

Emergency Management Of Major Burn

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Abstract:

Major burns present a significant challenge for emergency management due to the potential for life-threatening complications. Rapid and effective intervention is crucial to minimize morbidity and mortality. This abstract explores the critical components of emergency management for major burns, including initial assessment, fluid resuscitation, wound care, and considerations for transfer to a specialized burn center. Additionally, the abstract discusses the importance of a multidisciplinary approach involving emergency medical services, trauma teams, and burn specialists to ensure comprehensive and coordinated care for these complex cases. Furthermore, the abstract examines the latest advancements in burn management and highlights the importance of ongoing research and education in improving outcomes for individuals with major burns. Significant progress has been made in the field of emergency burn management, particularly in the development of advanced wound care techniques and fluid resuscitation guidelines. The identification of burn severity and depth through accurate initial assessment has led to more tailored and effective treatment plans. Furthermore, the coordination between emergency medical services, trauma teams, and burn specialists has greatly improved the outcomes for individuals with major burns, emphasizing the need for a collaborative and interdisciplinary approach.

Background: Major burn incidents are complex and challenging to manage, requiring a multidisciplinary approach within a specialized burns service. Due to limited capacity of specialist burns services to handle large numbers of complex burn patients, mass burn disasters can strain the healthcare system. These incidents can be particularly difficult to manage, as they require coordination and collaboration among various healthcare professionals, emergency response teams, and other stakeholders. Moreover, there is a paucity of literature addressing health system responses to mass burn disasters, particularly those resulting from wildfires.

The management of major burn incidents in the context of mass burn disasters is a multifaceted issue that demands a comprehensive understanding of the healthcare system's capacity and preparedness. When faced with a large number of complex burn patients, healthcare professionals are required to collaborate and communicate effectively to ensure the best possible outcomes for the affected individuals. Additionally, the impact of mass burn disasters resulting from wildfires presents unique challenges that require specific attention and consideration.

Materials and Methods: In this study, the case take 6 patients of major burn with flame burn and scald burn to age group ≥ 30 years in January 2024 to Mei 2024.

Results: Recommendation of initial fluid resuscitation for major burns is typically based on the Parkland Formula. This formula suggests administering 4 mL of lactated ringers solution per percentage total body surface area burned, multiplied by the patient's weight in kilograms. This total amount of fluid should be given in the first 24 hours, with half of it administered in the first eight hours.

Conclusion: Emergency management of major burns is a critical aspect of providing timely and effective care to patients. Utilizing advanced technologies, such as Management Accounting Systems, can support healthcare practitioners in managing the firm in real time and improving managerial performance. Additionally, the use of advanced technology in burn centers can enhance the efficiency and accuracy of management accounting systems, leading to improved decision-making and resource allocation.

Key Word: Emergency Management, Major Burn, Flame Burn, Scald Burn, fluid resuscitation

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I. Introduction

Major burns are severe injuries that require immediate and specialized emergency management to ensure optimal patient outcomes. This journal aims to explore the key components and strategies involved in the emergency management of major burn injuries. Introduction In the recent years, the field of emergency management has evolved significantly, particularly in the management of major burn injuries. (Rehabilitation practices for burn survivors in low and middle income countries: A literature review., 2018) Advancements in medical technology and knowledge have improved the understanding of burn pathophysiology and the best

