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Pathophysiology, Treatment and Rehabilitation of Thermal Burns: Narrative Review

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ABSTRACT

Background: Prevention and health promotion, as well as the identification and optimal and timely management of burns, favor a prompt recovery and return to the patient's daily life.

Objectives: Review classifications, risk factors, diagnosis and management of burns with special focus on the most common, that is, thermal ones. Inclusion criteria: Scientific articles carried out in the adult population with burns, in Spanish, English and Portuguese, between the years 2019 to 2024.

Methodology: A systematic search was carried out in PUDMED, LILACS, COCHRANE and Google Scholar, identifying 404 articles, of which 36 met the inclusion criteria.

Results: The initial management of the patient with burns is carried out using the acronym ABCDEF, fluid resuscitation assessing the patient's response mainly with diuresis (0.5-1 ml/kg/h in adults), analgesia, enteral nutrition within the first 24 hours, early escharotomy, psychological support and early rehabilitation.

Conclusion: The update in the diagnosis and proper management of thermal burns provides the necessary knowledge to provide the patient with a better quality of life, improve their general and occupational prognosis, and treat probable sequelae at both a systemic and psychological level.

Thermal burns, fluid resuscitation, escharotomy

Introduction

Burns are injuries caused by the action of various physical agents (flames, hot liquids and objects, radiated heat, ultraviolet rays, radiation, electric current, cold), chemical (caustics, acids, alkalis and hydrocarbons) and biological (plant resins, irritating substances of animal origin) [1,2] causing damage or destruction of the largest organ of the entire body, that is, the skin and/or its contents, interrupting its vital functions such as protection and homeostasis [2] causing alterations ranging from simple erythema to the total destruction of dermal and subdermal structures [1,3] Local heat injury on the skin and mucous membranes, with temperatures > 40° (degrees), initiates tissue destruction by protein denaturation [2] Thermal injuries represent approximately 90% of all burns and the depth of the injury depends on the temperature and duration of contact. They can be divided into scalds (caused by hot liquids, more common, representing almost 70% of burns in children), dry heat injuries and injuries caused by direct contact with a hot object [4] A patient is considered "severely burned" if he/she presents: Garcés Severity Index >70 points or with AB or B burns (2nd and 3rd) >20% of total body surface area burned (SCTQ) [1], (in adults: 25% SCQT and 20% in older adults) and in turn the American Burn Society or American Burn Association (ABA), in adults with more than 25% of SCQT, 20% in children under 10 years of age and in adults over 40 years of age [5] pediatric patients under 2 years of age, or adults over 65 years of age with 10% or more of AB or B burns (2nd and 3rd), all patients with respiratory burns or smoke inhalation burns, high voltage electrical burns and burns associated with polytrauma and serious associated pathologies [1] Burns are the fourth most common type of trauma worldwide after traffic accidents, falls and interpersonal violence.Mortality rates increase with increasing size and depth of burns, older age, and smoke inhalation [6] It is imperative to know their pathophysiological mechanisms, the classification of burns and their timely and optimal treatment, so we performed a narrative review of thermal burns in order to understand the pathophysiology of thermal burns, review their classification of burns and specify their initial treatment. The questions formulated to be answered in this review are:

1. What is the epidemiological situation of burns in Mexico ?,
2. What is the pathophysiological basis of thermal burns? How are burns classified?, finally
3. What is the ideal management of thermal burns?

Methodology

The structure of the narrative review was assessed based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) checklist modified for narrative analysis, as well as the SANRA scale (Scale for the quality assessment of narrative review articles) [7,8] The inclusion criteria were: randomized clinical trials, clinical practice guidelines, narrative reviews, systematic reviews with meta-analysis in the adult population (over 18 years of age) diagnosed with thermal burns between 2019 and 2024, in Spanish, English, and Portuguese. The exclusion criteria were: articles with incomplete clinical trials, in the recruitment phase, or suspended, articles with only an abstract, or that included the pediatric population. To obtain information and select articles to carry out this narrative review, the following databases were chosen: PUBMED, LILACS, COCHRANE, and Google Scholar. A systematic search was performed and of the 404 articles identified, 49 were eliminated due to duplication and 197 due to irrelevance, leaving 158 articles for eligibility. After the analysis, 122 articles were excluded, leaving a total sample of 36. The search is presented in the following flowchart. The MeSH search terms used were: "Management of thermal burns", "thermal burns in adults ..."Classification of burns" (burns thermal classification) and "Burns Thermal Guidelines"

