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Characterization, Treatment Pattern And Use Of Antibiotics In Burn Patients Of Quetta Pakistan

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Abstract

Background: Burn injuries represent a significant cause of morbidity and mortality, particularly in low-resource settings where treatment is often delayed, injury patterns are severe and empirical antimicrobial usage may be detrimental to outcomes. This study evaluated the demographic, clinical, drug-related, and outcome characteristics of burn patients who were admitted to tertiary care hospitals in Quetta.

Methods: A retrospective hospital-based descriptive study, using patient record review was conducted at the burn units of Sandeman Provincial Hospital Quetta and Bolan Medical Complex Hospital Quetta. This was a retrospective study using a structured proforma to review the medical records of patients admitted to the burns unit in 2022, 2023, and 2024. Demographics, burn characteristics, antibiotic prescribing, culture sensitivity, treatment outcomes and mortality associated factors were extracted and SPSS was used for analysis. Descriptive statistics were calculated as frequencies, with chi-square test applied for associations between clinical variables and mortality ($p<0.05$).

Results: We included 557 burn patient records. The majority of patients were aged 3–6 years (22.8%), male (57.6%) and were from Quetta (59.2%). Flame burns (47.4%) and scald burns (42.2%) were the two most common causes. Prevalence of second-degree burns (63.4%) and burns involving 11–20% total body surface area (41.8%) were most evident. Ceftriaxone represented the most frequently prescribed antibiotic (61.8%) and the intravenous route (98.9% cases). Complete isolated organism culture

sensitivity testing (for all isolated organisms) performed in only in 4.7% of patients; 28.5% patients needed antibiotic change after culture results. Sixty-five per cent of patients were discharged alive (65.5%), while 14.5% died. Mortality was significantly associated with cause of burn (p=0.040), percentage total burn surface area (TBSA) (p<0.001), burn degree (p<0.001) and hospital stay (p=0.007).
Conclusion: Mortality was most significantly predicted by burn severity. Better burn prevention, early severity directed management, and more robust microbiological support is required to enhance burn care metrics in Quetta.

Introduction

Approximately 180,000 people die annually due to heat, radiation, electricity, friction, and chemical burn injuries. Regrettably, most of these deaths are witnessed in the low and middle-income, which is still developing nations (Chaudhary et al., 2019). Burn injuries cause the greatest disability-adjusted life years (DALYs) in these countries. The two main demographic groups that become victims to such incidence are children and women because they are disproportionately affected (Avni, Levcovich, Ad-El, Leibovici, & Paul, 2010). Considerably, in several countries, including Bangladesh, Colombia, Egypt, and Pakistan, a high proportion of children exposed to burn injuries have long-term effects: 17 percent of them have temporary disabilities, and 18 percent of them have permanent disabilities (Chaudhary et al., 2019). Non-fetal burn injuries lead to significant health issues, including prolong hospital stays, disfigurement, disability, and social stigma (Chaudhary et al., 2019). In 2020, about 3.2 million people died from household air pollution, including more than 237,000 children under 5. This pollution comes from cooking with open fires or inefficient stoves that use kerosene, biomass, or coal (Apte & Salvi, 2016).

Burn wounds are prone to infection from bacteria that are already present on the body or introduced from the environment. Infection in burn patient can lead to serious complication and death, making infection control a critical priority (Cui et al., 2017). Burn patients are more likely to get infection because their immune system is weakened, which can lead to life-threatening sepsis. Furthermore, infection-related complication is accountable for 50-75% of fatalities among burn patients following initial treatment (Cui et al., 2017). Several factors are more likely to rise the risk of Contamination in burn patients, including exposure of the body surface, compromised immune system, and extended hospital stay (Chaudhary et al., 2019).

Factor that determines invasive infection in burn patients are, patient-related factor, age, total body surface area (TBSA), deepness of the burn injury, microorganism related issues, type of bacteria, number of bacteria, and characteristic of bacteria (Chaudhary et al., 2019). Immediately after a burn injury, the wound is sterile, but it quickly becomes infected with bacteria from healthcare workers hands, contaminated objects, and the patient's own gastrointestinal track (Chaudhary et al., 2019). Government hospital often experience delays in receiving culture reports due to a high patient load, which can take a few days (Fadeyibi et al., 2015). During the delay, doctor can prescribe empirical antibiotic therapy to control infection, but misuse and overuse of antibiotic are increasing resistance (Chaudhary et al., 2019). The study aims to identify the most prevalent bacteria responsible for burn wound infections and determine the most effective antibiotics for treatment (Chaudhary et al., 2019).

