critically ill patients are managed. Involved by multiple coexisting conditions, these patients require complex treatment approaches. Various dermatological problems may develop in ICU patients as a result of primary pathologies, their complications, and complex treatment regimens used for therapy. Furthermore, immobility puts ICU patients at increased risk of decubitus ulcers and similar conditions. Dermatological disorders at ICUs reduce quality of life, increase complexity of drug regimens, prolong duration of ICU stay, and increase mortality and morbidity.

Skin acts as a barrier protecting the human body from external factors and maintaining body temperature and hemostasis. Any damage to it results in the disruption
of this the delicate balance it provides. In critically ill patients, immobility, pharmacological treatments, and a host of other factors added impaired skin moisture and macerations make skin more susceptible to breakdown. These patients may develop various drug reactions, dermatoses, and infections.

Herein, we aimed to contribute to the literature by reviewing dermatological disorders involving patients admitted to our hospital's surgical ICU.

**Methods**

Our study protocol was approved by the Local Ethics Committee at Adnan Menderes University Medical Faculty (dated 2012, no 88). It was prospectively conducted on patients admitted to Surgical ICU at Aydin State Hospital between January 1, 2012, and December 31, 2014. The study participants were evaluated by dermatology consultations and their medical information was recorded. On the other hand, the medical information of unconsulted patients was accessed through hospital automation system.

Age, sex, comorbid conditions, dermatological disorders, tissue culture results, time to consultation, duration of ICU stay, and mortality rate were recorded among 605 patients admitted to surgical ICU for trauma and surgical pathologies. Factors affecting the prevalence and type of dermatological disorders among ICU patients were analyzed. Patients who refused to participate in the study, who had missing medical data or consultation records, who were younger than 18 years, who were pregnant, and who had an internal disease were excluded from the study.

Study data were analyzed with SPSS Release 18.0 (Statistical Package for Social Sciences for Windows). Normality of the data distribution was tested with Kolmogorov–Smirnov test. Descriptive statistics included mean and standard deviation for parametric variables, median, range, minimum and maximum for nonparametric variables, and number and percentage for qualitative data. Data analysis was performed using Pearson’s Chi-square and Fisher’s exact test. The test results were evaluated at a confidence interval of 95% and a significance level of $P < 0.05$.

**Results**

This study enrolled 605 patients, with a mean age of 60.1 ± 20.2 years; 347 (57.4%) study participants were male.

A dermatology consultation was requested for 73 (12.1%) patients who were assigned to Group A. Five hundred and thirty-two (77.9%) patients who did not have a dermatology consultation were assigned to Group B. Among the identified dermatological lesions, 21 (28.8%) were infectious dermatological lesions (IDLs); 19 (26%) were dermatoses; and 33 (45.2%) were drug reactions [Table 1]. Cultures of wound site samples included 4 *Pseudomonas aeruginosa* and 1 *Staphylococcus hominis* proliferation.

Age, sex, trauma status, and presence of a single comorbidity had no significant effect on the prevalence of dermatological disorders ($P > 0.05$). On the other hand, multiple comorbidities, hypertension (HT), diabetes mellitus (DM), coronary artery disease (CAD), Parkinson disease, and stroke were significantly correlated to the prevalence of dermatological disorders ($P < 0.05$). The median ICU stay of the study population was 7 (range: 51, minimum: 2, maximum: 53); a significantly greater number of dermatological consultations were requested for patients staying at ICU for more than 10 days ($P < 0.05$). Those for whom dermatology consultation was requested had a significantly longer ICU stay and a significantly greater mortality ($P < 0.05$) [Table 2].