Epidemiology

According to the National Institute of Statistics and Geography (INEGI) in Mexico 2018, the highest rate of burns was in men (72.4%), in the age group 20-59 years (56.9%), the place of death was in the home (35.6%) the most frequent types of burns are from smoke, fires or unspecified flames (82.5%) and the states with the highest percentage of burns are Jalisco, Nuevo León and Baja California [9] Survival in severely burned patients is between 5-15%. [10] Children and older adults are the most vulnerable age groups with the highest mortality rate [11] The leading cause of morbidity and mortality in fires is smoke poisoning, [12] which confers a 10-fold increased risk of mortality; older patients with burns greater than 40% of CCS and concurrent inhalation injuries are at high risk of mortality; [13] other causes of mortality include hypovolemic shock, acute respiratory distress syndrome (ARDS), and infection1 (of necrotic tissue and catheter, and the causative organisms are indigenous skin bacteria and toxin-producing organisms such as Clostridium perfringens, Staphylococcus aureus, and Group A Streptococcus that can cause fulminant sepsis even in a small burned area) [14] Recovery from superficial partial thickness burns with most of the adjacent structures intact will be rapid (10 to 14 days) and the risk of scarring will be low. If it extends to deeper layers of the dermis with greater adjacent damage, the epithelium will take longer to regenerate (3-6 weeks) and there will be a high probability of hypertrophic scarring [4].

Pathophysiology

Burns occur when a heat source comes into contact with the skin and although the temperature needed to burn the skin varies slightly depending on the location of the skin and the time of exposure, prolonged exposure to temperatures above 40 °C (104 °F) causes denaturation of proteins and only 10 seconds of exposure to 60 °C (140 °F) are required to cause a full thickness burn. [15] The burn zones are those described in 1959 by Jackson: 15 coagulation or central zone which is the area of maximum damage [1,15] and where cell death, denaturation of proteins in the extracellular matrix and damage to circulation occur, 1 the stasis or ischemia zone characterized by decreased perfusion that is potentially salvageable and the hyperemia zone the outermost region of the wound is characterized by increased inflammatory vasodilation1, [1,15] Burn injuries develop in two phases: The first or initial phase occurs during the first 48 hours after the thermal injury; with hypovolemia, edema, hypoalbuminemia and decreased glomerular filtration rate, the blood flow distributed to the organs is lower and digestive absorption is slower and the second phase, more than 48 hours after the injury, is a hyperdynamic state with high renal and hepatic blood flow and a higher level of alpha-1-acid glycoprotein [2].

The hypermetabolic response to burn injury persists for up to 36 months12 and involves massive protein and lipid catabolism, total body protein loss, muscle atrophy, peripheral insulin resistance, increased energy expenditure, and stimulated acute-phase protein synthesis; this catabolic state may persist for up to 1 year and is associated with poor wound healing, increased infection rate, tachycardia, loss of lean body mass (LBM), slow rehabilitation, and delayed community reintegration [16] Edema and multiorgan failure: When burn injury occurs, vasoactive mediators are released from the damaged tissue, causing an increase in capillary permeability and extravasation of fluid into the interstitial space; proteins are lost from the intravascular space and systemic capillary leakage usually persists for 18 to 24 hours, with edema not being clinically evident, but its appearance is progressive in the following hours. In extensive burns, up to 15% of red blood cells may be destroyed locally and an additional reduction of 25% may occur due to a decrease in cell survival time. This reduction in the capacity to transport oxygen also favors the presence of burn shock [17]. Burns that exceed 20% SCTQ cause

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a profound systemic inflammatory response (mediated by cytokines such as tumor necrosis factor (TNF), interleukin-6 (IL-6) and oxidizing radicals) [15] causing an increase in capillary permeability that develops in the lungs. within 1 to 6 hours of injury and peaks at 12 to 24 hours with temporary cardiac dysfunction and poor oxygen delivery at the cellular level in the acute phase of burn injury [15].