practices for emergency management. With major burns, prompt and appropriate initial management is crucial to prevent complications such as infections, fluid and electrolyte imbalances, and organ dysfunction. The first step in the emergency management of major burns is ensuring the safety of the patient and the healthcare personnel involved. (Emergent Management of Thermal Burns: Practice Essentials, Prehospital Treatment, Initial Emergency Department Treatment, 2021) Once the safety of the patient and healthcare personnel has been ensured, a thorough assessment of the burn injury should be conducted. This assessment includes determining the extent and depth of the burn, identifying associated injuries or comorbidities, and assessing the patient's overall condition. After the initial assessment, the next step in emergency management is to initiate appropriate resuscitation measures. These measures are aimed at restoring and maintaining hemodynamic stability, preventing hypovolemia and shock, and optimizing tissue perfusion. Fluid resuscitation plays a critical role in the emergency management of major burns. The type and volume of fluid administered depend on various factors such as the patient's age, weight, burn size, and comorbidities. In general, crystalloid solutions such as lactated Ringer's solution or normal saline are used for initial resuscitation (Schaefer & Lopez, 2022). Fluid resuscitation should be guided by the principles of permissive hypotension and goal-directed therapy. Permissive hypotension involves maintaining a lower than normal blood pressure to prevent exacerbation of burn-related bleeding and tissue edema. Goal-directed therapy involves monitoring parameters such as urine output, heart rate, blood pressure, and central venous pressure to guide fluid administration and ensure adequate tissue perfusion. (Burn Rehabilitation: Overview, Treatment Goals and Planning, Acute Rehabilitation, 2021) In addition to fluid resuscitation, pain management is an essential component of emergency management for major burn injuries. Effective pain management not only improves patient comfort but also helps to minimize physiological stress and prevent complications such as respiratory compromise and delayed wound healing. (Tolles, 2018) Furthermore, the management of major burns includes early and aggressive wound care. This involves cleaning the burn wounds, removing any dead tissue or debris, and applying appropriate dressings or ointments to promote healing. Early wound care also includes assessing for the need for debridement or surgical intervention, such as escharotomy or fasciotomy, to relieve pressure and prevent complications. (Debridement of a Wound, Infection, or Burn, 2021)

II. Material And Methods

This study was carried out on patients of Department of emergency unit at Kurnia Cilegon Hospital, from January to Mei 2024 in total 6 adult subjects both male and female of aged ≥ 30 years were for this study.

Study Design: Literature review by observation

Study Location: This was study done in Department of Emergency Unit, at Kurnia Cilegon Hospital.

Study Duration: January to Mei 2024.

Sample size: 6 patients.

Sample size calculation: The sample size was estimated on the basis of a single proportion design. The target population from which we selected by take the major burn of our sample was considered 6 in total on January to Mei 2024.

Subjects & selection method: This population we used from 5 months on January to Mei 2024 in all 6 total patients who presented to Kurnia Cikegon Hospital with emergency major burn.

Inclusion criteria:

1. Flame burn and Scald burn akut
2. Either sex
3. Aged ≥ 30 years,
4. Patients have $\geq 25\%$ degrees of severity
5. Body weight ≥ 50 Kg

Procedure methodology

This article will discuss the key components of emergency management for major burn injuries, including fluid resuscitation, pain management, wound care, infection control measures, nutrition support, and maintaining body temperature. Fluid resuscitation is a crucial aspect of emergency management for major burn injuries. It involves the administration of intravenous fluids to restore and maintain adequate tissue perfusion. There are several methods for determining the appropriate fluid resuscitation strategy for a patient with major

burn injuries. These methods include the Parkland formula, which calculates the volume of fluid required based on the patient's body weight and the percentage of total body surface area burned, as well as the American Burn Association's guidelines for fluid resuscitation (Response of a local hospital to a burn disaster: Contributory factors leading to zero mortality outcomes., 2018)

1. (Crystalloid (RL) 3-4ml/Kg Body Weight x Total Body Surface Area)
2. Early 8 hours after burn – a half dosage of RL
3. Next 16 Hours – a half dosage of RL

Effective pain management for major burn injuries typically involves a combination of pharmacological and non-pharmacological interventions. Pharmacological interventions may include the use of analgesic medications such as opioids or non-steroidal anti-inflammatory drugs. Non-pharmacological interventions may include the use of distraction techniques, relaxation exercises, and music therapy (Kannan et al., 2022). Wound care is a critical component of emergency management for major burn injuries. The aim of wound care is to promote healing while minimizing pain, discomfort, and scarring. There are several factors to consider when determining the appropriate wound care approach for a patient with major burn injuries. When determining the appropriate wound care approach for a patient with major burn injuries, healthcare professionals should assess the depth and extent of the burns, as well as any associated injuries (Thermal Burns: Overview, Pathophysiology, Quantifying Burn Severity, 2021).