The prevalence of dermatoses was higher among patients younger than 50 years while those older than 50 years of age had a significantly higher rate of dermatological infections ($P < 0.05$). There was no significant correlation between trauma status and lesion subtype ($P > 0.05$). No significant correlation was found between comorbidities and lesion subtype, either ($P > 0.05$). The median time to dermatology consultation was

| Table 1: The classification of skin diseases |
|------------------------------------------|
| Infection ($n=21$)                       |
| Bacterial ($n=9$)                        |
| Foliculitis                              |
| Cellulite                                |
| Wound infection                          |
| Fungal ($n=8$)                           |
| *Candida*                                |
| Viral ($n=4$)                            |
| *Herpes*                                 |
| *Zoster*                                 |
| Drugs ($n=33$)                           |
| Maculopapular drug eruption              |
| Acneiform drug eruptions                 |
| Fix drug eruption                        |
| Lichenoid drug eruption                  |
| Dermatoses ($n=19$)                      |
| Friction blisters                        |
| Allergic contact dermatitis              |
| Urticaria                                |
| Alopecia areata                          |
| Lichen planus                            |
6 (range: 28, minimum: 2, maximum: 30) days. No significant correlation was found between time to dermatology consultation, duration of ICU stay, and dermatological lesion subtype ($P > 0.05$). The IDL prevalence was significantly higher in the deceased patients ($P < 0.05$) [Table 3].

**Discussion**

As ICU patients are complex patients, consultation requests from other departments for these patients are common.$^2$ Dermatological disorders are common problems at ICUs.$^9$ Our study revealed that the most common infectious dermatological disorder was wound infection, the most common drug reaction was maculopapular drug eruption, and the most common dermatosis was frictional dermatitis. We demonstrated that the presence of multiple comorbidities, HT, DM, CAD, Parkinson, and stroke was associated with increased prevalence of dermatological disorders. Patients staying at ICU for more than 10 days were significantly more commonly consulted with the dermatology department. Mortality rate was significantly greater among patients consulted with the dermatology department. Patients older than 50 years of age had a significantly greater rate of infectious dermatological disorders whereas those younger than 50 years had a significantly higher rate of dermatoses. The latter condition was also significantly more common in females. Time to consultation was longest among those diagnosed with a dermatological infection and shortest among those diagnosed with dermatoses. The deceased patients had a significantly higher prevalence of infectious dermatological disorders.

Bedia et al. reported that 9.2% of ICU patients, 50% of whom were surgery/trauma patients, suffered dermatological disorders.$^6$ In a similar study among internal ICU patients, Emre et al. reported that a dermatology consultation was requested for 13.9% of the participants.$^3$ Lee et al. found that a dermatology consultation was requested for 1.2% of patients admitted to internal ICU.$^{10}$ We noted that a dermatology

### Table 2: The comparison of demographic properties of the study groups

|                      | Total (n=605) | Group A DDs: Present (n=73) | Group B DDs: Absent (n=532) | $P$  |
|----------------------|--------------|----------------------------|-----------------------------|------|
| **Age**              |              |                            |                             |      |
| <50                  | 171 (28.3)   | 26 (35.6)                  | 145 (27.3)                  | 0.137*|
| ≥50                  | 434 (71.7)   | 47 (64.4)                  | 387 (72.7)                  |      |
| **Gender, n (%)**    |              |                            |                             |      |
| Male                 | 347 (57.4)   | 38 (52.1)                  | 309 (58.1)                  | 0.329*|
| Female               | 258 (42.6)   | 35 (47.9)                  | 223 (41.9)                  |      |
| **Trauma, n (%)**    |              |                            |                             |      |
| Present              | 363 (60.0)   | 50 (68.5)                  | 313 (58.8)                  | 0.114*|
| Absent               | 242 (40.0)   | 23 (31.5)                  | 219 (41.2)                  |      |
| **Comorbidity, n (%)**|            |                            |                             |      |
| Comorbid             | 376 (62.1)   | 51 (69.9)                  | 325 (61.1)                  | 0.147*|
| Multiple comorbid    | 127 (21.0)   | 35 (47.9)                  | 92 (17.3)                   | <0.001*|
| HT                   | 105 (17.4)   | 23 (31.5)                  | 82 (15.4)                   | 0.001*|
| DM                   | 62 (10.2)    | 16 (21.9)                  | 46 (8.6)                    | <0.001*|
| CAD                  | 57 (9.4)     | 21 (28.8)                  | 36 (6.8)                    | <0.001*|
| COPD                 | 40 (6.6)     | 13 (17.8)                  | 27 (5.1)                    | <0.001*|
| Malignancy           | 30 (5.0)     | 3 (4.1)                    | 27 (5.1)                    | >0.999**|
| CF                   | 29 (4.8)     | 6 (8.2)                    | 23 (4.3)                    | 0.144*|
| CRF                  | 27 (4.5)     | 4 (5.5)                    | 23 (4.3)                    | 0.654**|
| Alzheimer            | 13 (2.1)     | 3 (4.1)                    | 10 (1.9)                    | 0.119**|
| Parkinson            | 7 (1.2)      | 3 (4.1)                    | 4 (0.8)                     | 0.041**|
| Stroke               | 9 (1.5)      | 0                          | 9 (12.3)                    | <0.001**|
| Others               | 15 (2.5)     | 3 (4.1)                    | 10 (1.9)                    | <0.199**|
| **Duration of surgery ICU stay (days)** |         |                             |                             |      |
| <10                  | 383 (63.3)   | 19 (26.0)                  | 364 (68.4)                  | <0.001*|
| ≥10                  | 222 (36.7)   | 54 (74.0)                  | 168 (31.6)                  |      |
| Mortality            | 216 (35.7)   | 34 (46.6)                  | 182 (34.2)                  | 0.039*|