Loss of plasma protein into the interstitium of burned areas results in hypoproteinemia, which causes systemic loss of oncotic pressure and eventually results in widespread tissue edema, even in unburned areas and intravascular volume is dramatically decreased, the combination of these processes being the onset of multi-organ failure including pulmonary edema, myocardial injury, paralytic gastrointestinal ileus, and reduced red blood cell production [15] Urinary dysfunction results from alterations in cardiovascular function and endocrine dysregulation (changes in angiotensin, vasopressin, and aldosterone secretion), the development of hypovolemia, as well as decreased cardiac output after thermal injury, reduced glomerular filtration rate (GFR) as a result of reduced renal blood flow, These alterations usually manifest themselves in the form of oliguria, and if they are not managed in a timely and appropriate manner, they can lead to acute tubular necrosis (ATN), renal failure and even death [4].

Diagnosis

The diagnosis of the patient with burns must consider the extent, depth and location of the burns as well as the age, sex, weight, nutritional status, comorbidities and state of consciousness of the patient in addition to the causal agent, mechanism and time of action, the scenario in which it occurred, concomitant injuries and the time of evolution of the burn [17]. The methods for the evaluation of the extension are: surface of the palm which is approximately equivalent to 1% of the SCTQ (useful in small burns <15% of SCTQ or very extensive, when the unburned surface is evaluated > 85% of SCTQ) and Wallace's rule of 9 (the body is divided into areas equivalent to 9%, to estimate the extent of medium and large burns in adults, it is not accurate in children) [1,17] To calculate the severity of burns, there is a table proposed by Dr. Fortunato Benaim, which is practical and fast, and bases its assessment on the relationship between the extent and depth of the burns as the best way to evaluate their severity [5].

Initial Management of Burns

The initial management of the burn patient is that of a traumatized patient [18,19] Priorities for emergency resuscitation include: airway stabilization, intravenous (IV) fluid administration, pain control, and local wound care [15].

- Upon arrival at the hospital, the patient's vital signs must be immediately evaluated [18] with a safe scene and protective equipment for health personnel, guaranteeing the safety of the environment with decontamination of the patient-21starting immediatelythe handling ABCDEF:
- A: Cervical spine controlled airway,
- B: Breathing (Administer 100% oxygen with target Oxygen Saturation (SatO2) >95%, chest auscultation,24 look for signs of CO poisoning, smoke inhalation injury, or partial or complete airway burn, and need for intubation [20] in case of shallow, apneic, and/or obstructive breathing, support breathing with nasal cannulation/mask/endotracheal intubation [21]),
- C: Circulation (Insert 2 large-bore peripheral (IV) lines into unburned skin, [22] assess skin color, tenderness, consciousness, peripheral pulses, capillary refill)7
- D: Neurological deficit and patient's level of consciousness (consciousness using AVPU scale (alert, verbal, pain, unresponsive) and Glasgow Coma Scale), [23].
- E: Exposure (remove clothing [24] and remove any hazardous materials around the patient [22], maintain room temperature using Transfer blankets or sheets to minimize heat loss and control ambient temperature, [25] maintaining a pleasant environment for the patient with care for their privacy, [22] preventing hypothermia [22] and
- F: fluid resuscitation 1,6 and performing laboratory studies: complete blood count (BHC), serum electrolytes (ES6), prothrombin time (PT), partial thromboplastin time (PTT), Blood group and RH, creatine phosphokinase (CPK), creatine phosphokinase MB fraction (CPK MB),arterial blood gas, lactate, carboxyhemoglobin (COHb) level,17 in women in fertile stage pregnancy test and taking destrostix) [23,25] as well as cabinet asChest X-ray and electrocardiogram (ECG) [17] Secondary review of the patient with thorough search of associated injuries from head to toe (fractures, dislocations), monitoring of vital signs every hour (in≥% 20 SCTQ), cardiac, ventilatory, urinary monitoring (place a bladder catheter in patients with burns 15% SCTQ to monitor hourly diuresis) [26] and lower limb perfusion (elevation of lower limbs to 45° degrees) general care of probes (Foley, nasogastric, central venous catheter and avoid complications such as infections), know the patient's medical history and their pre-burn weight [25] The initial evaluation of the patient's clinical history (age, allergies, comorbidities) [5], patient circumstances (causes, environment)5 as well as the characteristics of the burns (extent, depth, location)and gravity) and calculate the SCTQ (Wallace's Rule of 9s, palm rule, Lund and Browner) [15,17].