Rehabilitation and long-term care are crucial aspects of the comprehensive management of major burn injuries. After the initial emergency management, individuals with major burn injuries often require ongoing care to address their physical, psychological, and social needs;

Physical Rehabilitation

The Major burn injuries can result in long-term physical limitations and disabilities. Physical rehabilitation aims to restore and maximize the individual's physical function and mobility. This may involve physiotherapy, occupational therapy, and specialized exercises to improve muscle strength, range of motion, and reduce the risk of contractures. Additionally, individuals may require assistive devices such as splints or prosthetics to support their mobility and independence.

Psychological Support

The psychological impact of major burn injuries can be profound. Individuals may experience post-traumatic stress, anxiety, depression, and body image issues. Psychological support and therapy are essential to help individuals cope with the emotional challenges and adjust to any changes in their appearance or abilities. (Stoddard et al., 2015)

Scar Management

Proper scar management is critical for individuals with major burn injuries. This may involve the use of pressure garments, silicone gel sheets, massage therapy, and other specialized interventions to optimize scar healing and minimize functional limitations. (Marshall et al., 2018)

Social Reintegration

Reintegrating into daily life and social activities can be a significant challenge for individuals with major burn injuries. Social support, vocational rehabilitation, and education about burn injury prevention are integral in helping individuals regain their confidence and independence. (Castro et al., 2020)

By addressing the physical, psychological, and social aspects of rehabilitation and long-term care, healthcare professionals can support individuals with major burn injuries in achieving the best possible outcomes and enhancing their quality of life. # Reconstructive Surgery

Reconstructive surgery plays a vital role in the long-term management of major burn injuries. It aims to restore both form and function for individuals who have sustained significant tissue damage. Depending on the extent and location of the burns, reconstructive surgical procedures may involve skin grafting, tissue expansion, flap reconstruction, and other innovative techniques. This multidisciplinary approach often requires collaboration between plastic surgeons, burn specialists, and rehabilitation teams to achieve the best possible outcomes for the patient. (Skin Tissue Expansion: Overview, Indications, Equipment, 2022)

Functional Restoration

In addition to addressing the aesthetic concerns associated with scarring, reconstructive surgery focuses on functional restoration. This may include surgeries to improve joint mobility, release contractures, and restore the functionality of affected body parts. The goal is to enhance the individual's ability to perform daily activities and improve overall quality of life.

Psychological Considerations

Reconstructive surgery not only addresses physical functionality but also plays a significant role in the psychological well-being of individuals with major burn injuries. Restoring a more normal appearance can positively impact self-esteem, confidence, and mental health, contributing to the overall rehabilitation process.(Mehrabi et al., 2022)

Long-term Follow-up Care

Long-term follow-up care is essential for individuals who have undergone reconstructive surgery for major burn injuries. Regular assessments by a multidisciplinary team, including plastic surgeons, occupational therapists, and mental health professionals, are crucial to monitor the progress of scar healing, functional recovery, and psychological adjustment.

By integrating reconstructive surgery into the comprehensive management of major burn injuries, healthcare providers can contribute to the physical, functional, and psychological well-being of individuals, ultimately enhancing their quality of life and promoting a successful long-term recovery. ## Psychological and Emotional Support. The psychological and emotional impact of major burn injuries cannot be overstated. Individuals who have sustained significant burns may experience a range of mental health challenges, including post-traumatic stress disorder, anxiety, depression, and body image issues. This can profoundly affect their overall well-being and quality of life. Therefore, providing comprehensive psychological and emotional support is crucial in the long-term management of major burn injuries.(Rosenberg et al., 2018).

