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Research Article

RISK FACTORS OF PRESSURE ULCER IN ELDERLY NON-OPERATIVE FEMUR FRACTURE PATIENTS

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ABSTRACT

Introduction: Pressure ulcer can be defined as the degenerative changes in localized area of skin and underlying tissue caused by pressure, shear force, friction or the combination of these factors. These usually include all lesions caused by sustained pressure applied on body surface, such as hard bed surface leading to continued pressure on bony parts of body, paralyzed patients sitting in wheel chairs and wearing not properly fitted prosthesis of lower limbs. Such risks factors should be identified and treated properly to prevent pressure ulcers among non-operative femur fracture elderly patients.

Objective: The objective of this research was to determine the risk factors of pressure ulcer among elderly non-operative femur fracture patient. This study created awareness about risk factors responsible for pressure ulcer. By preventing these risk factors health status of non-operative femoral fracture patients can be improved.

Material and Methods: It was case control study in which self-structured questionnaire are used. Data was collected from Surgical and Orthopedic wards of Bahawal Victoria Hospital Bahawalpur from July 2017 to June 2018. Convenient sampling (Non-Probability) was used for data collection. Sample size calculated from "Raosoft" and sample size was 138.

Results: The result of this research shows that out of 138 patients 39(65%) patient were suffering from fecal incontinence; 27(62.8%) patient had more than 2 weeks stay at hospital; 39 (59.1%) patient had moist skin due to urinary incontinence; 55(64.7%) patient were affected by pressure of their mattress; 46(56.1%) had poor nutritional status; 50(47.6%) patient had difficulty in changing position; Shear force and friction were affecting 66(78.6%) patient.

The odds ratio of fecal incontinence, ICU stay more than 2 weeks, moist skin due to urinary incontinence, matters exerting pressure on bony prominences, patient's poor nutrition status and shear friction acting on body is greater than 1.00 so these are the serious risk factor of pressure ulcer in elderly with femur fracture.

Conclusion: Fecal incontinence, ICU stay more than 2 weeks, moist skin due to urinary incontinence, inappropriate mattress exerting pressure on bony prominences, patient's poor nutrition status and shear friction acting on body posed a greater risk of developing pressure ulcers. So these factors must be effectively prevented in these patients to decrease morbidity.

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INTRODUCTION

Pressure ulcer can be defined as the degenerative changes in localized area of skin and underlying tissues caused by shear force friction and the combination of both these factor. All lesions caused by sustained pressure applied on body surface such as hard bed surface leads to continued pressure on bony parts of body, prolonged wheelchair sitting and wearing not properly fitted prostheses of lower limb [1]. In this study those patients was included who had pressure ulcers due to the long stay in the hospital. Information of patient demographics,

disease and nutritional status was obtained. They tried to find out the risks of death in these patients. The patients who got pressure ulcer during the hospital stay was 76/684 (11.1%) and only 30/684 (4.4%) had pressure ulcers before the hospital stay [2].

The studies were conducted among the non-surgical patients and the results show that the major cause of pressure ulcer was low BMI and hypo-albuminemia. Low blood pressure is also a predictor of pressure ulcers. It is necessary to evaluate the risk factors of the patient before surgery. Utilizing a skill such as

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multiple regression technique (MRT) designed to indicate the key predictors for PU development [3]. A prospective cohort study was conducted to find out the factors which are involved in the formation of pressure ulcers.(5). Longer wait before surgery, prolonged surgical procedures and general anesthesia are possible risk factors for pressure ulcers. Environmental factors are also involved in the process of formation of pressure ulcer in hospital patients [4]

Most of the patients get pressure ulcers on the very first day after the surgery. The common sites of pressure ulcers are the sacrum, heels, and buttocks [6]. The patients with femoral neck fractures commonly face the risk of pressure sores and there is definitive advantage of Interface pressure reducing mattress in preventing the PU [7]. The nutritional deficiencies such as low albumen level & vitamin C, A and E deficiency are the risk factors for pressure ulcers [8]. Another major factor which causes pressure sores in surgical patients is immobility [9]. Fecal incontinence, leaking urinary catheters in fracture patients have heigh risk of devolping pressure ulcer. 17% of hospitalized patient have high risk of dveloping pressure ulcers and bed ridden patients have greater risk[10]. In one study 66 patients developed pressure sores, and 83% pressure sores developed on 5th day in hospital. This is caused due to long periods of immobilization of the patients on high pressure surface in ward before repair of fracture and achieving weight bearing function [11]

MATERIALS AND METHODS

This is a case control study .Data was collected from Surgical and Orthopedic wards of Bahawal Victoria Hospital Bahawalpur from July 2017 to June 2018. Convenient sampling (Non-Probability) was used for data collection. Sample size calculated from “Raosoft” and sample size was 138. There were two groups i.e. case group and control group. In case group male and female patients of non-operated femur fracture, age > 60 years with pressure ulcers were included, while those patients were excluded who had any other fracture, any other previously developed ulcers, patients with known skin pathology and patients of age < 60 years. On the other hand, patients of both genders with non-operated femur fracture, no pressure ulcers and age > 60 years were included in control group. Both gender were equally included in this study. An informed consent was taken from the study participants who fulfill inclusion criteria. Data was collected by using 12 point self-structure questionnaire & Braden scale used to find out the pressure ulcer risk factors among femoral fracture elderly patients. The Braden scale was based on an overview of the literature. The scale is made of six subscales. 23 is the highest score maximum score is 23, and cutoff scores which is used in different studies IS 16.(Bergstrom et al. 1987). In various populations the validity of Braden scale has been examined different. In these studies 38% and 100% sensitivity ranges and 60% and 92% between specificity. After collection of data, Odds ratio and relative risk were used to analyze data and all data was analyzed by using IBM SPSS statistics version 16, mean and +_ SD (standard deviation).