1. **Fluid Resuscitation:** This is the cornerstone of acute burn care and has had the greatest influence on patient survival. The challenge is to provide enough fluid to maintain perfusion without overload, which can cause pulmonary or myocardial edema, conversion of

superficial to deep burns, need for fasciotomies in unburned extremities, and abdominal compartment syndrome. [13] The guides of Africa and Chile recommend thatIf the SCTQ is < 10%, they do not require IV fluid resuscitation [17,27], and also considering that the transfer of patients from the accident is delayed, fluid resuscitation with Lactated Ringer solution should be started at a rate of 500 ml/hour in adult patients, at the same time ECG, blood pressure (BP) and heart rate (HR) monitoring should be performed. Central venous pressure or pulmonary artery pressure monitoring is useful for patients who are refractory to routine resuscitation [17] A complete and adequate record of fluid balance should be ensured [17] The degradation of the systemic glycocalyx increases with the size of the burn, causing capillary leakage and coagulopathy.29 There are complications due to fluid overload (cerebral and pulmonary edema and compartment syndromes) and poor resuscitation (shock, multi-organ failure, acute kidney injury) [25].

Patients with burns <30% of the SCT are candidates for oral resuscitation; however, early oral (PO) resuscitation can also be used to reduce the volume of IV resuscitation needed in patients with larger burns [19] Fluid resuscitation formulas have been designed to estimate 24-hour fluid needs, all require % of SCTQ, patient weight in kg is obtained or estimated only for total second- or third-degree burns [28] The ABA guideline recommends IV fluid resuscitation for adults and children with burns > 20% SCTQ6 and smaller burns are not associated with significant systemic inflammatory response and can be treated with PO hydration alone with the goal of resuscitation being to maintain end-organ perfusion, via crystalloid solutions preferably lactated Ringer's solution. [15,17] The Parkland formula (introduced by Baxter and Shires in 1968 and the gold standard for initial burn resuscitation) estimates the total 24-hour fluid requirement at 4 ml/kg/% SCTQ,6 (ABA refers to 2-4 ml/kg/% SCTQT)25 administering ½ of this volume in the first 8 hours 6 and the other ½ in the next 16 hours, this results in an expected requirement of 0.25 ml/kg/% SCTQT/h for 8 hours and then 0.125 ml/kg/% SCTQ/h for 16 hours30 and in the second 24 hours administering 20% to 60% of the calculated plasma volume as colloid [6,17] with adjustment maintaining hourly diuresis at 0.5 ml/kg/hour25 One of the complications with the Parkland formula is excessive resuscitation [15] ("fluid slip" is when the patient is resuscitated and the fluid is released from the lungs. volume of fluid administered exceeds the resuscitation volume predicted by the Parkland formula) [29] due toin accuracies in calculating fluid requirements, unnecessary fluid infusions, increased use of sedative and analgesic infusions, and excessive administration of crystalloid solutions4; This in turn increases mortality [29] (initial 24-hour resuscitation volumes of >250 mL/kg or >6 mL/kg/% of BSA burned have been associated with increased mortality) [30] The ABA guideline emphasizes the importance of monitoring and adjusting fluid resuscitation using perfusion markers, including vital signs, urine output (urine output 0.5–1 mL/kg/h in adults), cardiac output, and lactate level.15,17 Hyperglycemia (as a result of increased catecholamines) may cause an osmotic diuresis that should not be misinterpreted as adequate volume [15].

Exceeding the Ivy index (defined as 250 mL/kg administered during the first 24 h after injury) is associated with an increased risk of abdominal compartment syndrome, which is a risk factor for acute kidney injury (AKI) and death [29]. If a patient's total resuscitation volume in 24 hours is anticipated to be >6 mL/kg/% SCTQ at 12 hours post-burn or massive resuscitation (>1500 mL per hour for 2 hours or >250 mL/kg in 24 hours)20 the addition of a 4.5% albumin infusion should be considered and if initiated should be continued until 48 hours post-burn, the 4.5% albumin infusion rate is calculated as follows: Volume of 4.5% albumin for 24 hours = (*mL) × (%SCTQ) × (actual pre-burn weight, kg)30 The rescue resuscitation protocol using colloids, projecting a resuscitation >250 ml/kg/hour in 24 hours or a EU < 0.5 ml/kg for > 3 hours is starting between 12 – 24 hours post-burn, the colloid to be used is 5% albumin or fresh frozen plasma at a dose of 0.5 -1.0 mL/kg/ SCT divided into 24 hours 5

