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Evaluation and management of pain in geriatric patients who were diagnosed in Emergency Department

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Introduction and purpose of the work. Pain is one of the most common causes of medical rescue teams' callings. Most of the cases are solved at patients' homes. Some problems presented by geriatric patients are too difficult to be evaluated at home and need to be admitted to hospitals' emergency departments(ED) for further diagnosis. Geriatric patients are often burdened with multiorgan dysfunctions which can cause pain. This problem in senior population is often overlooked or underestimated **Material and method.** Survey was conducted among 100 patients after 65 years of age who were admitted to ED because of pain. Location, the intensity of pain before and after application of analgesia, vital signs(heart rate, blood pressure, the number of breaths, temperature), previously administered pain killers and sociodemographic factors were evaluated and noted **Results.** Women predominated in the study group as well as the patients with posttraumatic pain (mostly fall from the same height). Forty

five percent of patients took a painkiller at home. Preliminary average rating of pain numeric scale (NRS) was 7.49 points. Respondents who received painkillers before coming to the ED, felt more severe pain than those who did not take medications (NRS 7.93 vs. 7.41). Thirty minutes after application of analgesic pain intensity averaged 3.74 points.

Conclusions. Pain is a common cause among elderly patients who report to ED, despite previously adopted analgesics. It remains underestimated in prehospital care and needs special attention in emergency departments.

Key words: geriatric patient, injury, pain assessment, emergency department

Introduction

In almost every country, including Poland, the proportion of people aged over 65 years is growing faster than any other age group as a result of both longer life expectancy and declining fertility rates. Polish seniors have constitutionally guaranteed rights, including the right to free health services. Elongation of the average life expectancy, unfortunately, does not always translates into quality. One of the biggest problems that reduce the quality of life is pain. In geriatric patients ache is perceived a little differently than among younger patients. This may be related to bigger baggage of experience and greater resistance and multiorgan dysfunctions which usually are related to pain. Therefore, the definition of lasting pain in geriatric patients has been expanded to statement that it is an unpleasant sensory and emotional experience, associated with damage or threat of damage to tissue in the elderly (65-79 years) and very old (> 80 years) whose pain lasts in excess of 3 months **[1].** Acute pain in these individuals can apply independently and in many ways it's cause and intensity is difficult to be diagnosed and evaluated.

Purpose of work

The aim of our study was to obtain the information about pain of the elderly patients who were diagnosed and treated in ER because of reported soreness that did not responded to previous treatment. We also investigated the reasons of admissions and association with demographic factors.

Material and methods

Medical records (within 3 months of 2016) of 100 patients older than 65 years who were admitted to ED with pain were investigated retrospectively. Inclusion criteria were: age, consent for participation in the project, and pain as a cause of admission to ED.

Tools: We used 11-point Numerical Rating Scale (NRS) and the Visual Analog Scale (VAS) for pain intensity evaluation. Following the cut points on the scale, we determined 3 stages of pain intensity: 1-3 mild (analgesia not compulsory), 4-6 moderate (pain medication should be delivered) 7-10 severe pain.

Statistical analysis: Data were analyzed using IBM STATISTICA 12.0 (StatSoft, Poland). The values of the measurable parameters were presented by mean value, median and standard deviation and for non-measurable parameters using cardinality and percentage. For measurable features, the normality of the distribution of the analyzed parameters was evaluated using the W. Shapiro-Wilk test. The Chi2 independence test was used to investigate the existence of the relationship between the studied features. The Wilcoxon pairs order test was used for dependent variables to assess pain before and after administration of the drug. A significance level of $p < 0.05$ was assumed indicating the existence of statistically significant differences or dependencies. The database and statistical surveys were based on computer software.

Ethics

The study was approved by the Ethics Committee of the Medical University of Lublin.

