

TOXIC EPIDERMAL NECROLYSIS- FACTORS AFFECTING MORTALITY IN 03 CASES ADMITTED TO TEACHING HOSPITAL BADULLA

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INTRODUCTION

Toxic epidermal necrolysis (TEN) is a severe, life-threatening dermatologic condition marked by widespread detachment of the epidermis and mucous membranes, leading to extensive skin loss. It can result in complications such as sepsis and multi-organ failure, which can be fatal. Described by Alan Lyell in 1956 as resembling a scalding injury, TEN typically arises as an immune-mediated adverse reaction to certain medications, although infections, malignancies, and vaccines have also been implicated. It shares a pathological spectrum with Stevens-Johnson Syndrome (SJS), with the distinction primarily based on the extent of skin involvement. TEN involves more than 30% of the body surface area, while SJS is characterized by less than 10% skin detachment. This extensive skin loss can lead to critical complications, including fluid loss and infection, necessitating prompt medical intervention.

Toxic Epidermal Necrolysis (TEN) and Stevens-Johnson Syndrome (SJS) are rare but severe dermatologic emergencies with varying incidence rates across different regions and populations. In the United States, the annual incidence of TEN is approximately 1.9 cases per million adults, while SJS occurs more frequently, affecting around 9.3 per million individuals each year (Roujeau et al., 1993). Globally, the prevalence of these conditions exhibits significant regional differences. A German study conducted in 1996 estimated the yearly prevalence of both SJS and TEN to be around 1.9 cases per million population (Fuchs et al., 1996). In the United Kingdom, data collected between 1995 and 2013 indicate a higher reported incidence of up to 5.76 cases per million inhabitants annually for both SJS and TEN combined (Smith et al., 2015). Conversely, in Japan, TEN is less common, affecting approximately one adult per million each year, which may reflect genetic or environmental factors unique to the region (Yamamoto et al., 2000).

Epidemiological studies consistently show that Asian and Black populations are more susceptible to developing TEN and SJS compared to their White counterparts. Some research

indicates that individuals of Asian and Black descent have up to a two-fold increased risk of these conditions (Chan et al., 2012). Additionally, there is a clear female predominance in TEN cases, with a female-to-male ratio of approximately 1.5 to 1, suggesting possible hormonal or genetic influences (Arnaud et al., 2004). The age distribution of TEN primarily affects adults, especially those in their fifth to seventh decades of life, although cases can occur in any age group (Albert et al., 2010). In adults, the etiology of TEN is predominantly drug-induced, with medications such as antibiotics, anticonvulsants, and nonsteroidal anti-inflammatory drugs being common triggers. In contrast, infections are the leading cause of TEN in pediatric populations, highlighting the role of different pathogenic mechanisms across age groups (Kawasaki et al., 2009).

Recent advancements in genetic research have highlighted the association between specific Human Leukocyte Antigen (HLA) alleles and the susceptibility to TEN, particularly in Southeast Asian populations. For instance, the presence of the HLA-B*1502 allele has been strongly linked to an increased risk of carbamazepine-induced TEN in individuals of Han Chinese descent (International Severe Adverse Reactions Consortium, 2004). This genetic predisposition underscores the importance of personalized medicine approaches, such as genetic screening, to prevent the onset of TEN in high-risk populations before initiating treatment with known offending drugs (Chung et al., 2004).

METHODOLOGY

In this study, an analysis was conducted on three patients who were affected by Toxic Epidermal Necrolysis (TEN). The study examined the process of hospital admission, the accuracy of diagnosis, and the capability of promptly referring patients to specialized treatment units. The primary focus was on evaluating the timeliness and effectiveness of these interventions in managing the condition.

RESULTS

In this study, three patients diagnosed with Toxic Epidermal Necrolysis (TEN) were examined, all of whom unfortunately succumbed to the condition. Each case revealed distinct deficiencies within the healthcare services that may have contributed to these unfavorable outcomes. In one case, the delay in accurate diagnosis and initiation of appropriate treatment played a significant role. Although the patient was promptly admitted to a healthcare facility, the failure to recognize the severity of the condition early on and the lack of a timely referral to a specialized care unit contributed to the progression of TEN. This highlights the importance of clinical vigilance and swift diagnostic processes in managing life-threatening conditions like TEN.

In another case, the inadequacy in patient monitoring and follow-up care was evident. Although the patient had access to healthcare services, gaps in the continuity of care, including the lack of timely assessments and the absence of coordinated specialist consultations, were identified. These shortcomings suggest that, despite the availability of resources, the patient’s care was compromised by ineffective communication and coordination among healthcare providers.

