

EVALUATING THE ANALGESIC CONSUMPTION IN A CLINICAL EMERGENCY HOSPITAL

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Manuscript received: November 2016

Abstract

One of the main objectives of the European drug policies is to promote the rational usage of medications. Analgesics were identified as being the group of medicines most frequently prescribed by physicians, in order to release pain. Taking into account all these aspects, the objective of this study was to properly evaluate the analgesic consumption within a major county hospital, in Europe, in order to adequately help doctors in prescribing these drugs. The study was undertaken in the Clinical Emergency County Hospital of Oradea (CECHO), Romania, between 2013 and 2014, into the surgical and intensive care unit (ICU) wards. Within the analysed period, from the total of 88163 people treated, 63.8% were given analgesic treatment, of which 78% were treated on the ICU and surgical wards. Injectable analgesics are the most common (99% on the ICU and 97% on the surgical wards), the most used being metamizole (51.35%), acetaminophen (12.29%), metamizole + pirofenone + fentanyl and dexketoprofen (11.18% and 7.18% respectively). The median cost of analgesic therapy per treated patient in the surgical and ICU wards was of 3.93 €. The responsible usage of analgesic drugs within the institution considered was achieved through the collaboration between the clinical pharmacist and the doctor, as well as respecting therapeutic protocols and guidelines.

Rezumat

Unul dintre obiectivele primordiale ale politicii europene în domeniul medicamentului este de a promova utilizarea rațională a medicamentelor. Analgezicele au fost identificate ca fiind grupa de medicamente prescrise frecvent de către medici pentru gestionarea durerii. Având în vedere aceste aspecte, obiectivul acestui studiu a fost evaluarea consumului de analgezice la nivelul unui spital județean, în vederea prescrierii adecvate a acestor medicamente de către medici. Studiul a fost realizat în Spitalul Clinic Județean de Urgență Oradea, România, în perioada 2013 - 2014, pe secțiile cu profil chirurgical și anestezie și terapie intensivă (ATI). În perioada analizată, din totalul de 88163 bolnavi tratați, 63,8% dintre pacienți au beneficiat de tratament cu analgezice, din care 78% au fost tratați pe secțiile ATI și cele cu profil chirurgical. A fost preponderentă prescrierea de analgezice injectabile (99% pe secțiile ATI și 97% pe secțiile chirurgicale), cele mai utilizate analgezice fiind metamizol (51,35%), paracetamol (12,29%), metamizol + pirofenonă + fentanyl și dexketoprofen (11,18%, respectiv 7,18%). Costul mediu al terapiei analgezice pe pacient tratat, în secțiile chirurgicale și ATI, a fost de 3,93 €. Utilizarea responsabilă a medicației analgezice la nivelul acestei instituții poate fi realizată prin colaborarea dintre farmacistul clinic și medicul curant, precum și prin respectarea ghidurilor și protocoalelor terapeutice.

Keywords: analgesics, European hospital, consumption, costs

Introduction

Analgesics represent a group of drugs with a complex chemical structure which eliminates or tones down any kind of pain. They work through the association of four main actions in different proportions: analgesic, anti-inflammatory, antispastic-musculotropic and antipyretic effects. Analgesics are among the most widely used drugs in the entire world, with main objective to combat pain, the emotional experience associated with real or potential afflictions of the human body [3].

Promoting the rational drug use is one of the main objectives of the European policies regarding medication [5, 13]. In order to realize this strategy, several lists of medicines were developed [5], as

well as guides for standard treatment [17]. Even still, in many countries, medical institutions show an inadequate drug prescription through their irrational use or through prescribing a large number of medicines or the usage of drugs with unproven efficacy [1, 2, 7, 9, 16].

