International Journal Dental and Medical Sciences Research
Volume 5, Issue 3, May - June 2023 pp 599-601 www.ijdmsrjournal.com ISSN: 2582-6018

An Observational Study of the Presentation and Treatment of Pressure Sores in Patients with Traumatic Spinal Cord Injury – A Single Centre Experience

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Date of Submission: 09-06-2023 Date of Acceptance: 20-06-2023

ABSTRACT:
Healing of pressure sores depend on various factors like depth, severity and other characteristics. Observational study of all patients with bedsores presenting to a tertiary care center hospital in a metropolitan city and their distribution according to various parameters such as Age, Grade of pressure sores, Financial status, mental health etc.,
Keywords: Pressure sores, Bed sores, Spinal Cord Injury, Grades of Bedsore, Trauma

I. INTRODUCTION:

Pressure sores are a common occurrence in traumatic spinal cord injury patients. Pressure ulcers are caused by unrelieved pressure, resulting in damage to the underlying tissue. They usually occur over bony prominences and are classified as stages by the degree of tissue damage observed. Preventive measures for pressure ulcers consisted of basic skin care, pressure dispersion using fenestrated foams and alternating weight-bearing sites by regular turning.

The primary objective of this study is to study the pattern of presentation of pressure sores in patients in traumatic spinal cord injury in a tertiary care hospital. The secondary objective is to study the treatment outcomes and the factors influencing the healing of pressure sores pre-operatively and post operatively.

Stages of Pressure sores:

Stage 1 -Observable pressure related alteration of intact skin whose indicators as compared to the adjacent or opposite area of the body may include changes in one or more of the following: skin temperature (warmth or coolness), tissue consistency (firm or boggy feel), and/or sensation (pain, itching). The ulcer appears as a defined area of persistent redness in lightly pigmented skin, whereas in darker skin tones the ulcer may appear with persistent red, blue of purple hues.

Stage 2 -Partial thickness skin loss involving epidermis and/or dermis. The ulcer is superficial and presents clinically as an abrasion, blister, or shallow crater.

Stage 3 -Full thickness skin loss involving damage or necrosis of subcutaneous tissue that may extend down to but not through underlaying fascia. The ulcer presents clinically as a deep crater with or without undermining of adjacent tissue.

Stage 4 -Full thickness skin loss with extensive destruction, tissue necrosis or damage to muscle, bone, or supporting structures (for example, tendon or joint capsule). Undermining and sinus tracts may also be associated with Stage 4 pressure ulcers.

Surgical treatment of pressure ulcers is based on wound depth. Stage I and II ulcers are treated nonsurgically with local wound care and interventions to relieve pressure on the affected area. Patients with stage III or IV ulcers should be evaluated for surgery. Important features for preoperative assessment include the extent of soft tissue infection, the presence of contaminated fluid collection or abscess, osteomyelitis, and communication with deep spaces (e.g., joint space, urethra, colon, or spinal canal). Laboratory blood tests and imaging studies help establish whether soft tissue or bone infection is present. Plain radiographs are usually adequate to rule out osteomyelitis; CT and MRI are helpful when plain films are equivocal. Necrotic tissue and abscesses should be surgically debrided without delay to prevent or treat systemic sepsis. Bone must also be excised if it appears involved, as evidenced by poor bleeding, softness, or frank purulence. Patients with high spinal cord injuries at or above the level of the fifth thoracic vertebra may experience sudden extreme elevation of blood pressure, an autonomic-mediated event called hyperreflexia. This condition must be immediately recognized and treated to prevent intracranial and retinal hemorrhage, seizures, cardiac irregularities,
and death.

After adequate debridement, the pressure ulcer can be treated non-surgically in patients who

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have shallow wounds with healthy surrounding tissues capable of healing secondarily with offloading pressure. Nonsurgical treatment is also best in patients for whom surgery is contraindicated because of previous surgery or comorbidities. For surgical candidates, primary closure is rarely performed because an inadequate amount of quality surrounding tissue prevents closure without tension, making the repair predisposed to failure. Split-thickness skin grafting can be useful for shallow ulcers with well-vascularized wound beds on which shear forces and pressure can be avoided after repair, a rare circumstance in most patients with pressure ulcers.

II. OBSERVATION:

Out of total 50 patients observed, 14(28%) were females and 36 (72%) were males.

The patient's age ranges from 18 to 90. The mean average age of the patient admitted in the bed sore ward was 52.7 + 19.7 years of age. The place of origin of the majority of patients has been traced from Vellore, Cuddalore, Villupuram and Kallakurichi districts (central belt of TamilNadu). As per Modified Kuppusamy socio-economic scale, 42(84%) patients hailed from lower economic class, 5 (10%) from lower middle class and 3 (6%) from upper middle class. Most of the young patients with traumatic history had no co-morbidities. Out of the 50 patients, 18 (36%) had no comorbid conditions of any kind.