The third case revealed deficiencies in clinical decision-making and resource allocation. The patient’s condition may have been exacerbated by the delayed initiation of advanced therapies and the absence of specialized interventions. Furthermore, the lack of expertise in handling complex cases such as TEN contributed to the patient’s poor prognosis. This case underscores the critical need for well-established protocols and the availability of specialized care units to manage severe dermatological emergencies effectively.

Collectively, these cases illustrate the multifaceted challenges in managing Toxic Epidermal Necrolysis and underscore the need for improvements in diagnostic accuracy, interdisciplinary collaboration, and timely access to specialized care.

Table 1 : Summary of patient with Toxic epidermal Necrolysis

Age & Gender	Initial Illness	Treatment given	Remarks
35 yrs, Female	Respiratory Tract Infection	Co Amoxiclav	Late presentation with necrolysis, Death due to multiorgan failure
40 Years, female	Fever with Sepsis	Meropenem	Reactions developed first day of antibiotics, No dermatological collaboration for management.
50 years, Male	Explosive Injury(Accidental)	Analgesics Antibiotics	Delay in Diagnosis of Toxic Epidermal Necrolysis

In the first case, the patient with a respiratory tract infection was prescribed Co-Amoxiclav empirically, without prior antibiotic susceptibility testing or education regarding potential side effects. Despite the availability, affordability, and accessibility of healthcare services, the critical issue was the lack of patient awareness. The patient continued the medication without understanding the severity of the adverse events developing in her body, including necrolysis. This reflects a communication gap between healthcare providers and patients, where proper education on drug-related risks was not provided. Had the patient been made

aware of these risks, early intervention could have been initiated, potentially preventing further complications.

The second case involved a patient with fever and sepsis who was administered meropenem without conducting an Antibiotic Sensitivity Test (ABST). Although necrolysis, a serious adverse drug reaction, occurred, it was not recognized as a critical issue. Consequently, there was no timely dermatological referral, and the adverse effects were not addressed in the early stages. Despite the patient being hospitalized throughout the process, a breakdown in communication and a failure to properly monitor the side effects of the drug led to delayed recognition of the condition. The lack of early dermatological consultation highlights the importance of comprehensive multidisciplinary care, especially in cases where severe cutaneous reactions may occur.

In the third case, a patient with an explosive injury was misdiagnosed, which delayed appropriate treatment. The treating physician, due to the patient's dark skin, failed to recognize a significant morbidity during clinical examinations. This indicates a deficiency in clinical skills and a potential bias in assessing symptoms in patients with darker skin tones. The physician did not identify the adverse drug reaction, and as a result, no dermatology referral was made. This case underscores the need for improved clinical training to ensure that healthcare providers are able to detect subtle signs of adverse events, regardless of a patient's skin color. The oversight in identifying the dermatological condition led to a delay in appropriate management, emphasizing the importance of thorough and unbiased clinical assessments in all patients.

DISCUSSION

Toxic Epidermal Necrolysis (TEN) is a condition that, with early diagnosis and timely medical intervention, can be treated and its associated morbidity potentially prevented. Early recognition is crucial, and having a fundamental understanding of the condition is essential for both healthcare providers and patients. Although the incidence of TEN is rare, this underscores the importance of patient education when prescribing medications. Patients should be properly informed of potential risks, including severe adverse reactions, such as TEN, to ensure they are equipped to seek timely medical attention if symptoms arise.

The occurrence of TEN is often unpredictable, but this does not diminish the responsibility of healthcare providers to educate patients about possible side effects of prescribed drugs. Failing to do so may delay the identification of life-threatening conditions, such as TEN, which can rapidly progress if not managed promptly. It is also important to recognize that other factors may be at play when a patient seeks treatment in a healthcare facility, including underlying conditions or concurrent therapies, which may complicate the diagnosis and management of TEN.

Despite its rarity, the mortality rate associated with TEN remains high, often due to delays in diagnosis, inadequate patient awareness, or mismanagement of the condition. This highlights the critical need for healthcare systems to adopt proactive measures in educating both clinicians and patients about TEN and its early warning signs. By fostering greater awareness, patients are likely to alter their health-seeking behavior, leading to quicker decision-making and more prompt access to care. In turn, this can significantly improve clinical outcomes and reduce the high mortality trend associated with TEN. The key challenge lies in bridging the gap between rare yet severe conditions and the everyday clinical practices that prevent them from being overlooked.