The sufficient literature indicates, microbiological analysis and antibacterial resistance pattern in burn sepsis but the principal intention of this study is to observe the characteristic, treatment pattern and use of Antibiotic in Burn Patients at Tertiary Health Care Hospital at Quetta, Pakistan (Kumar, Kashyap, Mishra, Agarwal, & Kaur, 2011).

Study Objective
The present study intends to have the following objectives:

Primary objective
Characterization, Treatment Pattern and Use of Antibiotic in Burn Patient of Tertiary Health Care Hospital Quetta, Pakistan.

Secondary Objectives
To identify the characteristic of burns
To identify treatment pattern in burn patient
To identify antibiotic use in burn patient
To identify culture sensitivity test performed in burn patient
To identify the resistance and sensitivity of antibiotic use in burn patient

METHODOLOGY

Study Design
The present study was a retrospective, hospital-based descriptive study which was done using review of records of patients through a structured data collection proforma. The nationality of the burn victims enrolled in the study defined the patient population treated for burn injuries, throughout the study period, in the study matter area under consideration, tertiary care hospitals of Quetta.

Study Setting
This study was carried out in the burn units of two tertiary healthcare hospitals in Quetta city [Sandeman Provincial Hospital Quetta (SPH) and Bolan Medical Complex Hospital Quetta (BMCH)]. The hospitals were chosen for having the largest Public Sector Tertiary Care facilities of Quetta and due to establishment of specialized burn management services, receiving a high load of Burn patients from Quetta in particular and other regions of surrounding areas.

Study duration and study population
The population consisted of burn patients admitted to the burn units of SPH and BMCH for the years 2022, 2023 and 2024 All eligible patients admitted during this time were reviewed in a retrospective fashion.

Sampling
Study Population
The study population consists of all patients with burn injuries who were diagnosed and admitted to the selected tertiary care hospitals during the study duration months.

Sample Size
Sampling method: Census sampling. The study included all burn patient files meeting the eligibility criteria from the years 2022, 2023, and 2024 for which records exist. The study reviewed 557 patient records.

Sampling Technique
We performed a non-probability consecutive sampling, where all available and eligible patient records during this period were included. Structured proforma created for the study was used as data extraction tool.

Eligibility Criteria

Inclusion Criteria
Patient inclusioncharacteristics were as follows:
Patients with any type of burn injury on admission.
Availability and completeness of medical record and prescription chart data for extraction constituted key inclusion criteria for patients.

Exclusion Criteria
The study excluded patients experiencing:
Burn patients with incomplete records.
Patients without prescription charts or relevant clinical data.

Study Instrument
Data were collected using a structured proforma especially designed for this study. The proforma was utilized to obtain demographic, clinical, prescription, microbiological, and outcome-related information from patient medical records. Variables collected were age, sex, place of residence, cause of burn, total body surface area burned, degree of burn, culture sensitivity testing, sensitivity to antibiotics, antibiotics used, route of administration, treatment changes, complications, length of hospital stay, and treatment outcomes.

Data Collection Procedure
Staff from the local hospital reviewed patient records retrospectively with full approval from the relevant hospital authorities. Details were gathered from medical records, prescription records and existing culture and sensitivity reports and recorded into the study proforma. Great care was taken to ensure that nothing was extracted that could compromise either completeness or validity.

Ethical Considerations
Approval for conducting this study was obtained from the Ethics Committee, Department of Pharmacy Practice, University of Balochistan, Quetta Pakistan, and from concerned administrative authorities of Bolan Medical Complex Hospital Quetta and Sandeman Provincial Hospital Quetta. No identifiable information was collected and patient confidentiality was maintained throughout the study as this was a retrospective study based on record review. No personal identifiers were collected, and all information collected was used only for research purposes.

Statistical Analysis
Statistical Package for the Social Sciences (SPSS) was used to enter and analyze the collected data. Summary demographic, clinical, prescription, and outcome characteristics were summarized using descriptive statistics (frequencies and percentages as appropriate). The associations between clinical characteristics and mortality were assessed by inferential statistics (the chi-square test). Statistical significance was defined as a p-value of less than 0.05.

