

Risk of Decubitus Ulcers and their Occurrence in the Group of Patients Admitted to Hospital for Treatment at Conservative Wards

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Abstract

Introduction. Present scientific research indicates that the occurrence of decubitus ulcers among hospitalized patients is still a great medical problem, which has the influence on both, the quality and cost of medical care. In Poland, for years, some actions have been taken within the scope of decubitus ulcers' prevention and modern methods of their treatment. The effectiveness of those activities can be influenced by early diagnosis of the risk of occurrence of decubitus ulcers.

Research aim. The aim of the research was the assessment of risk and occurrence of decubitus ulcers in the group of patients accepted for hospital treatment on conservative wards.

Material and method. The research comprised of 10,507 patients on admission day for treatment to the following wards: Allergology, Gastroenterology, Geriatrics, Cardiology, Neurology, Rheumatology and Rehabilitation. In order to collect data the following methods were used: analysis of medical records, Norton scale for assessment of decubitus ulcers' risk and Torrance scale for assessment of ulcer's degree. Data analysis was conducted on the basis of program "Statistica – version 8".

Results. The risk of decubitus ulcers development was observed in 12% of all the patients admitted for treatment. It was the highest among patients admitted to Rehabilitation Ward (50%) and Neurology Ward (34%). Occurrence of decubitus ulcers was confirmed among 7% of all the examined patients, including above 3% of II/2nd degree. The highest percentage (27%) of decubitus ulcers was confirmed among the patients accepted to Rehabilitation Ward.

Conclusions. Diagnosing occurrence of decubitus ulcers at admittance to hospital and proper assessment of the risk of their occurrence allows for implementation of appropriate prophylactic procedures and treatment.

Key words: risk of decubitus ulcers, decubitus ulcer, prevention, treatment

Słowa kluczowe: odleżyny, zapobieganie odleżynom, leczenie odleżyn



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Introduction

In the second half of the 20th century, the research on etiology and pathogenesis of decubitus ulcers began but that topic is still open for researchers because of its many aspects referring to the origin and healing of decubital wounds [1].

Decubitus ulcer, according to international EPUAP (European Pressure Ulcer Advisory Panel), “is damage of skin and the cells under it caused by compression, cutting, friction, and/or combination of the factors mentioned before” [2].

Research conducted in 1980s on 37 million of the patients hospitalized by American Center of Research and Education on Bedsores showed that the risk of decubitus ulcer development occurred at 20% of the patients [3]. Present research also proves that the problem of decubitus ulcer occurrence still refers to many countries, including Poland. In the research done in 2005 in Germany on 16 million of the hospitalized patients, decubitus ulcer was the basic clinical diagnosis for 0.06%, and for 1.19% decubitus ulcer was diagnosed as a concomitant problem. The same research showed that the mortality of the patients with decubitus ulcers amounted to 10.9% and was higher among women [4]. Decubitus ulcers, depending on the medical centre, disease entity and patient’s age, occur among approximately 5–25% of the hospitalized patients [5]. The analysis of the literature indicates that the development of decubitus ulcers takes place during the first two weeks of hospitalization, “More than 30–40% develop during the first week, whereas about 70% during the second week of patient’s immobilization” [6]. For advanced stage of malignant disease, decubitus ulcers pose a problem in treatment of 12–24% of the patients [7]. The research on the elderly showed that 11% of the patients in elderly care homes suffered from decubitus ulcers [8].

Decubitus ulcers are of multifold etiology and the complexity of this medical problem led to the division of decubitus ulcers’ risk factors into the following groups: external factors depending on a patient and internal independent factors [1, 9]. High incidence of decubitus ulcers causes increased interest in risk factors, particularly in those which can be prevented. The dependence between risk factors and occurrence of decubitus ulcers cannot be easily estimated, however, there are a few interrelations, which can be distinguished. Among them: the level of albumen in blood serum, state of nutrition, concomitant diseases and age. Measurement methods used for those factors enable to get objective results [10–13]. According to American researchers, the occurrence of decubitus ulcers is the highest among people with BMI below 18.5 (27.3% of the examined) and decreases with the increase of the factor [11]. Almost 80% of decubitus ulcers’ occurrence is joined with deaths above the age of 75 in the course of disease entities and symptoms such as: multiple sclerosis, Parkinson disease, osteoporosis, paralysis and sepsis [4].