At hospital level, there is a daily number of diagnosed and treated clinical afflictions which, if not handled properly, lead to an increased morbidity and mortality. A frequently encountered symptom is pain which influences the general state of the patient as well as the quality of life. Management of pain is very important in many clinical cases, necessitating an intra-disciplinary approach, with the pain being treated usually with analgesics and sometimes with anti-anxiety medication. Analgesics

were identified as the group of medicines prescribed frequently by the doctors for handling pain [2, 7]. There are a lot of used classification criteria: by provenance (natural, semisynthetic, synthetic), by type of action (agonist or antagonist), by chemical structure and analgesic power [8]. Choosing an analgesic is determined by the severity of pain, individual needs and personal circumstances of the patient [10, 18]. As well as releasing pain, they have adverse effects which could negatively affect the quality of life of patients [15]. Opioid analgesics are given only based on secure medical prescriptions, with a record of tracing.

In many countries there is a proven interest for the economic aspects of applied analgesic knowledge during treatment, with a focus on the high cost of these treatments and a view towards on improving pain management and on implementing new technologies. Even though there has been significant progress in the availability and control of pain medication in hospitals, the rational use is still a problem worldwide [11, 12].

At international level, we cannot find any statistical data regarding analgesic consumption. We can however encounter data regarding opioid analgesic consumption, which is hard to estimate because of the poor reporting systems in some countries [14]. Analysing statistical data from 2009 - 2013 regarding high analgesic consumption (opioids) in Europe, we can observe a 15% increase in the consumption of opioids in countries from south-western Europe (Italy, France, Spain, Portugal). Countries from northern Europe also encounter an 8% rise in opioids consumption [14].

Romanian figures regarding analgesic consumption at hospital level are scarce, and a comparative analysis of this type of consumption is limited. The probability that admitted patients receive an analgesic [9], with an appreciation of inadequate drug prescription [17], is very high.

In the Clinical Emergency County Hospital Oradea, Romania, a medical institution with a grade II complexity level, analgesics were proven to be among the most frequently prescribed drugs. The main objective of this study was to evaluate the analgesics consumption at the level of a Romanian county hospital, in order to improve the adequate prescription of these drugs by doctors.

Materials and Methods

A descriptive, retrospective longitudinal study was developed, based on a quantitative research, using the existing IT hospital system, between 2013 and 2014, in the Clinical Emergency County Hospital of Oradea (CECHO), Romania. The study was approved by the hospital's Ethics Committee.

The prescription and consumption of analgesics in hospital wards was analysed based on the analgesics types, on the surgical and Intensive Care Unit (ICU) wards of the hospital. There was no analysis in any other medical ward of the hospital because of the low consumption and the inexistent oncology ward in the hospital. Also, the analysis does not include the emergency room, the ambulatory, operating rooms and birth rooms.

CECHO had 917 beds in its structure in 2013 and 885 beds in 2014, with the following surgical wards or compartments: general surgery, thoracic surgery, vascular surgery, orthopaedics and traumatology, maxillofacial surgery, otorhinolaryngology, plastic and reparatory surgery, burn unit, neurosurgery, obstetrics-gynaecology, pathologic obstetrics, gynaeco-oncology, sterility-infertility, ophthalmology and urology. The number of beds in surgical wards in the studied period was 488, and the ICU bed number was 65.

Results and Discussion

In 2013, 44786 patients were treated in all hospital wards, of which 57.30% on the surgical and ICU wards, and in 2014, 43377 patients were treated, 62.60% of them on the surgery and ICU wards (Figure 1). The median hospitalization was 5.73 days in 2013 and 5.46 days in 2014. The proportion of emergencies from the total admitted patients was 68.72% in 2013 and 72.12% in 2014.

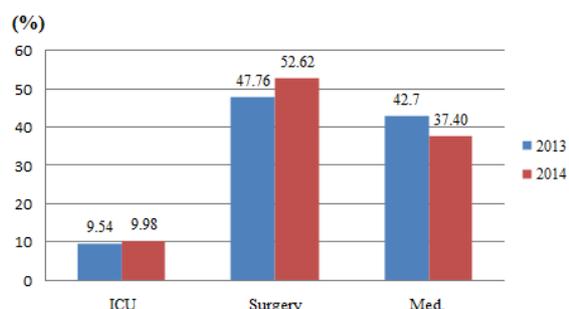


Figure 1.

