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Original Research Article

A Prospective Study of Chest Physiotherapy in Patients with Burn in Bundelkhand Region

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Abstract

The role of exercise in the rehabilitation of patients with severe burns. trauma results in persistent skeletal muscle catabolism and prolonged immobilization. We hypothesize that structured rehabilitative exercise is a safe and efficacious strategy to restore lean body mass and physical function in burn victims. Here, we review the evidence for the utility of rehabilitative exercise training in restoring physiological function in burn survivors. Burns is a very critical area of medicine citing the doctors to be on their toes. The prognosis being lowest and treatment the hardest, this area has not cited much research. Largely these medico legal cases are accidental and rare around the world but Indian scenar io is opposite. A rural set up here will admit a minimum of two burn cases a day, with 50% chances of it being an inhalational burn. Grave is the prognosis of these patients but attempts if made properly by trained indivisuals can help save life on the edge of death. Method: 104 patients were selected randomly from the Bundelkhand medical college Sagar, allocated in two groups. The group with traditional approach was named GROUP A and had 32 Patients. The group with changed approach was named GROUP B and it also had 32 Patients. OF them 4 patients from group a died due to severe deep burns in wards, while one patient from group B was shifted to a other burn centre. This led to the final sample size to be 98. The group B received immediate chest physiotherapy as compared to group A which received the same treatment 3Days later. Result: Team approach and early physiotherapy i.e. immediately as the patient is stabilized and shifted to the burn ward, improves the chest condition, prevents post burn chest complications, facilitates healthy recovery and helps improve the prognosis. Conclusion; chest Physiotherapy in immediate Post Burn period is Important and plays a vital role in rehabilitating the patient. It also affects the survival rate.

Keywords: Inhalational burns, Chest physiotherapy, Burn rehabilitation, Incentive Spirometry, Deep Breathing Exercise, Purse Lip Breathing, Relaxation, Chest Expansion Exercise, Oral suction, Coughing Techniques, Medico legal case rehabilitation, Survival techniques in inhalational burns, Cardio Respiratory physiotherapy, Medico legal team. Role of surgeon, Role of anaesthetist in Burn care.

Introduction:

Major burns (burns encompassing Q30% of the total body surface area (TBSA)) are unique with regard to the prolonged and debilitating effect they have on multiple organ systems within the body Consequently, interventions including, but not limited to, surgery, pharmacological agents, diet, and exercise, all play important roles in the successful rehabilitation of the burn patient. Exercise is generally considered to be a safe and efficacious approach to restoring physiological function in patients with various chronic diseases Burns is a critical area of medicine demanding attention, accuracy and presence of mind from the personnel incharge. Tricky as it may seem, many times a simple holistic team approach can alter the grave prognosis. The Indian scenario enlists burns as very common Medico legal case. A survey concluded, that on an average a rural primary health care set up registers atleast 2burn cases per day. Grave prognosis in these cases is mainly attributed to open wounds and inhalational injuries attained. The inhalational injury is caused by inhalation of toxic hot fumes leading to damage and impaired lungs. Every day atleast one person dies of an inhalational burn injury.The commonest reason of death in burns is impaired lung function leading to infection, toxicity, need for mechanical ventilation, failure to thrive and ultimately death. In here,these series of events led us to investigate if a team effort can, improve the prognosis. The biggest risk was to deal with the shock and then rehabilitating the patient avoiding a collapse. The team of researchers provided a step wise closely monitored treatment approach to patients. The approach consists of stabilizing and maintaining the patient in the casualty by team of surgeons, anaesthetist, physiotherapist and nursing staff. Once stabilized the patient was administered chest physiotherapy by a cardio- respiratory physiotherapist and continued till needed. The treatment was given in a controlled environment of a rural hospital set up. The approach taken towards this goal, was systematic and controlled by trained professionals. Every treatment protocol chosen to be performed, was backed with evidence of its effectiveness and was selected by a specialist. The team consisted of a Cardio Respiratory physiotherapist, surgeons, anaesthetist and nursing staff trained in management and handling of burn patients. The approach used was stabilization of the patient. followed by quick cardio-respiratory assessment, apt dressing and an immediate chest physiotherapy session.