*Pearson Chi-square test. **Fisher’s exact test. n: Number of cases, DDs: Dermatological disorders, DM: Diabetes mellitus, HT: Hypertension, CF: Cardiac failure, CAD: Coronary artery disease, COPD: Chronic obstructive pulmonary disease, ICU: Intensive Care Unit, CRF: Chronic renal failure.
consultation was requested for 12% of surgical ICU patients. We believe that a higher rate of dermatology consultations in our study population likely resulted from several factors, namely, wound infection due to trauma or surgery, advanced median age, multiple coexisting comorbidities, and immobility due to various reasons, including multiple trauma and femur fracture.

In previous reports, IDLs were the most common dermatological disorder at ICUs, with a rate of 28%–38.9%.\textsuperscript{[4,6,11,12]} Studies conducted at ICUs showed Candida as the most common pathogen.\textsuperscript{[4,6,11,13]} The high prevalence of Candida infections in ICU patients was linked to this pathogen’s rapid growth at suitable temperatures and moisture, its ability to involve intertriginous areas, its abundance of human flora, and liberal use of broad-spectrum antibiotics and parenteral nutrition at ICUs.\textsuperscript{[11]} In surgical patients, the infection rate is reportedly increased due to additional factors such as having disrupted skin integrity, administering inappropriate antibiotic prophylaxis, using improper operation room asepsis/antisepsis practices, leaving foreign material in surgical field, and using improper surgical technique.\textsuperscript{[14]} In a study among surgical patients, 76.5% of all infections developing in surgical patients occurred at ICUs.\textsuperscript{[15]} In the same study, wound infection developed at a rate of 17.8% among patients admitted to ICU.\textsuperscript{[15]} Our study demonstrated an IDL prevalence of 28.8%, with bacterial infections having been the most common infection among all identified IDLs. We believe that the high prevalence of bacterial infections could be explained by invasive procedures, disrupted skin integrity, and surgical infectious factors. We also believe that wound site IDLs were often treated with surgical debridement and antibiotics, and the wound culture results were consulted with the infectious diseases department; therefore, the number of dermatology consultations remained lower than expected.