RESULTS

Demographic Characteristics of Study Respondents
Demographic characteristics of the burn patients are shown in Table 3.1. A total of 127 (22.8%) patients were aged between 3–6 years which was the highest proportion of patients. A total of 557 patients (57.6%) were males and 236 (42.4%) were females. Patients were most frequently located in Quetta (330, 59.2%), whereas patients from out of Quetta made up 227 (40.8%) of the total sample.

Table 3.1 Demographic Characteristics of Study Respondents (n = 557)

Characteristics	Frequency	Percentage (%)
Age group		
Less than 1 year	58	10.4
1–2 years	72	12.9
3–6 years	127	22.8
7–12 years	48	8.6
13–19 years	64	11.5
20–29 years	85	15.3
30–39 years	43	7.7
40–49 years	28	5.0
50 years and above	32	5.7
Gender		
Male	321	57.6
Female	236	42.4
Locality		
Quetta	330	59.2
Out of Quetta city	227	40.8

Clinical Characteristics of Study Respondents

The clinical characteristics of the burn patients are shown in Table 4.2. The most common cause of burn was flame burn 264 (47.4%), followed by scald burns 235 (42.2%). Burn characteristics 18 In terms of burn extent, the majority of the cohort had 11–20% TBSA burned, with total 233 (41.8%) cases. In terms of burn depth, the most frequent degree was second-degree burn; with 353 (63.4%) patients. In 177 (31.8%) patients, an antibiotic sensitivity profile was available and 26 (4.7%) patients underwent culture sensitivity testing.

Table 3.2 Clinical Characteristics of Study Respondents (n = 557)

Characteristics	Frequency	Percentage (%)
Cause of burn	264	47.4
Flame	235	42.2
Scald	53	9.5
Electrical	5	0.9
Chemical		
Total body surface area burned	79	14.2
1–10%	233	41.8
11–20%	126	22.6
21–30%	49	8.8
31–40%	70	12.6
More than 40%		

Degree of burn First degree Second degree Third degree	104 353 100	18.7 63.4 18.0
Culture sensitivity performed Yes No	26 531	4.7 95.3
Antibiotic sensitivity available Yes No	177 380	31.8 68.2

Prescription-Related Characteristics

Table 3.3 presents findings on prescription-related outcomes. Most patients received one antibiotic (228; 40.9%) and the second-most common was two antibiotics (188; 33.8%). Eighty percent of patients received the following antibiotics: ceftriaxone (344; 61.8%), vancomycin (130; 23.3%), and co-amoxiclav (116; 20.8%). The route of administration was intravenous in most 551 (98·9%) cases.

Table 3.3 Prescription-Related Characteristics (n = 557)

Variable	**Frequency**	**Percentage (%)**
Total number of antibiotics prescribed		
1	228	40.9
2	188	33.8
3	61	11.0
4	70	12.6
More than 4	10	1.8
Antibiotics prescribed*		
eftriaxone	344	61.8
Vancomycin	130	23.3
Co-amoxiclav	116	20.8
Amikacin	88	15.8
Meropenem	63	11.3
Ciprofloxacin	58	10.4
Piperacillin/Tazobactam	49	8.8
Ceftazidime	48	8.6
Linezolid	45	8.1
Cefepime	37	6.6
Metronidazole	37	6.6
Cephradine	32	5.7
Imipenem	16	2.9
Fosfomycin	16	2.9
Moxifloxacin	10	1.8
Cefixime	8	1.4
Levofloxacin	6	1.1
Azithromycin	6	1.1
Cefaclor	1	0.2
Ampicillin	1	0.2
Route of administration		

Intravenous Oral	551 6	98.9 1.1

* Multiple response category; percentages do not total 100%.

Resistance Level of Participants

As per the findings of culture sensitivity (resistance or ineffectiveness) of the initial antibiotic regimens, 159 (28.5%) patients required a change in antibiotics therapy as shown in Table 3.4. The remaining 558 (100%) culture-tested patients, 398 (71.5%) had no antibiotic change.