2. **Analgesia:** Paradoxically, pain intensity is not necessarily directly related to the extent of burn injury13 Patients experience background pain as a result of thermal injury and tissue destruction, which is usually of low to moderate intensity and long duration.13 Analgesic medications in the acute stage and intravenous doses for burns are: Tramadol (12 years and older): 1 mg/kg23 Ketamine: 0.2-0.5 mg/kg, Morphine or diamorphine: 0.03-0.1 mg/kg, Fentanyl: 1-1.5 µg/kg and Meperidine: 0.5-1 mg/kg [23]. In adult patients, nonsteroidal anti-inflammatory drugs (i.e., naproxen, oxicam group) may be preferred and in pediatric patients, paracetamol: 10-15 mg/kg, orally [21].

3. **Enteral Nutrition (EN):** Nutritional timing is an important factor affecting patient survival after severe burn injuries. Significant damage to the intestinal mucosa and increased bacterial translocation that occurs after burn injury result in decreased nutrient absorption, for this reason nutritional support should preferably be initiated within 24 hours after injury [4,14]. In addition, early initiation of enteral nutrition may decrease the metabolic response to thermal injury [1] as well. Early enteral feeding results in better maintenance of muscle mass, accelerated wound healing, reduced risk of Curling ulcer formation, and shorter intensive care unit (ICU) stays [4]. A profound hypermetabolic and catabolic response develops in patients with burns covering more than 20% of the CCTS, leading to muscle atrophy and, if untreated, death from multiorgan failure. 6 A nasogastric tube should be placed [30] even during initial resuscitation6 and EN should be started within the first 6 to 12 hours [13]. Regarding parenteral nutrition, it is used in case of failure to achieve adequate caloric and protein intake by the enteral route or when the intestine is not functioning, as in cases of enteric fistulas, severe pancreatitis or prolonged ileus [17]. In patients with burns involving more than 20% of the SCTQ, a high-protein diet should be provided along with adequate calories to meet energy requirements. In adults, the intake

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should be 1.5-2 g of protein per kilogram of body weight per day (g/kg/d); in children, it should be 3 g/kg/d [19]. Caloric requirements can be estimated using various formulas for resting energy expenditure (Harris-Benedict, Toronto, Milner, Currier, and Hangang formulas) and multiplied by 1.4 to 1.5. Protein is provided at a rate of 1.5 to 2 g/kg/day and the rate may be adjusted on the basis of nitrogen balance studies [6]. The Harris-Benedict formula is: Basal energy expenditure (BEE) (kcal/day) Male = 66.5 + (13.75 x weight (kg)) + (5.003 x height (cm)) - (6.775 x age) and for female = 655.1 + (9.563 x (kg)) + (1.85 x height (cm)) - 4.676 x age)14 Estimated energy expenditure = BEE x IF (injury factor, % SCTQ: 10%:1.2, 11-20%:1.3, 21-30%:1.5, 31-50%:1.8, 50%:2.0) [14]. The Curreri formula or calorimetry is also used for caloric calculation: (25 kcal x kg) + (40 kcal x %SCQ) per day. In patients with burns over 50%, caution should be exercised with carbohydrate intake, which should not exceed 5 mg of glucose/kg/minute, since excessive administration results in hyperglycemia, hepatic steatosis and increased CO2 production. 17 Protein requirements are higher than in other categories of patients, and should be distributed around 1.5-2.0 g/kg in adults [27].

4. **Antibiotic Prophylaxis:** As with all patients, hand hygiene and the use of universal prevention equipment are essential. In burn patients, routine antibiotic prophylaxis with topical or systemic antibiotics is not indicated17 Gram stain and bacterial culture of wounds, sputum, urine, etc., should be performed at the time of treatment and antimicrobial agents should be administered accordingly for 1 or 2 days and discontinued if no microorganisms are detected in the culture sample at the time of initial treatment. If there is necrotic tissue, topical antibacterial agents such as silver sulfadiazine should be used topically until the necrotic tissue is removed [14].