The percentage of patients treated by CECHO in different wards in 2013 - 2014

Acute pain, post-surgical pain, neoplasm pain, neuralgias, migraines and chronic pains benefit of the effect of analgesic medicines.

Between 2013 and 2014, from the total of 88163 treated patients, 56252 were given analgesic treatment (63.8%), of which 78% were treated in ICU and surgical wards. The cost of all drugs in € was 2452542.98 in 2013 and 2534881.99 in 2014, representing 9.55% of all hospital expenses in 2013 and 9.16% in 2014 (Figure 2). From the total consumption of drugs, analgesic consumption was 4.3% in the ICU wards in 2013 and 4.4% in 2014, and in the surgical wards 8.6% and 11.4% respectively.

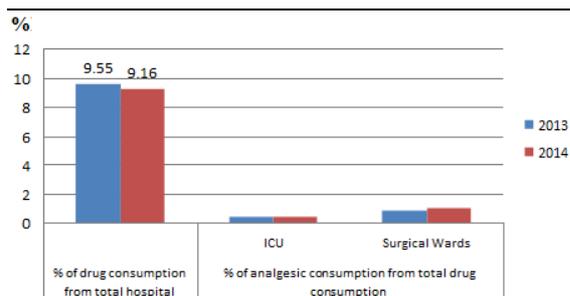


Figure 2.

The percentage of drug consumption from the total hospital expenses and the percentage of the analgesic consumption from the total drug consumption 2013 - 2014

Analgesics were classified by their mechanism of action. The percentage of the analgesics type used from the total analgesic consumption was thus calculated (Table I).

The central acting analgesic represent 90.73% of total analgesics, of the opioid analgesics represent 9.03%, analgesics with mixed action 5.77% and the non-opioid 75.93%. The most utilized centrally acting analgesic is metamizole (51.35%) followed by acetaminophen (12.42%) and metamizole + pitofenone + fempipramide (11.18%).

Table I

The percentage of analgesic type from total analgesic consumption – cumulated, ICU and surgical wards, 2013 - 2014

| | ICU + Surgical | | |
|---|----------------|---------------|---------------|
| | 2013 | 2014 | Total |
| A. Central action analgesics | 97.54 | 83.92 | 90.73 |
| I. Opioid analgesics | 10.06 | 8.01 | 9.03 |
| I.1. Opiate alkaloids | 0.24 | 0.16 | 0.20 |
| Morphine | 0.17 | 0.11 | 0.14 |
| Codeine | 0.07 | 0.05 | 0.06 |
| I.2. Synthetic analgesics | 9.82 | 7.85 | 8.83 |
| a) Phenilpiperidine derivates | 7.90 | 7.85 | 7.87 |
| Pethidine | 3.18 | 2.64 | 2.91 |
| Fentanyl | 4.72 | 5.21 | 4.96 |
| b) Benzomorphan derivates | 1.92 | 0.00 | 0.96 |
| Pentazocine | 1.92 | 0.00 | 0.96 |
| II. Mixed action | 6.14 | 5.39 | 5.77 |
| Tramadol | 6.14 | 5.39 | 5.77 |
| III. Non-opioid | 81.34 | 70.52 | 75.93 |
| Ketamine | 1.57 | 0.65 | 1.11 |
| Acetaminophen | 11.18 | 13.41 | 12.29 |
| Metamizole | 56.86 | 45.83 | 51.35 |
| Metamizole + Pitofenone + Fempipramide | 11.73 | 10.63 | 11.18 |
| B. Peripheral action analgesics | 2.46 | 16.08 | 9.27 |
| I. Nonsteroidal antiinflammatories | 1.17 | 15.35 | 8.26 |
| Diclofenac | 1.14 | 0.90 | 1.01 |
| Ketoprofen | 0.02 | 0.08 | 0.05 |
| Dexketoprofen | 0.00 | 14.36 | 7.93 |
| Piroxicam | 0.01 | 0.01 | 0.01 |
| II. Specific COX2 Blockers | 1.16 | 0.65 | 0.9 |
| Parecoxib | 1.16 | 0.65 | 0.9 |
| III. Diverse chemical structure | 0.13 | 0.08 | 0.11 |
| Ketorolac | 0.13 | 0.08 | 0.11 |
| TOTAL | 100.00 | 100.00 | 100.00 |