Table 3.4 Resistance Level of Participants (n = 557)

Level of Resistance	Frequency	Percentage (%)
Antibiotic changed after culture sensitivity: Yes	159	28.5
Antibiotic changed after culture sensitivity: No	398	71.5

Outcomes of Treatment

Results from the treatment are shown in Table 4.5. Severe, major complications were rare with 473 (84.9%) classified as other/no complication. In terms of final status, 365 (65.5 %) patients were discharged alive, 81 (14.5 %) expired, and 111 (19.9 %) left against medical advice (LAMA). 439 (78.8%) patients had a short hospital stay 15 days or less

Table 3.5 Outcomes of Treatment (n = 557)

Outcome	Frequency	Percentage (%)
Complications observed		
Sepsis Wound infection Delayed healing Organ failure No complication/others	54 17 1 12 473	9.7 3.1 0.2 2.2 84.9
Patient status		
Alive Expired LAMA	365 81 111	65.5 14.5 19.9
Hospital stay		
Less than 15 days 1 month More than 1 month	439 100 18	78.8 18.0 3.2

Association Between Clinical Characteristics and Mortality

Relationship of clinical characteristics to mortality There was a marginal significance between cause of burn and mortality (p = 0.040), as mortality was higher among flame burns. Mortality was significantly associated with total body surface area (TBSA) (p 40% of body surface area. Degree of burn, also, had a highly significant

relationship with mortality p < 0.001 and third-degree burn was associated with highest mortality. Conversely, there was no significant association observed between mortality and antibiotic sensitivity (p = 0.416), or change in antibiotic therapy (p = 0.162) (figure 3). Length of stay was also significantly associated with mortality (p = 0.007), indicating that patients who expired tend to have shorter stay, possibly reflecting rapid worsening in the context of severe burn injury.

Table 3.6 Association Between Clinical Characteristics and Mortality

Variable	Category	Alive n (%)	Expired n (%)	χ^2	p-value
Cause of burn	Flame	157 (43.0)	41 (50.6)	8.286	0.040
	Scald	158 (43.3)	38 (46.9)		
	Electrical	45 (12.3)	2 (2.5)		
	Chemical	5 (1.4)	0 (0.0)		
TBSA (%)	1–10%	65 (17.8)	2 (2.5)	117.429	<0.001
	11–20%	174 (47.7)	10 (12.3)		
	21–30%	81 (22.2)	23 (28.4)		
	31–40%	24 (6.6)	8 (9.9)		
	>40%	21 (5.8)	38 (46.9)		
Degree of burn	First degree	80 (21.9)	1 (1.2)	214.998	<0.001
	Second degree	264 (72.3)	19 (23.5)		
	Third degree	21 (5.8)	61 (75.3)		
Antibiotic sensitivity	Yes	130 (35.6)	25 (30.9)	0.660	0.416
	No	235 (64.4)	56 (69.1)		
Antibiotic changed	Yes	124 (34.0)	21 (25.9)	1.956	0.162
	No	241 (66.0)	60 (74.1)		
Hospital stay	<15 days	264 (72.3)	72 (88.9)	9.831	0.007
	1 month	86 (23.6)	8 (9.9)		
	>1 month	15 (4.1)	1 (1.2)		

Discussion

This current retrospective hospital based study was conducted to assesses the demographic characteristics, patient profile, clinical features of disease, antibiotic prescribing pattern, resistance pattern and treatment outcome in burn patients admitted in the burn units of Tertiary care hospitals Quetta. The results will be important for understanding the burden of burn injury and treatment in this environment with respect to patient age, burn mechanism, injury severity, antimicrobial use and mortality.

In the current study, the greatest number of burn patients had an age of 3–6 years, among all age groups followed by patients 20–29 years old. This trend adds credibility to the idea that burn injuries commonly involved both young children and young adults of working age (Pumariega, Jo, Beck, & Rahmani, 2022). The high proportion in children could be due to low hazard proclivity, poor supervision and unintentional exposure to hot fluids, fire or unsafe cooking conditions (Smith et al., 2022). On the other hand, burns in this age group are possibly representative of workplace, domestic injuries, or unsafe burning of flammable materials. The majority of patients were male, with a male-to-female ratio often exceeding 2:1. This gender excess possibly relates to exposure by travel, profession, or higher incidence of outdoor/high-risk activities (Bryski, Azad, Etchill, & Rhee, 2023). The bulk of cases were from Quetta, which is anticipated as the selected hospitals are the largest survey

tertiary care referral centers in the city and receive the majority of serious burn cases from urban areas and nearby regions.

