METHODS IN POSTOPERATIVE ANALGESIA IN ONE DAY SURGERY. ASSOCIATION WITH REGIONAL DORSAL PENILE BLOCK

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Abstract: *The interventions included in the one day surgery may be defined as the surgery that does not produce large bleeding, high postoperative pain and has a duration of no more than 60 minutes.(13) A worthy tracking goal in the postoperative progress and healing is the treatment of pain, immediately after surgery. Analgesic medication administered in the one day surgery is represented by NSAIDs, which can be used as a unique medication in mild pains, as well as in moderate pains due to their high analgesic potency. In addition to its analgesic effect, it also presents anti-inflammatory characteristics, helping to reduce, where appropriate, the local edema. This article refers to two groups of patients (1 and 2), who underwent circumcision operation as a therapeutic treatment of phimosis, paraphimosis, short frenulum or penile cancer. Pain assessment was performed, postoperatively, using the dimensional assessment of the pain, that is the visual analogue scale (VAS) and the sedation assessment, which was done postoperatively, after the patients received benzodiazepines and opioids during general anesthesia, was performed using the Ramsay score. In addition to the impact on development and healing, intense pain has an impact on delayed resumption of hydration and on the feeding with solid food.*

Cuvinte cheie: *durere, analgezie, bloc dorsal penian, scala VAS, scor Ramsay*

Rezumat: *Intervenţiile incluse în chirurgia de o zi pot fi definite ca intervenţii chirurgicale care nu produc o sângerare mare, care nu produc durere foarte mare postoperatorie şi care au o durată nu mai mare de 60 de minute.(13) Un obiectiv demn de urmărit pentru evoluţia şi vindecarea postoperatorie este reprezentat de tratamentul durerii în perioada imediat postoperatorie. Medicaţia analgetică administrată în chirurgia de o zi, este reprezenată de AINS, care pot fi utilizate ca medicaţie unică în durerile uşoare, dar şi în durerile moderate, deoarece potenţa lor analgetică este ridicată. Pe lângă efectul analgetic, prezintă şi proprietăţi antiinflamatorii, ajutând la reducerea, atunci când este cazul, a edemului local. În acest articol se face referire la două loturi de pacienţi (1 şi 2) care au fost supuşi operaţiei de circumcizie, ca tratament terapeutic al fimozei, parafimozei, frenului scurt sau cancerului penian. Evaluarea durerii s-a realizat, postoperator, folosind metoda unidimensională de evaluare a durerii, şi anume scala analog vizuală (VAS), iar evaluarea sedării postoperator, după ce pacienţii au primit în timpul anesteziei generale benzodiazepine şi opioide, s-a realizat folosind scorul Ramsay. Pe lângă impactul asupra evoluţiei şi vindecării, durerea intensă are un impact şi asupra întârzierii reluării hidratării şi alimentării cu alimente solide.*

INTRODUCTION

In order to avoid the prolongation of hospitalization due to limiting the patient's mobilization, to the limiting of the respiratory effort, to the increased risk of pulmonary embolism, as well as pneumonia (7) and in order to avoid unfavourable postoperative evolution, we must consider the appropriate treatment of acute pain.

The existence of associated co-morbidities can give side effects induced by nociceptive stimuli (9), which make the pain that directly influences the evolution, to be sometimes difficult to quantify. Because of this, we decided to analyze the impact of pain in one day surgery. The interventions included in the one day surgery may be defined as the surgery that does not produce large bleeding, high postoperative pain and has a duration of no more than 60 minutes.(13)

This type of surgery has a good cost/benefit ratio, involving reduced hospital resources, rapid integration in society; it is a safe and effective practice, leading even to the decrease of the risk of the nosocomial infections.

Circumcision is usually of a short duration surgery. Among postoperative complications, we can include intense pain, vomiting, micturition disorders, involving even excitement. In order to reduce the length of hospital stay and rapid resumption of moisture and solids, effective analgesia is the main objective to be pursued in the immediate postoperative period.

Analgesic medication administered in the one day surgery is represented by NSAIDs, which can be used as a unique medication in mild pains, as well as in moderate pains due to their analgesic potency.

In addition to its analgesic effect, it presents anti-inflammatory properties, helping to reduce, where appropriate, local edema.

PURPOSE

The aim of this study is the analysis of the efficacy of the analgesic treatment after surgery (circumcision). There are 4 aspects of specific objectives:

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- the assessment of pain, having at the basis of analgesia, the dorsal penile nerve block;
- the assessment of pain, depending on the NSAID administered;
- the assessment of pain, by comparing the patient's story and the judgment of the medical staff;
- additional analgesics, depending on the NSAIDs administered;
- the repetition of complete re-hydration and nutrition.

METHODS

The study was conducted on a total number of 50 patients, males, aged between 10 and 25 years old, over a period of 8 months (adults/children ratio = 1/1, 75)

The subjects were classified as ASA I and II and the visual analogue scale VAS was used.

Figure no. 1. Visual analogue scale

0 mm

100 mm

LACK OF PAIN MAXIMUM PAIN

Among the exclusion criteria, it is worth mentioning:

- concomitant diseases of the respiratory tract, cardiac or CNS device;
- patient's refusal;
- local infections;
- anticoagulants;
- known allergy to analgesics;
- chronic use of analgesics.
- There have been used two groups of patients:

Batch 1

- Dorsal penile nerve block + Nefopam hydrochloride (Acupan) - 2 ml, 10mg/ml ampoule.