The risk of decubitus ulcers’ development due to chosen factors, which contribute to their occurrence are assessed by means of many scales. The most often used scales are: Norton, Douglas, Waterlow, Braden and the

scale according to Dutch Consensus Prevention of Bedsores (CBO). In the way of thoroughness, the scales Norton, Douglas and Braden were assessed. It is difficult to say unambiguously which tool is the most effective and universal because the appropriate choice depends on the features of the population under research, clinical conditions and characteristics of a ward [6, 9].

Decubitus ulcer wounds as a serious therapeutic problem pose a challenge of nursing, curative and economic character [14]. Decubitus ulcers are also the cause of pain and suffering, they can lead to dangerous complications of general health condition, at the same time extending the period of hospitalization [9]. Individualized nursing care means identifying the patients with risk of decubitus ulcers in order to introduce proper preventive and therapeutic measures.

The aim of research

Assessment of the risk of decubitus ulcers and their occurrence in the group of patients accepted for hospital treatment on conservative wards.

Material and method

The research was done on a group of patients admitted for hospital treatment on conservative wards (**Table 1**) in the year 2014. In total, 10507 patients were examined.

According to the research model (**Figure 1**), the number of patients with decubitus ulcers admitted to hospital for diagnosis or treatment was assessed, as well as the group of patients with the risk of their occurrence.

The risk criteria of decubitus ulcers’ development was the result obtained according to Risk Assessment Scale of Decubitus Ulcer Development Norton. Doreen Norton Scale is based on the factors leading to the development of decubitus ulcers. The tool assesses the parameters of somatic condition, consciousness condition, mobility and urinary and fecal incontinence. The obtained score 14 or lower shows the risk of decubitus ulcers’ occurrence. This scale constitutes a simple, non-invasive screening tool, which enables to assess the risk of decubitus ulcers’ development of all the hospitalized [15].

Moreover, the percentage of patients with decubitus ulcers which came into being during hospitalization was recognized, also with the degree of ulcer. The assessment criterion of the degree of ulcers was done on the basis of Classification of Decubitus Ulcers according to Torrance. Five-grade scale according to Torrance enables the assessment of ulcer bed. The grades of the scale, determined and described in detail, enable to qualify appropriately the changed tissues with their depth of lesion. The grades used in the tool (1–5) increase with the skin lesion where I° indicates reversible pale reddening, and V° advanced necrosis a bone [1, 9].

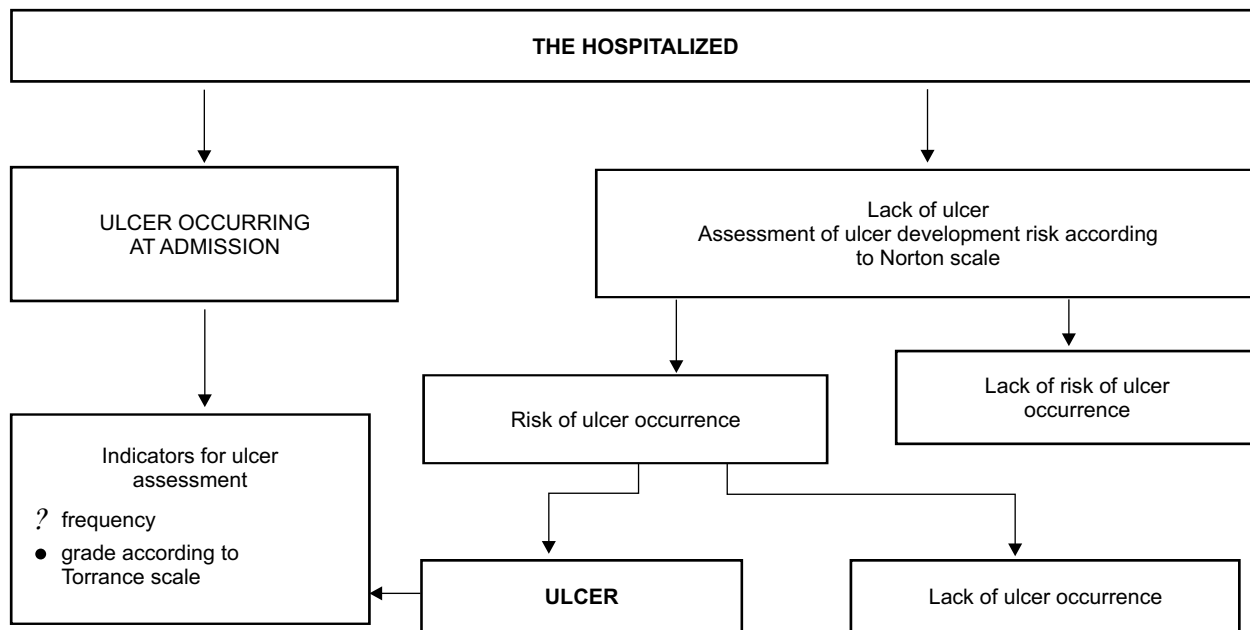
Data analysis in view of the characteristics of particular wards was made by means of statistics packet “STATISTICA 8”. To describe variables descriptive statistics were used in the form of standard deviation (SD) and medians (Me).