With respect to clinical characteristics, flame burns were the most frequently cause of injury, while scald burns ranked second. It also shows that the major causes of burn injuries in this population are open flame, domestic stoves, gas leakage and other fire-related accidents (Asefa, Abebe, & Negussie, 2024). The large percentage of scald burns also demonstrates that children are at risk for hot liquids and household kitchen accidents. Cases involving electrical and chemical burns were far less common, indicating that these mechanisms accounted for a smaller proportion of the total burn burden. The most common burn extent was 11–20% total body surface area burned, and second-degree burns were the most common burn depth. It also indicates that the vast majority of patients had moderate burn injuries, not very minor ones or massively major ones (van Balen et al., 2024). Nonetheless, still, a significant cohort have burns greater than 40% TBSA suggesting a substantial number of your cohort that we would define as severe and potentially life-threatening.

We must not overlook the distribution of burn depth. The vast majority of cases were second-degree burns (approximately two-thirds of all cases), followed by first-degree burns and third-degree burns. This is clinically significant since second-degree burns typically need inpatient hospitalization, wound care, pain control, fluid resuscitation, and monitoring for infection. As shown in the mortality analysis, bears had much worse outcomes with third-degree burns (although they were fewer in number) (Erol, Gedik, Aydoğan, Arslan, & Haberal, 2022). This demonstrates that burn depth is one of the most important prognostic factors as deeper burns carry higher risks of shock, infection, organ dysfunction, length of stay and mortality (Namazi, Fatemi, Pahlevanpour, Abbastabar, & Gharahgheshlagh, 2022).

Of note, an important finding in the current study was the limited utilization of sensitivity testing, whereby cultures were performed on a minority of patients only. Similarly, antibiotic sensitivity profiles were available for less than a third of the study cohort. This suggests that the empirical initiation of antibiotic treatment in the majority of cases may have occurred rather than being guided by microbiological evidence (Huang, Huang, Yan, Sun, & Li, 2022). In burn care, the empirical use of antibiotics is widespread, especially in resource-poor environment or acute settings; however lack of proper microbiological support may lead to inappropriate antibiotic selection, unnecessary broad-spectrum use and microbial resistance. The relatively low culture testing frequency in this cohort may reflect poor diagnostic resources, late collection of specimens, resource limitation, or reliance on clinical judgement (Mekonnen et al., 2023).

Most patients received either one or two antibiotics, while some received three or more (prescription related findings). This indicates that combination therapy was used in a large number of cases, possibly following severe burns, suspected infection, or fears of resistant organisms (Aghlmandi et al., 2023). The most frequently used antibiotics were ceftriaxone, vancomycin, co-amoxiclav and amikacin. The explanation for the common use of ceftriaxone may be its broad-spectrum coverage, availability, and routine use in hospitalized patients (Sadiq, Umair, & Saman, 2026). If vancomycin is utilized, this likely indicates suspicion for gram-positive or resistant infection, typically in the case of severe burn wounds. Some patients were also being treated for more complex or higher risk infections, as evidenced by the use of agents such as meropenem, piperacillin/tazobactam, and linezolid in some of these individuals. It was not surprising that the intravenous route was so widely used in this cohort (almost 82%). Burn patients often warrant immediate systemic therapy, may at times be severely ill and be too unstable for oral therapy in the acute phase (Altaf et al., 2023).

In the study, nearly 28.5% of patients needed to be switched to a new antibiotic therapy following culture sensitivity, which indicates resistance (or a lack of proper

response) to the initially given empirical regimen. This correlation is clinically important due to high non-concordance between the initial treatment in the real world and the later microbiological findings (Marino et al., 2025). Burn patients who pose a risk of colonisation or infection by resistant organisms are those with a disrupted skin barrier, prolonged hospitalisation, intensive invasive procedures, and prior antibiotic exposure. Even though culture-directed antibiotic alteration was not universal, the percentage of altered stewardship still suggests that active antimicrobial resistance or treatment failure played an important role in this setting (Corona et al., 2023).

In terms of treatment outcomes, the most common outcome was no major complication (90 percent), and 2-thirds were discharged alive. This implies that despite the toll of burn injury, many patients improved with treatment and survived (Shewaye et al., 2024). The mortality rate was still significant, and almost one in five patients were LAMA. The LAMA proportion matters and can indicate financial problems, misunderstanding of disease severity, dissatisfaction of hospital care, social situation or preference to be transferred to another facility or home care. A high LAMA rate is also clinically and public health concern as it may compromise long-term prognosis and continuity of care (Belayneh et al., 2025).