Procedure:

The sample for the study was taken from BMC Sagar. The patients were allocated on alternate basis to systematic approach(Group B) and traditional approach(Group A) groups. The basic treatment for both the groups remained the same, however, the role of physiotherapy was altered. The first step in the protocol was stabilizing the patient by assessing the surface of burns, cleaning the wounds, replacing the fluid, maintaining the airway, dressing and shifting the patient to burn ward. This part of the protocol consisted of team effort by surgeon. Anaesthetist, physiotherapist and nursing staff. In the burn ward the patient was immediately summoned to Chest physiotherapy in a controlled environment. A record was kept of the treatment sessions and interventions used After major trauma, prolonged immobilization and the need for mechanical ventilation likely affect the pulmonary system. Burns, particularly flame-related burns, are often accompanied by inhalation injury. It is perhaps not surprising then that compromised pulmonary function is a

component of the pathophysiology of major burns Adults with severe burns have recently been shown to have impaired pulmonary function, as determined by spirometry The effect of exercise training on indices of exercise tolerance and pulmonary function in burn victims.

Protocol:

The protocol used was altered according to the role of physiotherapy. The basic first aid approach was given to all burn admissions, followed by their distribution in two groups in the burn ward. The controlled group was named ―A and the group with immediate physiotherapy B‘.

The protocol for group A: First Aid Assessment Delayed Physiotherapy.

The protocol for group B: First Aid Assessment Immediate Physiotherapy.

The physiotherapy protocol: Deep Breathing Purse lip breathing Chest Expansion Exercise Coughing Technique Oral Suction Ankle Toe Movements Active– Assissted Movements Relaxation.

The outcome measures were, Incentive spirometry, Range of motion, number of days of O2 therapy, Time taken by patient to attain Independence in ADL, Sputum culture, Chest X- ray every 5days. The above parameters were charted daily three times a day by physiotherapist., Anaesthetist and Surgeon. The nursing staff headed in maintaing aseptic environment of the wound, ward and equipments.

Results:

Of 104 patients included in the study, 52 patients were allotted in group B. This group received immediate chest physiotherapy in burn ward. They were visited by the therapist 3 times/ day and were advised to perform certain interventions which they remembered atleast two times a day without the therapist. The family too was included in the study but was not informed about the same. Incentive spirometry however, was strictly used only under the supervision of the therapist.The results showed a good respiratory muscle strength judged by incentive spirometry, time taken to get fatigued, ability to generate cough and spit it out, also need of oral suction to remove secretions. In group B the patients showed minimum of 400 – 600cc incentive spirometry value to start with, were able to get secretions out independently with need for oral suction after voluntary removal of cough for oral hygiene. They also had good capacity to perform exercise which lasted for 3 to 6 minutes on an average at a time. The group B patients continued this trend till Approx. 72 hours post burns, the ability to respond to verbal command was also good. However, it suffered a decline in the later period but continuation of the regime by the team, the patient and the family let to good quick recovery. The patients took 4 to 5 days to get recovered from the deterioration and then were rehabilitated more vigorously to achieve the functional independence. One patient was shifted to another burn center in between the study. Group A on the contrary had a bad start as majority of patients could not appreciate physiotherapy exercise, were disinterested, unwilling, easily fatigued and had a poor compliance. This group received the same physiotherapy treatment but after 3 days of admission to the burn ward. The incentive spirometry for them ranged between 0 – 400cc. to begin with. Family support in them was low due to fear, emotional disturbance and lack of awareness of patients remaining ability. This group took 15 days on an average to be able to complete the full protocol at a stretch, thus slowing down programme. Two patients in this group could not survive despite all efforts and treatment.

Conclusion:

Inhalation burns can be managed with a good team approach, giving a chance to increase survival among victims. The role of chest physiotherapy in the immediate burn period is also crucial and helps to move the patient towards a better and healthy prognosis.

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