5. **General Care of Burn Wounds:** Within 3 hours of injury, cool wounds for 20 minutes using normal saline or water or by using wet compresses. Initial healing includes removal of devitalized tissue, blisters and other contaminants, washing with saline solution before dressing, escharotomy (incision in the skin to release the tension caused by the inelastic eschar1 to restore distal circulation and allow adequate ventilation 5) and fasciotomy, debridement of muscle compartments when there is muscle necrosis and finally coverage (except face and perineum)1 Superficial (first-degree) burns simply need to be kept clean and dry. They do not require special dressing because the dermis is intact. Partial-thickness wounds require dressing to promote healing, reduce the risk of infection, and decrease pain. Topical silver sulfadiazine has been widely used for burn care, but more recent reviews suggest that it is associated with longer healing times31 and is not recommended by the Mexican guidelines [1,27].

6. Surgical management of burn wounds (early escharotomy, debridement, and reconstructive surgery) is key to saving lives and treating extensive burns [14]. Superficial burns usually do not require surgical removal, early surgical intervention for deeper injuries may later require such an allograft or autograft [13]. Eschar is dead, stiff skin tissue that forms in deep second- or third-degree burns. Circumferential eschar on a limb occludes distal circulation, and eschar on the chest compresses the muscles of respiration.5 Early escharotomy is performed to prevent tissue injury that can worsen edema and pressure; Multiple surgical procedures over weeks to months for staged excision and grafting are associated with significant pain as well as blood loss, hypothermia, and cardiovascular stress [13]. Immediate excision also offers additional advantages, including less protein loss, lower risk of infection and sepsis, and less pain compared with delayed reconstruction patients. 4 It is reasonable to deroof and debride large or thin-walled blebs or blebs that interfere with functional motion [15]. In patients with circumferential thoracic and abdominal burns, compartment syndromes requiring escharotomies may develop, but such syndromes occur after 12 to 18 hours and are preferably managed in the burn center [6].

Indications for escharotomy include signs of decreased perfusion including absent or decreased pulse oximetry (<95%), absent or decreased pulses, elevated compartment pressures, or new-onset neurologic deficits, inability to adequately ventilate a patient because of restriction from the thoracic scar, extension beyond the scar should be avoided as there is a risk of injury to deeper structures, mediolateral and mediomedial areas of the extremities should be incised to avoid arteries and nerves.15 Complications of escharotomy include excessive bleeding, inadvertent fasciotomy, incision/injury to healthy tissue, infection [5].

7. Ophthalmological evaluation and secondary review with evaluation of circumferential lesions [15],in addition to examining pulses and clinical perfusion of the extremities and ruling out compartment syndrome [26] Consider tetanus prophylaxis if criteria are met (contaminated wound, unvaccinated patient) [25] Psychological support and psychiatric assessment to improve the outcomes of burn patients from the acute to the chronic phase and help the patient resume their activities of daily living.14 Management of complications: burns greater than 15-20% of SCTQ can cause hypovolemic shock, organ dysfunction and death.4 Transfer to the burn area [1].

8. Antithrombotic prophylaxis: Patients with thermal injury have multiple risk factors for developing venous thromboembolism (VTE), including increased % SCTQ (2.4% risk with 40-59% SCTQ), longer ICU stay, central venous access, older age, obesity, wound infection, and transfusion of 4 units of packed red blood cells. Despite these risks, there is no consensus on the use of VTE prophylaxis. Patients with these risk factors may benefit from early and intensive VTE prophylaxis [31].

9. Physical therapy and rehabilitation: Physical therapy should begin as soon as possible, once the patient is admitted to hospital, due to the prolonged bed rest and inactivity that the patient will experience due to metabolic alterations and the damage caused by the burn, regardless of its type of etiology. The first intervention is the functional positioning of the extremities, passive mobilization, passive stretching of the hamstrings, active mobilization, muscle strengthening of

the paravertebral muscles, abdomen, glutes, quadriceps, hamstrings, soleus and calves through isometric exercises, sitting to standing with support (stability table, standing frame with partial weight support), standing frame, walker or cane and the final phase includes ascending and descending ramps and steps to culminate with independent walking, strengthening through isotonic exercises, isometric contraction and manual resistance [32-36].

Conclusion

Prevention and health promotion will always be the main objective when it comes to burns of any etiology. As primary management, in the case of thermal burns, they will initially be treated as polytrauma with the ABCDEF algorithm, with the cornerstone of adequate fluid resuscitation, analgesia, enteral nutrition, early escharotomy, prevention of complications such as infections and rehabilitation with psychological support to improve the life and functional prognosis of the patient with thermal burns and to be able to reincorporate the patient into his or her daily and work life in an optimal way.

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

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