Table I. Ulcer occurring at admission for hospital treatment according to Torrance scale

Ward	The hospitalized N	Relation of accepted patients with ulcer to all the hospitalized according to Torrance scale																																			
		I°						II°						III°						IV°						V°						Total					
		N	%	Me	SD	N	%	Me	SD	N	%	Me	SD	N	%	Me	SD	N	%	Me	SD	N	%	Me	SD	N	%	Me	SD								
I Ward of Internal Diseases and Allergy	2003	49	2.45	2.14	1.31	95	4.74	4.19	2.26	43	2.15	1.90	1.18	18	0.9	0.63	0.83	9	0.45	0.00	0.64	214	10.68	1.90	0.76												
II Ward of Internal Diseases and Gastroenterology	2104	51	2.42	1.97	2.05	59	2.8	2.891	1.637	25	1.19	0.79	1.24	15	0.71	0.62	1.02	12	0.57	0.24	0.69	162	7.7	0.79	0.72												
III Ward of Internal Diseases and Geriatrics	1888	27	1.43	0.68	2.04	111	5.88	4.11	3.76	29	1.54	1.25	1.19	23	1.22	1.20	1.31	16	0.85	0.60	0.94	206	10.91	1.20	1.27												
Cardiology Ward	1743	15	0.86	0.73	0.85	49	2.81	2.45	1.95	22	1.26	1.01	1.21	12	0.69	0.66	0.87	3	0.17	0	0.45	101	5.79	0.73	0.66												
Neurology Ward	682	6	0.88	0.68	0.93	17	2.49	1.84	2.25	3	0.44	0	1.19	3	0.44	0	0.78	0	0	0	0	29	4.25	0	0.84												
Rheumatology Ward	1967	2	0.1	0	0.23	2	0.1	0	0.24	3	0.15	0	0.38	0	0	0	0	1	0.05	0	0.18	8	0.41	0	0.15												
Systemic Rehabilitation Ward	59	3	5.08	0	12.09	5	8.4	0	12.26	4	6.78	0	14.75	2	3.39	0	10.12	2	3.39	0	0	16	27.12	0	5.47												
Apoplexy Rehabilitation Ward	61	0	0	0	0	0	0	0	0	1	1.64	0	4.81	1	1.64	0	4.81	0	0	0	0	2	3.28	0	2.48												
Total	10 507	153	1.46	1.39	0.78	338	3.22	3.18	0.89	130	1.24	1.06	0.50	74	0.7	0.61	0.39	43	0.41	0.50	0.22	738	7.02	1.06	0.33												

Source: Authors' own elaboration.

Figure 1. Research Model



Source: Authors' own elaboration.