The peripherally acting analgesics are 9.27% of the total analgesics, of which non-steroidal anti-inflammatory drugs (NSAIDs) are 8.26%, specific COX2 blockers 0.9% and diverse chemical

structure 0.11%. The most frequently used peripherally acting analgesic is dexketoprofen (7.18%), followed by diclofenac and parecoxib (1.02% and 0.9% respectively) (Figure 3).

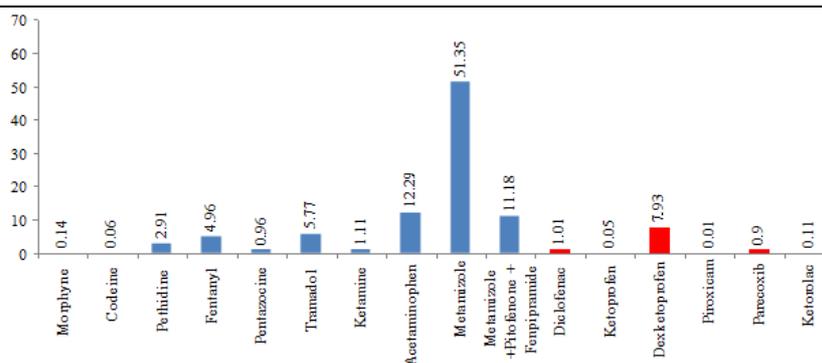


Figure 3.

The percentage of median consumption on analgesic types, 2013 - 2014

In the two studied years, from the total consumption of analgesics, the injectable ones represented 99.0 -

99.7% in ICU wards and 96.7 - 97.3% in surgical wards (Table II).

Table II

The total consumption of injectable analgesics, ICU wards and surgical wards, 2013 - 2014

| | ICU | | | Surgical | | |
|--|---------------|---------------|---------------|---------------|---------------|---------------|
| | 2013 | 2014 | Total | 2013 | 2014 | Total |
| A. Central action analgesics | 99.51 | 95.6 | 97.56 | 97.23 | 79.66 | 88.42 |
| I. Opioids | 21.73 | 18.47 | 20.11 | 5.15 | 4.06 | 4.59 |
| I.1. Opioid alkaloids | 0.57 | 0.42 | 0.50 | 0.01 | 0.01 | 0.01 |
| Morphine 2% - 1mL vials | 0.57 | 0.42 | 0.50 | 0.01 | 0.01 | 0.01 |
| I.2. Synthetic drugs | 21.16 | 18.05 | 19.61 | 5.14 | 4.05 | 4.58 |
| a) Phenilpiperidine derivates | 17.61 | 18.05 | 17.84 | 3.83 | 4.05 | 3.93 |
| Pethidine 50mg/mL - 2mL vials | 9.97 | 9.51 | 9.74 | 0.38 | 0.35 | 0.36 |
| Fentanyl 0,05mg/mL - 10 mL vials | 7.64 | 8.54 | 8.10 | 3.45 | 3.70 | 3.57 |
| b) Benzomorphone derivates | 3.55 | 0.00 | 1.77 | 1.31 | 0.00 | 0.65 |
| Pentazocine 30mg/mL -1mL vials | 3.55 | 0.00 | 1.77 | 1.31 | 0.00 | 0.65 |
| II. Mixed action | 2.81 | 5.09 | 3.95 | 6.05 | 4.65 | 5.35 |
| Tramadol 50mg/mL - 2mL vials | 2.81 | 5.09 | 3.95 | 6.05 | 4.65 | 5.35 |
| III. Non-opioid analgesics | 74.97 | 72.04 | 73.5 | 86.03 | 70.95 | 78.48 |
| Ketamine 50mg/mL - 10 mL vials | 3.78 | 0.62 | 2.16 | 0.69 | 0.69 | 0.69 |
| Acetaminophen 10mg/mL - 100 mL bottles | 16.10 | 21.07 | 18.65 | 9.26 | 10.99 | 10.14 |
| Metamizole 1g/2mL vials | 51.08 | 43.57 | 47.32 | 60.25 | 46.66 | 53.45 |
| Metamizole+Pitofenone+Fenpipramide 5mL vials | 4.01 | 6.78 | 5.39 | 15.83 | 12.61 | 13.99 |
| B. Peripheral action analgesics | 0.47 | 4.71 | 2.58 | 2.78 | 20.35 | 11.54 |
| I. Non-steroidal antinflammatories | 0 | 4.7 | 2.34 | 1.05 | 19.33 | 10.16 |
| Diclofenac 25mg/mL - 3mL vials | 0.00 | 0.03 | 0.01 | 1.02 | 0.75 | 0.86 |
| Ketoprofen 100mg/2 mL vials | 0.00 | 0.02 | 0.01 | 0.03 | 0.11 | 0.07 |
| Dexketoprofen 50mg/2mL vials | 0.00 | 4.65 | 2.39 | 0.00 | 18.47 | 9.23 |
| II. Specific COX2 blockers | 0.39 | 0.00 | 0.19 | 1.57 | 0.91 | 1.24 |
| Parecoxib powder and solvent for injectable solution 40 mg | 0.39 | 0.00 | 0.19 | 1.57 | 0.91 | 1.24 |
| III. Diverse chemical structure | 0.08 | 0.01 | 0.05 | 0.16 | 0.11 | 0.14 |
| Ketorolac 30mg/mL - 1mL vials | 0.08 | 0.01 | 0.05 | 0.16 | 0.11 | 0.14 |
| TOTAL | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