| Table 3: Comparison of patients demographic properties between subgroups of skin disorders |
|-------------------------------------------------|-------------------|-------------------|-------------------|-------------------|
| Age (years)                                      | Infections (n=21) | Drug reactions (n=33) | Dermatoses (n=19) | P                  |
| <50                                              | 2 (9.5)           | 7 (21.2)           | 17 (89.5)         | <0.001*            |
| ≥50                                              | 19 (90.5)         | 26 (78.8)          | 2 (10.5)          |                    |
| Gender, n (%)                                    |                   |                   |                   |                    |
| Male                                             | 16 (76.2)         | 16 (48.5)          | 6 (31.6)          | 0.016*             |
| Female                                           | 5 (23.8)          | 17 (51.5)          | 13 (68.4)         |                    |
| Trauma, n (%)                                    |                   |                   |                   |                    |
| Present                                          | 14 (66.7)         | 22 (66.7)          | 14 (73.7)         | 0.852*             |
| Absent                                           | 7 (33.3)          | 23 (31.5)          | 5 (26.3)          |                    |
| Comorbidity, n (%)                               |                   |                   |                   |                    |
| Comorbid                                         | 15 (71.4)         | 26 (78.8)          | 10 (52.6)         | 0.139*             |
| Multiple comorbid                                | 6 (28.6)          | 19 (57.6)          | 10 (52.6)         | 0.103*             |
| HT                                               | 6 (28.6)          | 8 (24.2)           | 9 (47.4)          | 0.212*             |
| DM                                               | 4 (19.0)          | 9 (27.3)           | 3 (15.8)          | <0.999**           |
| CAD                                              | 3 (14.3)          | 14 (42.4)          | 4 (21.1)          | 0.058*             |
| COPD                                             | 3 (14.3)          | 8 (24.2)           | 2 (10.5)          | 0.745**            |
| Malignancy                                       | 1 (4.8)           | 2 (6.1)            | 0 (0)             | <0.999**           |
| CF                                               | 2 (9.5)           | 3 (9.1)            | 1 (5.3)           | <0.999**           |
| CRF                                              | 1 (4.8)           | 2 (6.1)            | 1 (5.3)           | <0.999**           |
| Alzheimer                                        | 2 (9.5)           | 0                  | 1 (5.3)           | 0197**             |
| Parkinson                                        | 0                 | 1 (3.0)            | 2 (10.5)          | 0552**             |
| Stroke                                           | 4 (19.0)          | 3 (9.1)            | 2 (10.5)          | 0.269*             |
| Others                                           | 2 (9.5)           | 1 (3.0)            | 0                  | 0.197**             |
| Time to consultation request (IQR), day          |                   |                   |                   |                    |
| <10                                              | 14 (66.7)         | 29 (87.9)          | 12 (80.0)         | 0.168*             |
| ≥10                                              | 7 (33.3)          | 4 (12.1)           | 3 (20.0)          |                    |
| Duration of ICU stay, median (IQR), days         |                   |                   |                   |                    |
| <10                                              | 4 (19.0)          | 12 (36.4)          | 3 (15.8)          | 0.183*             |
| ≥10                                              | 17 (81.0)         | 21 (63.6)          | 16 (84.2)         |                    |
| Mortality                                        | 15 (71.4)         | 11 (33.3)          | 8 (42.1)          | 0.021*             |