Results

The patients admitted to hospital with decubitus ulcers made up 7.02% of all the hospitalized. Though, in wards of Internal Diseases and Allergology, Internal Diseases and Geriatrics the percentage of the patients admitted to a ward with ulcers, in relation to all the patients hospitalized in a ward, amounted to 10.68% and 10.91%. The most numerous group of patients (27%) with ulcers occurrence while accepting to hospital in relation to all the patients hospitalized in a ward, were the patients of Systemic Rehabilitation Ward, where decubitus ulcers of 2nd degree were confirmed for more than 8% of the patients. The smallest percentage, in comparison with the other wards, of patients accepted with ulcers (0.41%) referred to Rheumatology Ward. The complete results of the research referring to accepting a patient with ulcer in all wards are illustrated in Table I.

The patients with risk of ulcer occurrence amounted to 12.73% of all the hospitalized, 6.05% of them developed decubitus ulcers of 2nd degree. The highest percentage of the patients with risk of ulcer occurrence in relation to all the patients accepted to a ward referred to Systemic Rehabilitation Ward (50.85%) and Apoplexy (55.74), and Neurology (34.31%) (Table II). Rheumatology Ward presented a slight percentage (0.92%) of the patients with risk of ulcers, only one patient developed decubitus ulcer of 2nd degree in this group. Other Wards of Internal Diseases and Cardiology had a similar percentage of patients with risk of ulcers from 12.45% to 14.02%. The above research results are illustrated in Table II and Table III.

Ward I of Internal Diseases and Allergology, and Ward III of Internal Diseases and Geriatrics had the highest percentage of the patients whose ulcers occurred during hospitalization – 15.26% of 1st degree and 12% of 2nd degree (in the group of patients with risk of ulcer) (Table III). In Apoplexy Rehabilitation Ward no patient with ulcer occurrence was recorded during hospitalization. Neurology Ward presented a low percentage of patients with ulcers occurring after admission to hospital and of all the grades in Torrance scale, 3rd grade was the highest (1.28%). In the group of patients with risk of ulcer occurrence in all the wards under research, the highest percentage of ulcers developed at 1st grade (5.98%) and 2nd (6.05%). Advanced ulcers at 4th grade were observed in 0.67% of the patients, but 5th grade ulcers were not recorded (Table III).

The median referring to ulcer occurrence in the hospital under research in relation to all the patients with risk of ulcers in all wards amounted to 5.56 for 1st and 2nd grades (Table III).

Discussion

On the basis of the research results on decubitus ulcers' risk and their occurrence in the group of patients admitted for treatment in conservative wards, it can be observed that the highest percentage of the patients whose ulcers developed after admission to hospital was in I Ward of Internal Diseases and Allergology, more than 15% at 1st degree, and in III Ward of Internal Diseases and Geriatrics, 12% of 2nd degree. In these wards, the relation of the patients with ulcer occurrence risk to all

Table II. Patients endangered with ulcer occurrence

Ward	Hospitalized		Relation of patients endangered with ulcer occurrence to all the hospitalized according to Norton scale			
	N	N	%	Me	SD	SD
I Ward of Internal Diseases and Allergology	2003	249	12.43	11.23	6.28	6.28
II Ward of Internal Diseases and Gastroenterology	2104	295	14.2	15.4	5.27	5.27
III Ward of Internal Diseases and Geriatrics	1888	250	13.24	12.20	3.11	3.11
Cardiology Ward	1743	228	13.08	12.06	7.38	7.38
Neurology Ward	682	234	34.31	35.28	2.98	2.98
Rheumatology Ward	1967	18	0.92	2.23	4.31	4.31
Ward of Systemic Rehabilitation	59	30	50.85	46.82	3.29	3.29
Ward of Apoplexy Rehabilitation	61	34	55.74	45.16	4.84	4.84
Total	10 507	1338	12.73	12.97	1.14	1.14

Source: Authors' own elaboration.