From the total injectable analgesics in ICU wards, the ones with central action represented 97.56%. 88.42% were used in surgical wards. In ICU wards, opioid and non-opioid analgesics were used in almost equal percentages (20.11% and 73.5% respectively), while the mixed ones in 3.95% of cases. In surgical wards, non-opioid analgesics were used in 78.48% of cases, and the mixed ones

in 5.35% of cases. The opioids were used in 4.59% of cases.

Injectable peripherally acting analgesics were used in 2.58% of cases, of which 2.34% are represented by NSAIDs. In surgical wards, 11.54% of patients used these kinds of analgesics, and NSAIDs are 10.16% from this class (Figure 4).

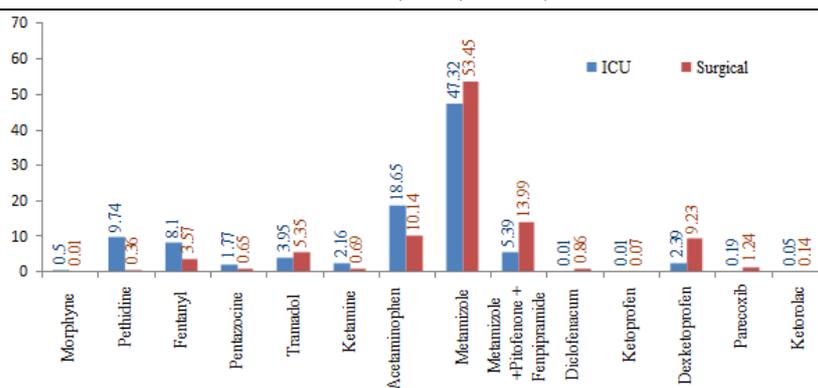


Figure 4.

The percentage of injectable analgesic consumption based on analgesic types in the ICU and in the surgical wards, 2013 - 2014

From the total non-injectable analgesics in the ICU wards, the ones with central action are 100% and 99.91% in the surgical wards. In the ICU wards, opioid analgesics are 77.95% used and non-opioids are 22.03%. In the surgical wards, non-opioids are

used in 65.15% of cases and mixed analgesics in 29.22% of cases (Table III).

The non-injectable peripherally acting analgesics are used only on surgical wards, representing 0.09% NSAIDs (Figure 5).