Hospital length of stay revealed that most were discharged earlier than 15 days, and some did not leave a month or more. It is possible that shorter hospital stay in the majority reflects mild to moderate INJURIES, premature discharge after Initial stabilization, or in some cases such rapid deterioration that they die before being admitted to long-term care (Han et al., 2022). This interpretation is supported by the association analysis, in that shorter length of stay was significantly associated with mortality. This could mean that patients who died shortly after admission with severely burned wounds probably died before comprehensive management could be accomplished (Lingsma et al., 2018).

For instance, factors associated with mortality comprise one of the most profound findings of the study. Mortality was strongly associated with cause of burn, and has been noted to have a relatively higher fatal burden among people with flame burns in comparison to other types of burns (Zeaiter et al., 2025). It is possible because flame burns are more likely to be deeper, larger, and to have associated inhalational injury than scald burns. Total body surface area burned was an excellent predictor of mortality, with death rising dramatically for burns larger than 405% body surface area. This finding aligns well with the clinical canon in which larger burn size is associated with greater fluid loss, systemic inflammatory response, risk of infection, multi-organ dysfunction, and ultimately, death (Ghorbani et al., 2026).

Likewise, mortality had a very significant association with degree of burn. Third-degree burns accounted for the most deaths—57 percent, compared to under one in nine deaths attributable to first- and second-degree burns. This is to be expected given that third-degree burns include full-thickness skin destruction, more severe soft tissue damage, greater risk of infection, and more intensive management strategies (Ulhaq, Alkhadhrawi, Qasim, Omair, & Alfawzan, 2024). These findings underline burn severity — in both depth and extent — to be the primary predictor of survival in hospitalized burn patients (Ismail, Meseret, & Alemayehu, 2023).

In contrast, no significant associations between mortality and change in antibiotic therapy once culture testing was complete was shown along with antibiotic sensitivity status. This could imply that microbiological determinants were not the main causes of death in this cohort or that mortality was more influenced by the severity of burn injury itself than by subsequent adjustments of antibiotics (Kilinc, 2025). Another possibility is that the limited number of patients having culture testing limited the capacity to detect a genuine association. So, the lack of statistical significance must not be taken as a message that either antibiotic stewardship or microbiological surveillance is not important. Instead, it suggests that burn severity, in this instance,

was a better predictor of mortality than microbiological factors (Hariyanto, Yahya, Cucunawangsih, & Pertiwi, 2022).

Taken all together, the current study has several key implications Burns are still a significant clinical challenge in Quetta, especially in the pediatric and male population. Second, flame and scald burns are the main injury mechanisms, which are associated with preventable household and environmental risk factors. Finally, TBSA and burn degree remain powerful mortality indicators in early risk stratification, and as such, should remain front and center among early markers for prognostic tools. Fourth, extensive IV antibiotic use without culture-based management and microbiological testing suggests reinforcing solid culture-based management and antibiotic stewardship practices in burn units. Lastly, despite the survival of most patients, mortality and loss to follow-up rates suggest there remain important clinical and system issues that limit burn care.

To conclude, the interpretation of findings indicates that outcomes of burn injury cohort were mainly determined by burn injury severity and type, and that several antibiotic variables had lesser importance for predicting mortality. The significance of these findings focuses on enhanced prevention strategies, timely referral of cases, burn severity assessment, microbiological support, and antimicrobial treatment protocols tailored to patients in tertiary care burn centres.

Conclusion

In conclusion, this retrospective hospital based study, determined burn injuries to be a significant clinical burden to the tertiary care hospitals in Quetta which was more prevalent among young children, especially in the age group of 3–6 years with male patients. Flame and scald burns were the commonest manner of onset, second-degree burns and burns covering 11–20% total body surface area were the commonest clinical presentations. Third-degree and major burns were found to have significantly worse outcomes and mortality, with burn severity being the strongest predictor of survival. Intravenous antibiotics were the most prescribed ones, with ceftriaxone being the most prevalent, culture sensitivity testing had low availability suggesting predominant empirical treatment. Despite a high survival and discharge alive rates mortality and leaving against medical advice remained major issues for the patients.

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