The probability of developing Toxic Epidermal Necrolysis (TEN) cannot be overlooked when treating patients, particularly when prescribing medications known to trigger adverse reactions. It is essential for clinicians to inform patients about potential adverse events associated with their treatment. This not only ensures patient safety but also reinforces the ethical obligation to obtain informed consent, where patients are made fully aware of the risks and benefits of their treatment options. Ethical considerations, such as obtaining informed consent, play a critical role in patient management. However, the responsibility for accurate diagnosis and timely intervention lies primarily with the clinician. The ability to identify early warning signs of complications, such as TEN, and to make informed diagnostic decisions are key competencies that healthcare providers must possess. By remaining vigilant to potential complications during treatment, clinicians can not only mitigate risks but also improve patient outcomes.

The clinician's role goes beyond simply treating a condition—it encompasses anticipating possible adverse reactions and being prepared to manage them effectively. This vigilance is particularly crucial in the case of rare but severe conditions like TEN, where early recognition and intervention can mean the difference between life and death. Therefore, while patients should be educated about potential risks, it is ultimately the clinician's responsibility to balance the need for effective treatment with the constant awareness of possible complications, ensuring patient safety through proactive care. On the other hand, the importance of combined therapy becomes evident in this context. Whenever possible, patients should receive interventions from multiple specialists, as multidisciplinary collaboration can significantly enhance patient outcomes. In managing a patient with Toxic Epidermal Necrolysis (TEN), close observation is critical, as is the involvement of various specialists during the onset of complications. The review of TEN cases clearly highlights the value of such multiple collaborations in ensuring comprehensive care. Additionally, when administering antibiotics, it is recommended to perform an Antibiotic Sensitivity Test (ABST) whenever feasible before initiating treatment. This approach allows for more targeted therapy and minimizes the risk of adverse events. By selecting antibiotics based on ABST results, clinicians can make more informed decisions, especially in the context of

severe adverse reactions, such as TEN. The necessity of collaboration among specialists, including dermatologists, infectious disease experts, and critical care physicians, cannot be overstated in managing complex cases like TEN. Such an approach not only ensures that all aspects of the patient's condition are addressed but also improves the accuracy of diagnosis and the appropriateness of treatment. Furthermore, delaying antibiotic therapy until ABST results are available ensures that patients receive the most effective treatment with minimal risk of adverse reactions, thereby reducing the likelihood of complications and facilitating timely decision-making in cases where adverse events do occur. The integration of multiple disciplines and the prioritization of evidence-based antibiotic administration, such as through ABST, are essential strategies in improving patient outcomes in TEN cases. These approaches ensure that adverse events are managed more effectively and that patient care is both proactive and precise.

The cases analyzed in this study clearly demonstrate the level of attention and openness required when treating patients and assessing their clinical conditions. It highlights the need for meticulous clinical evaluation and vigilance in managing patient care. While healthcare administrators are responsible for establishing the availability of healthcare services, issues regarding accessibility and affordability persist within Sri Lanka's healthcare delivery system. These deficiencies can significantly impact patient outcomes, particularly in the management of severe conditions such as Toxic Epidermal Necrolysis (TEN). It is evident that addressing these gaps requires more than just the availability of services. Accessibility—both in terms of geographical reach and financial affordability—plays a critical role in ensuring that patients receive timely and appropriate care. The shortcomings in these areas suggest a need for healthcare policymakers to focus on structural improvements, particularly in rural and underprivileged regions where access to specialized care may be limited.

Moreover, regular clinical training, timely clinical audits, and periodic reviews of healthcare practices are crucial for maintaining high standards of care. Continuous professional development and up-to-date training for healthcare providers ensure that clinicians remain adept at diagnosing and managing complex conditions like TEN. Clinical audits and reviews serve as quality control mechanisms, ensuring that healthcare delivery is effective, patient-centered, and aligned with current medical standards.

From a policy perspective, healthcare policymakers must prioritize these interventions to close existing gaps in accessibility and affordability while improving the overall quality of care. By doing so, they can enhance the effectiveness of healthcare delivery systems and ensure better outcomes for patients, particularly in managing rare but life-threatening conditions.

CONCLUSION

- A detailed analysis of all stakeholders involved in patient care is crucial to ensure comprehensive treatment. This includes healthcare professionals, administrators, and policymakers.
- Collaboration across various sectors, including different medical specialties and policy sectors, is essential to provide holistic care to patients.
- Establishing robust communication platforms within hospitals is critical for improving coordination among healthcare providers, leading to better patient outcomes.
- Even when service deficiencies are addressed, achieving desired outcomes can still be challenging due to systemic issues like resource limitations and delays in decision-making.
- Policymakers need to consider the complexities of healthcare systems, focusing on reducing barriers and promoting effective collaboration and communication to enhance healthcare delivery and patient care quality.

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