Table III

The non-injectable analgesic consumptions, cumulated on ICU and surgical wards, 2013 - 2014

| | ICU | | | Surgical | | |
|---|---------------|---------------|---------------|---------------|---------------|---------------|
| | 2013 | 2014 | Total | 2013 | 2014 | Total |
| A. Central action | 100.00 | 100.00 | 100.00 | 99.92 | 99.91 | 99.91 |
| I. Opioid analgesics | 65.86 | 90.06 | 77.95 | 3.58 | 7.47 | 5.52 |
| I.1. Opioid alkaloids | 3.33 | 0.58 | 1.95 | 1.60 | 1.51 | 1.55 |
| Codeine tablets 15 mg | 3.33 | 0.58 | 1.95 | 1.60 | 1.51 | 1.55 |
| I.2. Synthetic mixtures | 62.53 | 89.48 | 76.00 | 1.98 | 5.96 | 3.97 |
| Phenylpiperidine derivates | 62.53 | 89.48 | 76.00 | 1.98 | 5.96 | 3.97 |
| Fentanyl transdermic patch 50 (15 cm ²), 100 (30 cm ²) - release 72 hours | 62.53 | 89.48 | 76.00 | 1.98 | 5.96 | 3.97 |
| II. Mixed action | 0.00 | 0.00 | 0.00 | 33.80 | 24.65 | 29.22 |
| Tramadol extended release tablets 100 mg | 0.00 | 0.00 | 0.00 | 33.80 | 24.65 | 29.22 |
| III. Non-opioid analgesics | 34.14 | 9.93 | 22.03 | 62.54 | 67.79 | 65.15 |
| Acetaminophen tablets 500mg | 29.02 | 6.08 | 17.55 | 6.27 | 7.95 | 7.11 |
| Metamizole tablets 500 mg | 4.93 | 3.67 | 4.30 | 44.05 | 48.59 | 46.32 |
| Metamizole+Pitofenone+Fenpipramide tablets 20 mg | 0.19 | 0.18 | 0.18 | 12.22 | 11.25 | 11.72 |
| B. Peripheral action analgesics | 0.00 | 0.00 | 0.00 | 0.08 | 0.10 | 0.09 |
| I. NSAID's | 0.00 | 0.00 | 0.00 | 0.08 | 0.10 | 0.09 |
| Piroxicam tablets 20 mg | 0.00 | 0.00 | 0.00 | 0.08 | 0.10 | 0.09 |
| TOTAL | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

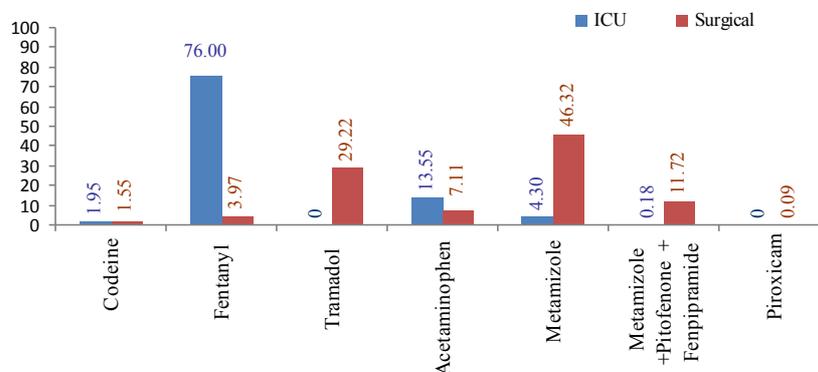


Figure 5.

The percentage of non-injectable analgesic consumption represented by analgesic types in the ICU and in the surgical wards, 2013 - 2014

The average price per treated patient in the surgical and in the ICU wards in 2013 - 2014 was 3.93 €, of which 3.06 € in the surgical wards and 4.80 € in the ICU wards (Figure 6).