*Pearson Chi-square test, **Fisher’s exact test. n: Number of cases, DM: Diabetes mellitus HT: Hypertension, CAD: Coronary artery disease, COPD: Chronic obstructive pulmonary disease, CRF: Chronic renal failure, ICU: Intensive Care Unit, IQR: Interquartile range, CF: Cardiac failure
Pseudomonas species of bacteria are opportunistic pathogens that are abundant in nature. They are responsible for a major proportion of ICU infections. They have the ability to cause infections in brain, lungs, soft tissue, and skin in patients who are admitted to ICU and/or who are immunocompromised. Their antibiotic response is limited owing to their highly resistant nature.\cite{16,17} It has been reported that S. hominis is highly resistant to a variety of antibiotics including methicillin.\cite{18} In our study, the most commonly isolated microorganisms from wound sites were P. aeruginosa and S. hominis. To our opinion, wide-spectrum antibiotics administered to patients admitted to ICU for trauma or postsurgical care practically eliminate many strains causing wound site infection but spare-resistant Pseudomonas and S. hominis. Considering that the culture samples obtained in our study were from nonhealing wounds, isolating these two organisms may be considered normal. Many studies to date have indicated that the prevalence of drug reactions among patients admitted to ICU was between 9.3% and 21.6%, with maculopapular drug rash being the most common type of rash.\cite{4,6,9,12} Although the main medication types causing drug reactions are antibiotics and chemotherapeutics, nonsteroidal anti-inflammatory drugs may also lead to a considerable proportion of drug reactions as reports have indicated.\cite{9} The prevalence of drug reactions in our study was 45.2%, which was greater than what was previously reported. In accordance with the literature, the most common lesion type was maculopapular drug eruption. We believe that our study population was composed of a higher proportion of trauma and surgical patients, and this increased the rate of analgesic and prophylactic antibiotic use and boosted the rate of drug reactions. We also have the opinion that frequent administration of anticonvulsive medications after brain trauma also contributed to that finding. Moreover, it should be noted that the with a rapid evolution of drug reactions, unlike slowly developing infective skin lesions, the clinicians became more likely to consider these lesions abnormal and requested more consultations. Emre et al. reported that the prevalence of dermatoses among ICU patients was 46.6%, with frictional blisters being the most common pathologies.\cite{4} Fischer et al. found a dermatitis prevalence of 49.4%.\cite{12} Immobility, increased skin fragility, and edema as a result of aging, trauma, comorbid conditions, and medications may make frictional blisters more common.\cite{4,19} We demonstrated that dermatoses occur at a rate of 26%, with frictional blisters and allergic contact dermatitis having been the most common types. Many medical kits and materials (antiseptics, plasters, care creams, electrodes, etc.) may give rise to allergic reactions.\cite{4,6,20} Fisher et al. stated that allergic lesions already existed before ICU admission in 3.7% of their patients. Irritating contact dermatitis develops as a result of friction, heat, and excess moisture, and it reportedly leads to infections.\cite{21} Previous studies have shown a link between a variety of dermatoses including alopecia areata and lichen planus and psychological stress.\cite{22,23} We think that a lower prevalence of dermatoses in our study likely developed from a younger study population due to a greater number of trauma patients, and using latest technology and high-quality antiseptic materials. We believe that lichen planus and alopecia areata developed due to the posttraumatic stress disorder and inflammation which were triggered by psychological stress associated with surgical operations. It should also be noted, however, that lichen planus and alopecia areata detected at ICU may have been already present before ICU admission since these lesions often produce localized lesions and cause little or no subjective symptoms.

With aging, skin thickness is reportedly reduced and dermal collagen and elastin fibers decrease in density as a result of flattening of dermal papillae at epidermal-dermal junction.\cite{16-18} Wollina and Nowak reported that dermatological disorders increase with aging and facilitate the emergence of drug reactions and other dermatological disorders.\cite{12} However, they stated that these age-related lesions became more prominent after the age of 60.\cite{17,28} Badia et al. reported that vasoactive drugs increased the clinical intensity of dermatological disorders.\cite{16} We found no relationship between age and prevalence of dermatological disorders. However, the prevalence of dermatoses was higher below the age of 50 and IDLs above 50. We believe that IDLs increased among those aged above 50 years because of a better hemostasis among younger persons, as well as an increased rate of vasopressor support, intense antibiotherapy, analgesic use, and impaired immune function among older patients.

Emre et al. reported that drug reactions were more common among ICU patients; they also reported that dermatoses were more common in women although this difference did not reach statistical significance, and IDLs did not show any sex predilection.\cite{4} It was reported that vanishing protective effects of estrogen after menopause increases the prevalence of dermatoses.\cite{29} Badia et al. denied any association between sex and dermatological disorders.\cite{6} Although our study failed to show any sex-related association, dermatoses were more common in female patients. We believe that there appeared no sex-related differences among lesion frequencies owing to similar proportions of primary disorders requiring ICU admission although the female patients suffered dermatoses more commonly due to the vanishing protective effects of estrogen.