Out of 50 patients admitted , 29 patients belong to traumatic injury mainly RTA causing paraplegia/quadriplegia in young patients. Apart from RTA, 12 patients sustained injury due to fall from tree, fall from buildings. The reason for non-traumatic bedridden patients are mainly neurological illness like stroke, Diabetic foot ulcers, Parkinson's and Alzheimer's disease.About 70% of patients had presented with Grade 3 pressure sores (muscle involvement). Remaining patients had Grade 4 (bone depth) and Grade 2 ulcers. The cause for severe bedsore is mainly due to delay in patients presenting to the hospital, failure to notice the wound at early stages and seeking home remedy. Most of the bedsores received treatment with special alpha beds, water beds, nursing care with frequent position changing, daily dressing with surgical graft/flap if warranted (about 34%). Out of 50 patients, most of the bedridden patients suffered psychiatric illness like post-traumatic stress disorder and suicidal tendencies which were taken care by the psychiatrist counselling and management. Most of the patients are suffering from mental stress due to unemployment after the injury.

The majority of the patients had traumatic events before being bedridden. Traumatic group had 29 (58%) patients and the non-traumatic group had 21 (42%) patients. Road Traffic accidents is the important cause of trauma in patients received here. RTAs led to spinal cord injuries resulting in para/quadriplegia in young patients.

Mean duration of accident and formation bedsore was 15.37 months from accident.

Mean duration of time between formation of bedsore and seeking medical attention was 3.2 months. There was delay in patients presenting to the hospital after the formation of bedsore, attributed mainly due to failure to notice the wound at early stages and seeking home remedy rather expert opinions. Out of the 16 RTAs, 5 patients were pedestrians hit by a vehicle,9 patients were travelling by Two wheeler at the time of accident almost all the them had a two-wheeler vs car accident, 2 patients fell from bridge while driving.12 (24%) patients fell from height such as fall from tree/fall from buildings. It should be noted that fall from moving vehicles is included in the RTA category even if the patient was driving or a passenger. In the Non-traumatic group, neurological disorders were found to be the major cause of chronic debilitating factor leading to be formation of pressure sores. 9 (42% of all non-traumatic patients) patients had Neurological conditions, out of which 7 patients had cerebrovascular accidents of some form leading to hemiplegia/hemiparesis. 1 patient had Meningocele, and 1 patient has Spinal Arterio-venous malformation. In the Non-traumatic group, 3 patients had Parkinson's disease and 1 patient had Alzheimer's disease.25(50%) patients are paraplegics, 7(14%) patients are hemiplegics, 2 patients are quadriplegics. 35 (70%) patients had grade 3 pressure sores. 5 Patients had Grade 4 ulcer, 10 (20%) patients had Grade 2 ulcer.

Out of the 50 patients, only 1 patient had history of abandonment by his own family members and failure to get domestic help. Many patients had significant mental suffering, which included 12(24%) Post traumatic stress disorders, 4 (8%)patients with suicidal tendencies. Before the accident 13 were homemakers, 1 student, 30 unskilled workers, 4 were working as skilled workers, 2 had professional jobs. After incident, only 3 (6%) are working as helper/ assistants in shops and remaining 47 (94%) are unemployed. The unemployment after the accident was statistically significant <0.05. At present the outcome is, 17 (34%) has been managed by Surgery, 5(10 %) yet to be healed, 3(6%) expired

due to medical conditions, 3 (6%) referred to higher center for further management,22 (44%) patients had been treated conservatively which includes 3 AMAs.

III. DISCUSSION:

The prevention of pressure ulcers represents a marker of quality of care. Pressure ulcers are a major nurse-sensitive outcome. Hence, nursing care has a major effect on pressure ulcer development and prevention. Prevention of pressure ulcers often involves the use of low technology, but vigilant care is required to address the most consistently reported risk factors for development of pressure ulcers. The literature suggested that not all pressure ulcers can be prevented, but the use of comprehensive pressure ulcer programs can prevent the majority of pressure ulcers. When the pressure ulcer develops, the goals of healing or preventing deterioration and infection are paramount. Randomized controlled trials are needed to determine optimal management strategies dependent on stage and comorbidities/severity of illness. Nursing remains at the forefront of protecting and safeguarding the patient from pressure ulcers.

IV. CONCLUSION:

Pressure sores are a common occurrence in traumatic spinal cord injury patients. Pressure ulcers are caused by unrelieved pressure, resulting in damage to the underlying tissue. They usually occur over bony prominences and are classified as stages by the degree of tissue damage observed. Prevention is better than cure. Preventive measures for pressure ulcers consistsof basic skin care, pressure dispersion using fenestrated foams and alternating weight-bearing sites by regular turning. Mental stress due to unemployment after the injury is very common and the need for psychiatric counselling post- traumatic events is noted. There was delay in patients presenting to the hospital after the formation of bedsore, attributed mainly due to failure to notice the wound at early stages. Hence public awareness is crucialfor decreasing the disease burden at the family level and societal level.

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