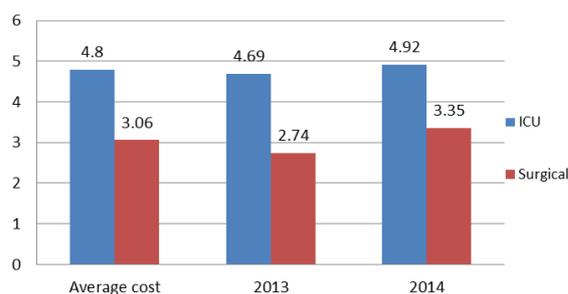


Figure 6.

The average cost (€) per treated patient in 2013 - 2014 and the costs in the surgical and in the ICU wards

The main objective when treating patients is improving the quality of patients' life which can include releasing pain. Thus, 63.8% of the total admitted patients received analgesic treatment. 78% were treated in the surgical and in the ICU wards, with a high number of analgesic prescriptions, due to the pre and the post-operative pain management protocols.

Starting from the fact that our hospital is an emergency hospital, the emphasis consists on drugs for parenteral use (97 - 99%). This aspect does not however exclude the existence of pharmaceutical forms for oral use, which were actually mentioned. Their percentage in the case of antipyretic analgesics and opioid analgesics is reduced compared to injectable forms.

From the reports generated at hospital level, we can observe a high level of metamizole prescription, both in injectable and oral form. Choosing this type of analgesic, derived from pyrazolone, as first line medication in pain management by the hospital, is maintained constantly even after 2011, a year in which the National Agency for Medicines and Medical Devices (NAMMD) [5] imposed the prescription necessity for this drug. There are no reported agranulocytosis cases in Romania thus far which should come as a reaction to metamizole usage. While the adverse effects of this drug include agranulocytosis, the medical studies on this disease have split the opinion in the medical world in such a degree that some countries ban this drug (metamizole) and in other countries it's administered restrictive. In the case of our hospital, there were no new pharmacovigilance notifications tied to the eventual adverse reactions of consecutive metamizole administration.

The association between metamizole, pitofenone and fempipramide is another alternative of the surgical wards to combat the post-surgical pain.

The presence of metamizole in the composition may elicit the same fears as those mentioned above. Thus far, the pharmacovigilance hospital commission was not informed of any adverse reaction appearing after administering this cocktail of drugs. The use of this therapeutic association is not that frequent as the individual metamizole administration.

The consumption of acetaminophen as infusion dosage form is increasing constantly in the last few years. Benefiting from a generous distribution and diffusion in the human body, acetaminophen acts like a moderate analgesic and antipyretic [6]. Forbidden in patients with renal or hepatic insufficiency, the acetaminophen infusion dosage form has become a therapeutic alternative in treating pain which is used wider and wider in patients without the above-mentioned ailments, especially over 1000 bottles per month in our hospital. The analgesic and antipyretic performances of acetaminophen have determined its induction in the protected drugs list of surgical wards and operating blocks.

Derived from phenylacetic acid - diclofenac demonstrates a high anti-inflammatory reaction as well as an analgesic reaction. Utilizing the injectable form in our hospital has become more popular in recent years.

Derivate of propionic acid - ketoprofen, dexketoprofen act on the moderate pain, both being part of the medication list of our hospital. Dexketoprofen is significantly more used in the hospital wards.

Ketorolac, which is indicated in short treatments of pain, is only included in infusion dosage form in our hospital's drug list. The number of indicated therapeutic units is not significantly high.

From the coxibs group, a clear leader is parecoxib, a precursor of valdecoxib which is used in managing post-surgical pain as a short term solution. Parecoxib is indicated in the most of the surgical wards.

The associated prescription of analgesics is relatively low. The most utilized association is the one between metamizole and tramadol. Thus, this association is found in the doctors' prescriptions from the urology, general surgery, intensive care and orthopaedics wards. Approximately a third of patients from the above mentioned wards benefit, from this version of analgesic treatment.