Results

Sample characteristics:

The average age of women was 72.50 ± 5.63 and men 71.13 ± 4.85

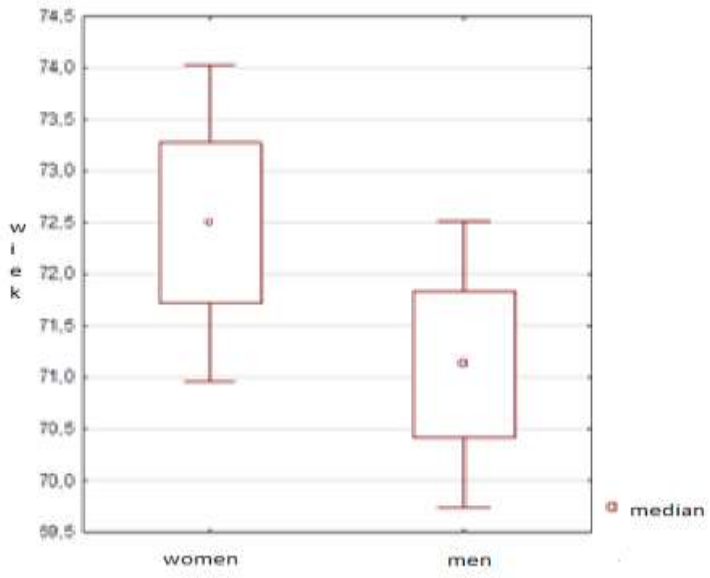

Figure1. The average of men and women

Table 1 The characteristics of the evaluated group.

	N (%)
women	53
traumatic patient	69
city inhabitant	52
living alone	26
obesity	58
underweight	30
smoking	38

The most common reason for admission to ED was post-traumatic pain (54%), cancer (10.39%), renal or biliary disorders (7.79%) and other - table 2

Table 2 Reasons for admission to ED

	N (%)
posttraumatic pain	54
dyspnoea	6
gripe	6
atrial fibrillation	6
fatigue	2
hypertension	3
neoplasm	10
burn	3
cystitis	2
infarct	4
others	4
together	**100**

The research shows that the vital parameters of patients reporting to ED were normal, only blood pressure was slightly increased (Table 3).

Table 3. Evaluation of patients' vital parameters.

parameters	**median**	**SD**	**lower quartile**	**median**	**upper quartile**
pulse	75,77	13,08	65,00	75,00	80,00
blood pressure	146,21	23,82	130,00	140,00	160,00
body temperature	36,70	0,44	36,50	36,60	36,80
breaths	15,75	2,82	14,00	15,00	17,00

The research shows that 44% (n = 44) of the respondents received painkillers before reporting to ED. Especially patients treated because of internal diseases more often took painkillers (51.47%) than the surveyed trauma patients (29.03%). The differences were statistically significant (p = 0.04). Statistical analysis showed that before admittance to ED, women took pain medications (53.85%) more often than men (34.04%). The differences were statistically significant (p = 0.05). The respondents reported morphine (22.73%) or ketoprofen (22.73%) as most commonly administrated medications, less frequent were paracetamol (18.18%), ibuprofen, (11.36%), adhesives (2.27%), No-Spa (6.82%) or other medications. Analgesics were self-administered (36.36%) or given by family (38.64%), while 15.91% of respondents received a drug from a paramedic, 2.27% from a nurse, 4 , 55% from a doctor and 2.27% from the neighbor. All patients were in pain at the time of reporting to ED. The most common were pain in the abdomen (30%), upper and lower extremity, hip (26%) and chest (20%). The less frequent were pains of head, jaws, ear (16%) and back (8%).

The studies show that before taking medication, patients rated the mean pain on a scale (of 1 to 10 points) as 6.69 ± 1.36. In addition, trauma patients experienced slightly stronger pain compared to internal medicine patients. The differences found were not statistically significant (p = 0.56), (Table 4).

Table 4. Pain severity assessment and the cause of the complaint

Cause of complaint	average	SD	lower quartile	median	upper quartile
internal diseases	6,62	1,47	5,50	7,00	8,00
trauma	6,84	1,10	6,00	7,00	7,00
p=0,56					

The statistical analysis showed that the respondents who received painful medications before entering the ED felt more intense pain than those who did not take them. The differences found were not statistically significant (Table 5).

Table 21. Pain severity assessment including taking pain medications before reporting to ED

pain killers before admission	average	SD	lower quartile	median	upper quartile
yes	6,93	1,30	6,00	7,00	8,00
no	6,49	1,39	6,00	7,00	7,00
p=0,11					

The most frequently administered first choice anty-pain medication in ED were morphine (29%), ketoprofen (19%), tramadol (11%), pyralgin (10%), No-Spa (13%) and others (18%).

Studies show that the level of pain within 30 minutes from drug administration was higher in patients who received morphine compared to those who received other medications. The differences found were statistically significant (p = 0.01), (Table 6).