Table III. Patients whose ulcers occurred in a ward according to Torrance scale to the ones endangered with ulcer occurrence

Ward	Patients endangered with ulcers according to Norton scale		Relation of patients whose ulcers occurred in a ward according to Torrance scale to the ones endangered with ulcer occurrence															
	N	Norton scale	I°			II°			III°			IV°			V°			
			N	%	Me	SD	N	%	Me	SD	N	%	Me	SD				
I Ward of Internal Diseases and Allergology	249		38	15.26	12.59	11.33	8.03	5.93	8.94	3	1.2	0	2.80	2	0.8	0	3.21	-
II Ward of Internal Diseases and Gastroenterology	295		13	4.41	6.80	3.86	3.73	12.96	5.50	6	2.03	0.79	1.24	6	2.03	0.62	1.02	-
III Ward of Internal Diseases and Geriatrics	250		18	7.2	6.11	9.74	12	12.92	11.16	5	2	0.00	3.26	1	0.4	0	1.92	-
Cardiology Ward	228		6	2.63	1.92	2.88	7.46	7.03	6.33	1	0.44	0.00	1.92	0	0	0.00	0.00	-
Neurology Ward	234		2	0.85	0.00	2.05	0.43	0.00	1.44	3	1.28	0.00	2.99	0	0	0.00	0.00	-
Rheumatology Ward	18		1	5.56	0.00	9.62	5.56	0.00	9.62	1	5.56	0.00	4.81	0	0	0.00	0.00	-
Ward of Systemic Rehabilitation	30		2	6.67	0.00	15.05	3.33	0.00	14.43	1	3.33	0.00	7.22	0	0	0.00	0.00	-
Ward of Apoplexy Rehabilitation	34		0	0	0.00	0.00	0	0.00	0.00	0	0	0.00	0.00	0	0	0.00	0.00	-
Total	1338		80	5.98	5.56	4.56	6.05	5.56	3.94	20	1.49	0.80	1.88	9	0.67	0.00	2.09	-

Source: Authors' own elaboration.

the hospitalized amounted respectively to 12.43% and 13.24%. Neurology Ward presented higher percentage of the patients with ulcer occurrence risk (34.31%), whereas the ratio of the patients whose ulcers occurred during hospitalization to those with ulcer occurrence risk was definitively lower and amounted for 1st degree to 0.85% and 0.43% for 2nd grade. The above analysis shows that the research should be broadened with the issues referring to risk factors of ulcer occurrence among patients.

In news bulletins about the frequency of decubitus ulcers' occurrence, different data is presented – depending on a medical centre, disease entity and patient age. It is estimated that ulcers occur among approximately 5–25% of the hospitalized patients, most often in intensive care units and long-term care units as well as among patients after injury or in the course of spinal cord diseases [5]. The percentage of ulcers occurrence based on own study in internal wards was between 2 to 15% (Table III).

In the research conducted in the years 2004–2009 in Municipal Hospital in Olsztyn, in the course of 6 years 97194 patients were hospitalized, out of whom a group of 10762 patients with ulcer occurrence risk was marked off, which was 13.75% of all the patients admitted to that hospital. During the research period, ulcers occurred among 4.84% of all the hospitalized [16]. The results obtained during own study referring to the group endangered with ulcer occurrence are similar and amount to 12.73% (Table II). The percentage of ulcers occurrence in all the wards under research amounted to (5.98%) of 1st degree and (6.05%) of 2nd degree, and referred to the group of patients with ulcer occurrence risk (Table III).

Epidemiologic data from the USA estimate frequency of ulcers occurrence in the wide range from 0.4 to 38% for emergency cases, 2.2–23.9% for inpatient health service, from 0 to 17% for the bed-ridden in chronic home care [17]. In own study, the patients admitted with ulcers amounted from 0.41% in Rheumatology Ward to 27.12% in Systemic Rehabilitation Ward (Table I).

Due to multi-factor etiology of decubitus ulcers occurrence, they cannot be eliminated completely, but they should be controlled and their occurrence diminished by prophylaxis and treatment.

Conclusions

The results obtained in the presented research show the scale of the health problem caused by the risk of decubitus ulcers and their occurrence in the group of patients admitted to hospital in conservative wards. Diagnosing occurrence of decubitus ulcers at admittance to hospital and proper assessment of the risk of their occurrence allows for implementation of appropriate prophylactic procedures and treatment.

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