Regarding opioid analgesics, we can mention the following ideas: *tramadol* - in injectable form has risen as a therapeutic indication and is among the utilized drugs in surgical and orthopaedics wards; *pentazocine* was a constantly used opioid analgesic in our hospital, but it has been replaced with tramadol; *morphine*, pethidine and fentanyl patches contribute to pain management in both acute and chronic stages in patients admitted to the surgical and the ICU wards as well as to the emergency

room; *injectable fentanyl* contributes to release acute or chronic severe pain, while also having use in anaesthetic and pre-anaesthetic stages.

The correct selection of analgesic for each patient is extremely important. The pain management heavily relies on this aspect, as well as the appearance or the exclusion of the severe adverse effects and the exacerbation of other ailments of the patient.

This study presented the process of prescribing analgesics within a county hospital and how this could enhance the perspective in order to open discussions regarding the modifying analgesic prescription protocols (evaluating the presence or the absence of the adverse effects in the case of the frequent analgesic usage, shifting towards therapeutic associations and carefully evaluating proportions, increasing or decreasing morphinomimetic analgesic usage). These possible future protocols can lead to the qualitative and quantitative redesign of the analgesic database of our hospital aimed at improving the quality of care our patients receive.

All of those who are involved in the adequate management of pain (patients, doctors and pharmacists) need to have the latest information on the efficiency, safety and protocols regarding any analgesic drug [17]. Taking into account that analgesics are not vital medicines, having an effect only on the quality of patients' life, any doctor needs to evaluate the therapeutic benefit and any possible adverse effect with the help of a qualified pharmacist, who has a pivotal role [4].

The clinical pharmacist ensures that a proper stock exists, for all the necessary medicines, in this case analgesics which are included in the hospital's database, while also notifying the medical corps of any delays or shortcomings from suppliers or pharmaceutical companies, in order to properly evaluate and select alternatives so that the patient's analgesic needs and the continuity of the treatment is protected. Furthermore, the transfer of a patient from one ward to another may determine medical examinations between the physicians and the pharmacist regarding the analgesic treatment or the substitution. Morphinomimetic analgesic therapy often requires cooperation between doctor and pharmacist in order to establish the necessary dose and length of treatment. Modern medicine recommends a multi-disciplinary approach of the patient and underlying sickness in order to guarantee therapeutic success.

Respecting the guidelines and using therapeutic guides and hospital policies regarding analgesics, based on evidence, restrictive measures and inter-disciplinary examinations (between pharmacist and doctor) are extremely important. For example, a discussion between a clinical pharmacist and a doctor regarding optimal analgesic dosing and length of therapy also applies to poly-traumatized

patients, who receive morphinomimetic analgesics. Taking into account the analysis undertaken at the hospital level, the following measures regarding adequate analgesic prescription should be considered: implementing the "good medical practice recommendations" of the Romanian Association for Pain Study [17]; multi-disciplinary approach to analgesic therapy; annual analysis of analgesic consumption within the hospital.

Conclusions

Analgesics were prescribed more frequently than other therapeutic drug classes, from the total number of treated patients, 63.8% benefiting from analgesic medication. On the surgical and the ICU wards, 78% of patients received analgesics.

From the total consumption of drugs, the average consumption of analgesics was 4.35% in the ICU wards and 10% in the surgical wards, with an average cost of 3.93 €/treated patient.

The emergency profile of the hospital determined the prescription of parenteral analgesics from the total consumption of analgesics, injectable ones are 99% of ICU wards and 97% of surgery wards.

We offered a high importance to non-opioid analgesics, because of their less severe adverse effects.

The most prescribed analgesic with peripheral action are dexketoprofen (7.18%), diclofenac and parecoxib with 1.02% and 0.9% respectively, while from the central action analgesics we have metamizole (51.35%) acetaminophen followed by metamizole+pitofenone+fempipramide with 12.42% and 11.18% respectively.

The associated prescription of analgesics is relatively low. The most utilized association is the one between metamizole and tramadol.

The pharmacist has an important role in the therapeutic approach while respecting the hospital practice regarding analgesics and basing his decisions on consultations with the doctor.

It is also important for secondary studies to be conducted in other hospitals in the country, in order to help the key figures in healthcare to identify possible problems and find solutions which will contribute to the rational use of analgesics.

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