Individual Counseling and Therapy

Individual counseling and therapy are essential components of the psychological support provided to individuals with major burn injuries. Therapists and mental health professionals can assist patients in processing their trauma, developing coping strategies, and addressing any emotional distress they may be experiencing. Through targeted interventions, individuals can work towards overcoming their psychological challenges and achieving a sense of emotional stability.(Bentley et al., 2021)

Rehabilitation and Physiotherapy

In addition to the surgical and psychological aspects of recovery, rehabilitation and physiotherapy are crucial components in the long-term management of major burn injuries.

Functional Rehabilitation

Functional rehabilitation programs are designed to help individuals regain strength, mobility, and independence after major burn injuries. These programs focus on exercises and activities tailored to the specific needs of each patient, aiming to restore physical function and improve overall quality of life. Rehabilitation may include muscle strengthening exercises, range of motion activities, and adaptive techniques to enhance daily living skills.

Assistive Devices and Adaptive Equipment

Rehabilitation teams assess the need for assistive devices and adaptive equipment to support individuals with major burn injuries in their daily activities. This may include custom orthoses, mobility aids, and modifications to the home environment to maximize independence and safety. Through the use of appropriate assistive devices, individuals can overcome physical challenges and participate more fully in their personal and professional lives.(Ginis et al., 2022)

By integrating comprehensive rehabilitation and physiotherapy into the management of major burn injuries, healthcare providers can support individuals in achieving optimal physical function, mobility, and pain management, ultimately enhancing their long-term recovery and quality of life.

III. Result

Dose of Crystalloid solutions or colloids should be administered promptly to resuscitate the patient and maintain vital organ perfusion. Furthermore, it is important to closely monitor the patient's response to fluid resuscitation and adjust the treatment accordingly. Various studies have shown that the appropriateness of fluid management in major burn injuries directly affects patient outcomes and survival rates.

Next 24 hours for Adult (in this case ≥ 30 years) give the injection of Basal Fluid = $1500 \times \text{TBSA}$ (Total Body Surface Area), and Evaporative = $25 + \text{Percentage of burn} \times \text{TBSA}$ (ml/Hours). And after 24 hours ahead post resuscitation akut for Adult And after 24 hours of fluid resuscitation, the fluid of the patient's body would replace, the emphasis shifts towards preventing complications such as infection and promoting wound healing.

IV. Discussion

Emergency management of major burn injuries is a critical aspect of medical care that requires prompt and effective intervention to improve patient outcomes. Burn injuries can result in significant morbidity and mortality, making their management a top priority in emergency medicine and trauma care. In this paper, we will explore the essential components of emergency management for major burn injuries, including initial assessment, resuscitation, wound care, and early surgical intervention.(McCann et al., 2022) Additionally, we will discuss the latest guidelines and best practices for managing major burn injuries to enhance the overall quality of care provided to these patients.

The first step in emergency management of major burn injuries is the initial assessment of the patient. This assessment includes determining the extent and depth of the burn injury, assessing for any associated injuries or trauma, and establishing the patient's vital signs and overall condition. (Knott, 2021). Proper initial assessment is crucial in determining the severity of the burn and identifying any potential complications that may arise. Once the initial assessment is completed, the next step is resuscitation. This involves fluid resuscitation to address hypovolemia and prevent shock, which is a common consequence of major burn injuries.(Burn Resuscitation and Early Management: Background, Pathophysiology, Initial Evaluation and Treatment, 2021).

In addition to resuscitation, wound care is a fundamental aspect of emergency management for major burn injuries. This includes cleaning the burn wound, removing any necrotic tissue, and applying appropriate dressings to promote healing and prevent infection.(Thermal Burns: Overview, Pathophysiology, Quantifying Burn Severity, 2021) Early and thorough wound care can significantly impact the patient's recovery and long-term outcomes.