Badia et al. found a similar dermatological lesion prevalence between trauma and nontrauma patients among a broader surgical patient group. Uzunköy reported
that the infection prevalence was as high as 17.8% among trauma patients.\textsuperscript{[10]} We failed to demonstrate any association between trauma status and dermatological lesion prevalence. We have the opinion that the overall infection prevalence was found lower and the groups were insignificantly separated from each other with regard to IDL prevalence because infectious lesions developing at wound site were less commonly consulted with the dermatology department. Some former studies showed that factors such as DM, chronic renal failure, cardiovascular disorders, and immunosuppressive drug use were associated with an increased dermatological disorder prevalence.\textsuperscript{[6,6,7,9]} Fischer et al. reported that immunosuppressive agents increased IDL prevalence while Badia et al. implicated DM and corticosteroid use as IDL etiologies.\textsuperscript{[6,9]} Saçar and Saçar, in their review, stated that dermatoses increase in frequency in some neurological disorders such as parkinsonism and epilepsy due to immobility, neurotransmitter abnormalities, and medications.\textsuperscript{[10]} In our study, the dermatological disorders did not increase in prevalence in patients with a single comorbidity, but they did in those with multiple comorbidities. We established no link between the number of comorbidities and lesion type. We also found a positive association between HT, DM, CAD, chronic obstructive pulmonary disease, cerebrovascular events, and dermatological disorders although the prevalence was similar among the subtypes. We believe that the frequency of dermatological disorders increases depending on the number of comorbidities. We hypothesize that all types of dermatological disorders increase in prevalence particularly in the case of certain comorbidities where vascular pathologies emerge and tissue supply is impaired. We believe that lesions were similar owing to similar admission clinics. No study to date has specifically evaluated a possible association between time to consultation and dermatological lesion type, and we could not demonstrate such an association, either. We believe that this occurred because that dermatological disorders of ICU patients are ignored and consulted later in their course since these patients are already in grave condition from a primary condition.

Former studies have shown that the duration of ICU stay parallels dermatological disorder prevalence, with the deceased patients having more dermatological disorders.\textsuperscript{[6,11,11]} In our study, the prevalence of these diseases was greater in patients admitted for more than 10 days, but no association could be found between duration of stay and lesion subtype. We think that with increased duration of ICU stay, more complex therapies are administered and patients are exposed to more nosocomial infections, leading to a greater rate of dermatological disorders. We also think that medications and disinfectants used against IDLs increased the prevalence of drug reactions and dermatoses at a greater rate and prevented intergroup differences from reaching statistical significance.

Pathologies added on top of primary disorder reportedly prolong duration of ICU stay and increase mortality.\textsuperscript{[2,3,7]} Emre et al. reported that they did not detect any association between duration of hospital stay and dermatological lesion subtype.\textsuperscript{[14]} In line with the literature, we found an increased prevalence of dermatological disorders among deceased patients. We believe that patients who die or stay at ICU for a long time develop more dermatological disorders because they receive more complex therapies, they are exposed to an increased rate of nosocomial infections, and they are increasingly immobile. We also have the opinion that other dermatological pathologies added to preexisting conditions, particularly dermatological infections, also contribute to increased mortality.

**Conclusion**

Our study revealed that many factors including age, multiple comorbid conditions, duration of ICU stay, time to consultation, and mortality contribute to the development of dermatological disorders. We believe that dermatology clinics will not only improve quality of patient care but also shorten duration of ICU stay and reduce mortality by intervening dermatological disorders at ICUs.

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**Conflicts of interest**

There are no conflicts of interest.

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**What is new?**

- Our study revealed that the most common infectious dermatological disorder was wound infection, the most common drug reaction was maculopapular drug eruption, and the most common dermatosis was frictional dermatosis.
- We demonstrated that the presence of multiple comorbidities, HT, DM, CAD, Parkinson, and stroke were associated with increased prevalence of dermatological disorders. Our study revealed that many factors including age, multiple comorbid conditions, duration of ICU stay, time to consultation, and mortality contribute to the development of dermatological disorders.

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