RESULTS

The result of this research shows out of 138 patients 39(65%) patient were suffering from fecal incontinence; 27(62.8%)

patient had more than 2 weeks stay at hospital; 39 (59.1%) patient had moist skin due to urinary incontinence; 55(64.7%) patient were affected by pressure of their mattress; 46(56.1%) had poor nutritional status; 50(47.6%) patient had difficulty in changing position; Shear force and friction were affecting 66(78.6%) patient.

The odds ratio of fecal incontinence, ICU stay more than 2 weeks, moist skin due to urinary incontinence, mattress exerting pressure on bony prominences, patient’s poor nutrition status and shear friction acting on body is greater than 1.00 so these are the serious risk factor of pressure ulcers in elderly with femoral fracture.

Table1 Gender its frequency and percentage

Gender	Frequency	Percentage
Male	93	67.4
Female	45	32.6
Total	138	100

The percentage of male patients are involve (N=138, 67.4%)
The total female patients are involve (N=138 , 32%)

Table 2 Descriptive statistics of age

	Minimum	Maximum	Mean±SD
Age of patients	60.00	88.00	67.56±6.23

Age range of the male and female patient are 60 to 88 years

Table 3 Risk factors of pressure ulcer and Odds ratio value

Risk Factors	Having	Pressure Sore N=138		Odds ratio value	p-value
		Yes	No		
1. IS the patient suffering from fecal incontinence?	Yes	39 (65%)	21 (35%)	2.28(1.14-4.56)	0.016
	No	35 (44.9%)	43 (55.1%)		
2. Is the stay in ICU is longer than 2 weeks?	Yes	27 (62.8%)	16 (37.2%)	1.72(.82-3.60)	0.392
	No	47 (49.5%)	48 (50.5%)		
3. Is the skin moist due to fecal incontinence?	Yes	39 (59.1%)	27 (40.9%)	1.52(.77-2.99)	0.211
	No	35 (48.6%)	37 (51.4%)		

Risk Factors	Having	Pressure Sore N=138		Odds ratio value	p-value
		Yes	No		
4. Mattress exerting pressure on bony prominence?	Yes	55 (64.7%)	30 (35.3%)	3.28(1.60-6.71)	0.029
	No	19 (35.8%)	34 (64.2%)		
5. Is patient nutritional status poor?	Yes	46 (56.1%)	36 (43.9%)	1.27(.64-2.52)	0.521
	No	28 (50.0%)	28 (50.0%)		
6. Do patient change position after 2 hours?	Yes	50 (47.6%)	55 (52.4%)	.34(.14-.80)	0.740
	No	24 (72.7%)	9 (27.3%)		
7. Is shear force or friction acting on body?	Yes	66 (78.6%)	18 (21.4%)	21.08(8.45-52.5800)	0.00
	No	8(14.8%)	46 (85.2%)		

DISCUSSION

Data have been collected from patients who had neck of femur fracture using self-structured 11 items questionnaire related to the risk factors of pressure ulcer among elderly patients. Age above 60, poor nutritional status, long hospital stay, difficulty in position change, moist skin due to urinary incontinence were estimated high risk factors for pressure ulcer in elderly patients. Literature shows, those patients who have to wait long for the surgical treatment of neck of femur fracture, staying for long

in intensive care unit and treated by general anesthesia were at great risk for pressure ulcers. During the hospital stay patients were also affected by extrinsic factors. The result of this research also proves that pressure exerted on body bony prominences by mattress and shear force and friction caused pressure ulcers in elderly neck of femur fracture patients. Literature shows that patient who were treated surgically were at low risk for pressure ulcer. The cause of pressure ulcer in surgically treated patient was immobility [9]. The result of this research also proves that patient who were unable to change their body position were at higher risk of pressure ulcers.

Fecal incontinence was proved to be a serious risk of pressure ulcers. Patient with moist skin developed pressure ulcers in bed ridden elderly patients of non-operative neck of femur fracture patients [10].

CONCLUSION

Pressure ulcers are serious complication of neck of femur fracture among non-operative elderly patients. Risk factors should be treated properly to prevent pressure ulcer among patients. Fecal incontinence, moist skin, poor nutritional status, long hospital stay and bed ridden patients are at higher risks for pressure ulcer. Shear force and friction should not act upon the patients. Proper pressure exerting mattress should be used at hospitals and home to prevent bony prominence for pressure ulcer.

Further researches should be done regarding to pressure ulcer in non-operative neck of femur fracture elderly population in rural areas as well. It will help to make people aware about the risk factors of pressure ulcer and teach them prevention strategies.

Ethical Consideration

- Data was collected from the patients in orthopedic and surgical departments of hospital
- Consent was taken from the patient
- Data was confidential.
- This study has No financial conflict of interest

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