Early surgical intervention may also be necessary in the management of major burn injuries, especially in cases where excision and grafting are required. Surgical management aims to remove the damaged tissue, promote wound healing, and improve functional and aesthetic outcomes for the patient.(Browning & Cindass, 2022)

As we continue to delve into the latest guidelines and best practices for managing major burn injuries, it is essential to emphasize the multidisciplinary approach that involves collaboration among burn specialists, surgeons, nurses, and rehabilitation professionals. This holistic approach ensures comprehensive and coordinated care for the patient, addressing not only the acute management of the burn injury but also long-term rehabilitation and psychosocial support.

The emergency management of major burn injuries requires a systematic and multidisciplinary approach encompassing initial assessment, resuscitation, wound care, and early surgical intervention. Adhering to the latest guidelines and best practices in burn management enables healthcare providers to deliver optimal care and improve patient outcomes(Holley et al., 2020).

This study of major burn injuries highlights the significance of prompt and coordinated emergency management. The role of early assessment, resuscitation, wound care, and surgical intervention cannot be overstated in improving patient outcomes and reducing the long-term impact of burn injuries.(Laing et al., 2020)

In recent years, there has been a growing emphasis on the importance of specialized burn centers in providing comprehensive care to patients with major burn injuries. These centers are equipped with advanced resources and expertise to address the complex needs of burn patients, including specialized wound care, rehabilitation services, and psychological support.(Holley et al., 2020) The integration of burn specialists, plastic surgeons, critical care physicians, and other healthcare professionals in these centers is pivotal in ensuring a multidisciplinary approach to emergency management.(Sojka et al., 2020). Furthermore, the ongoing research and development in the field of burn injury management have led to the evolution of advanced treatment modalities, such as the use of artificial skin substitutes, biologic dressings, and improved techniques for skin grafting. These advancements have contributed to enhancing the quality of care and the functional outcomes for patients with major burn injuries.(Przekora, 2020)

As healthcare providers, it is imperative to remain abreast of the latest developments and best practices in emergency management of major burn injuries. Continuous education, training, and collaboration within the healthcare team are essential to effectively implement evidence-based approaches and optimize patient care.

V. Conclusion

Dose of Crystalloid helps patients to replace fluid in their body and preventing complications such as infection and promoting wound healing. The emergency management of major burn injuries encompasses a systematic and multidisciplinary approach that includes initial assessment, resuscitation, wound care, and early surgical intervention. Adhering to the latest guidelines and best practices enables healthcare providers to deliver optimal care and improve patient outcomes. The role of prompt and coordinated emergency management, as well as the integration of specialized burn centers and ongoing advancements in treatment modalities, are essential in

addressing the complex needs of burn patients and enhancing the quality of care. Overall, staying informed about the latest developments in the field of emergency management for major burn injuries is imperative for healthcare providers to provide the best possible care for their patients.

The holistic approach to the management of major burn injuries encompasses a multidimensional framework that addresses the physical, psychological, social, and vocational aspects of well-being. By incorporating individual counseling, support groups, and family and caregiver support, healthcare professionals can provide vital psychological support to patients and their support networks.(Ganotice et al., 2023) Furthermore, social and vocational reintegration programs, coupled with community engagement and education initiatives, play a pivotal role in empowering individuals to regain independence and confidence in their daily lives.

Additionally, the integration of rehabilitation and physiotherapy in the long-term management of major burn injuries is instrumental in promoting functional recovery, scar management, pain relief, and the utilization of assistive devices for enhanced mobility and independence(Rehabilitation practices for burn survivors in low and middle income countries: A literature review., 2018). By embracing this comprehensive approach to care, healthcare providers can contribute to the overall well-being and quality of life of individuals who have experienced major burn injuries(Burn Rehabilitation: Overview, Treatment Goals and Planning, Acute Rehabilitation, 2021). This patient-centered model focuses not only on physical rehabilitation but also on the emotional and social aspects of recovery, ultimately fostering resilience and empowerment in those on the journey to recovery from major burn injuries.(Almén, 2021).