Table 6. Assessment of pain intensity 30 min. after administration of the pain killer

medication	average	SD	lower quartile	median	upper quartile
morphine	4,25	1,04	4,00	4,00	5,00
others	3,54	1,22	3,00	4,00	4,00
p=0,01					

Most often, the first painkiller was administered intravenously (86%), and less often orally (6%) or intramuscularly (8%).

Discussion

According to Polish law, every patient is guaranteed the right to cure pain by the Patient's Rights Act [2]. Until now, the provision of the Act guaranteed the right to alleviate pain only to ill patients in the terminal state. As part of the current modification of the act: "every patient has the right to treat pain". Regulations provide a legal basis that guarantees pain

relief to all patients who are suffering pain, regardless of the type and stage of the disease. To our knowledge the current research is one the first Polish studies describing geriatric pain management.

The analysis showed that larger group of patients had taken painkillers before admittance to ED, for a longer time than assumed in the hypotheses. They constituted about ¾ of the studied group. This is most likely caused by multifariousness of admitted drugs in this group, which is confirmed by other researchers [3,4]. Our research showed that a significant proportion of people who took pain medicines did not know what the exact name of the drug was and what were its side effects. An interesting phenomenon is the fact that the only painkillers which patients could remember were those which are shown in television commercials. Most of respondents received painkillers before coming out to patients clinic or ED. Majority of them were suffering of internal diseases. This was most likely caused by the fact that such patients usually know their ailments and know what medications they can take. Additionally we observed that women were more likely reporting painful ailments requiring additional administration of painkillers (53%). According to questionnaire, the most common drug before arrival to ED was morphine (27%) and ketoprofen (27%). The respondents stated that usually medications were taken by themselves (36%) or were given by family members (38%). Health care workers were mentioned on the closing positions, which does not agree with our observations. Opioids were most often administered by health care professionals, and data proving this fact were collected from Mobile Emergency Units' (MEU) travel cards. This may be due to the fact that the majority of patients could not remember the medicines which they were given and which painkillers they received from personnel hired in MEU, ED or outpatient clinics. Generally, respondents had problems with the survey and presented difficulty in understanding the questions. All patients in the study experienced pain and almost all of them received medications, that in their opinion reduced pain. The most common pain reported by the respondents was abdominal pain (30%). Unfortunately, we could not find the research of other authors in this particular age group, which indicates the lack of data and the need for further research and publications. Patients who completed the questionnaire indicated the same numerical value each time, both on the VAS and NRS scales, which is contrary to the results of the studies by Kosiński and Siudut. In their work, they proved the discrepancy between the two scales. It may be due to a much wider circle of the respondents in the work of the above-mentioned authors and the age divergence that occurs in both works [5]. Our studies showed that the vast majority of respondents lived with family, (75%), but it were

patients who lived alone that more often reported to medical services with pain problems. The reason for this may be loneliness and the psycho-social aspect, which has been proven in many studies. it is especially visible in elderly people, who have been isolated from social life, so they can look for different contacts with the society even such as reporting with pain ailments which sometimes may be exaggerated or even simulated [6]. The studies also indicated that people after 65 years of age who live alone, were more likely to report injuries. This may be due to the fact that most of the housework must be done by themselves, which significantly increases the risk of trauma [7]. The analysis also showed that 74% of patients were taking medications permanently. This is most likely caused by multifariousness in this group, which is confirmed by other researchers [8].

Limitations of the study

It was hard to gather more numerous age group. Some of the patients had problems with fulfilling a questionnaire and understanding the questions.

Conclusions:

1. 30 minutes after analgesics administration patients experienced significant improvement in pain comfort and indicated on the NRS and VAS scales an average of 3 points lower than before drug admission.
2. The most common pain complaints reported by patients were abdominal pain 30% and chest pain 20%.
3. 75% of respondents were taking medications permanently, including analgesics.
4. The most common painkillers in ED were opioids, while non-opioids were more commonly administered in the outpatient clinic.
5. Demographic factors: age and gender have no effect on the perception of pain. Also, smoking and BMI did not show dependence in the perception of pain. Psycho-social factors influence the pain perception in patients over 65 years of age.
6. Patients suffering from pain had a slightly higher blood pressure and heart rate while body temperature and number of breaths were normal.

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