Batch 2

- Dorsal penile nerve block + dexketoprofen (Tador) - 2 ml, 25mg/ml ampoules.
- Within the two groups of patients, children outnumbered the adults, the 2nd group having, in statistical terms, a higher number ($p < 0.01$).
- Demographic characteristics of the two groups of patients are shown in table no. 1.

Table no. 1. Demographic characteristics of the patients

Measured parameters	Batch 1	Batch 2
Age (years)	15±5	20±10
Children/Adults	37,9% / 62,1%	29,9% / 70,1%
P	NS	<0,01
Duration of surgery (min.)	30	40

All patients receiving NSAIDs were given gastric protection with H2 receptor inhibitors (Ranitidine).

As a backup, they used morphine 0.15 mg/kg to a VAS score greater than 50, and if the VAS score remained at a level less than 40, they repeated the administration of morphine.

All patients were forbidden to drink fluids 3 hours before surgery and the intake of solid food 6 hours prior to the surgery.

Before performing the dorsal penile nerve block, all patients received the following general anesthesia scheme: induction with propofol 2 mg / kg, Fentanyl 2μg/kg, Midazolam 0.2 mg / kg, on Sevoflurane pivot 1.5-2%, achieving deep sedation, after which they introduced LMA (laryngeal mask), having age-specific sizes.

After achieving deep sedation and the introduction of LMA, the dorsal penile block is practised, distilling the bupivacaine 0.25%, through lateral approach, the lower bins, at a distance of 0.5 cm lateral to the midline. Inject 1-5 ml for each hand, without exceeding 7 ml. The maintenance of anesthesia is achieved by means of sevoflurane 1.5 - 2% + 100% O2 2l/minute. The ventilation was initially performed manually, after which the patient was left on spontaneous breathing.

Intraoperatively, the patients received 0.9% NaCl solution, respecting the following formula, namely: 4:2:1 [4ml/kg/h for the first 10 kg, 2 ml / kg / h for the next 10 kg; 1ml/kg / h for a weight greater than 20 kg (15)]. AV, BP, SpO2 were continuously monitored, whereas 21 patients received metamizol sodium (Algocalmin) iv 25mg/kg (2ml/ampoule - 500mg/ml) before awakening,

On awakening, the volatile agent was stopped, the LMA was removed while the patient was still sedated, with effective spontaneous breathing with SpO2 99-100%, thus avoiding laryngeal spasm.

Postoperatively, the following have been administered:

Batch 1:

- 12 patients received Nefopam hydrochloride (Acupan) 20 mg IV slowly, for 15-30 minutes, every 6 hours in 100 ml saline, except those who had a history of seizures.

Batch 2:

- 20 patients received dexketoprofen (Tador), 50 mg every 8 hours at a body weight greater than 50 kg, 50 mg every 12 hours if G was less than 50 kg (2 ml+8 ml saline => 5mg/ml)

Postoperatively, over a period of 24 hours, by using the Ramsay score, the degree of sedation was monitored 2 hours after the surgery, by using the VAS scale, the pain intensity (high or low); it was also monitored the overall analgesic medication with adverse effects, resumption of fluid intake 4 hours after the surgery and the intake of semisolids 6 hours after the surgery, both liquids and semisolids being at room temperature.

The VAS scale was not applied in the first two hours, because the patients with regional anesthesia (dorsal penile nerve block), did not accuse any pain or discomfort, which is why it was only the Ramsay score that was assessed (the level of sedation of all patients)

Comparison was also made between the assessment of analgesia quality made by the medical staff and the patient.

We used two kinds of variables: categorical and continuous whereas statistically speaking, a p-value < 0.05 was considered as being significant.

Categorical variables were represented as numbers using the Fisher test. Continuous variables were represented by using the Student's t test, comparing them and then interpreting and presenting as average ± SD.

RESULTS

In the patients with Ramsay sedation, the visual analogous scale could be appreciated in 45% of patients 2 hours after the surgery, the rest of 32% had a Ramsay score 3 and 23% responded to loud commands, so they had a Ramsay score of 4.

The Ramsay sedation score became 2 in all patients 4 hours after the surgery (table no. 2).

Table no. 2. The interpretation of Ramsay Score

Ramsay Score	2 hours	4 hours
Ramsay = 2	45%	33,3%
Ramsay = 3	32%	33,3%
Ramsay = 4	23%	33,3%

We also evaluated the VAS score and got the following results: although the used analgesic therapy was administered according to doses, 57.9% of the patients had a VAS score greater than 40, and additional administration of morphine had to be made in 28 55% of the patients.

For the first 2 hours, the medium static VAS score showed very low values for all groups of patients because of the analgesia provided by the dorsal penile nerve block.

Comparing the static and dynamic VAS score in the patients who received Nefopam hydrochloride to those who received dexketoprofen, the VAS score in the first category was lower than in the second category of received analgesics, the difference being significant only in the first 18 hours (figures no. 1, 2).

Figure no. 2. Medium static VAS score.

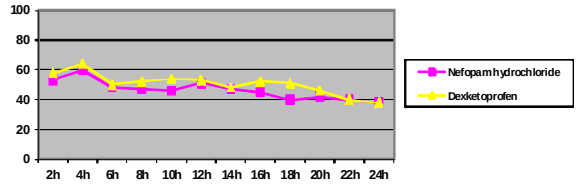
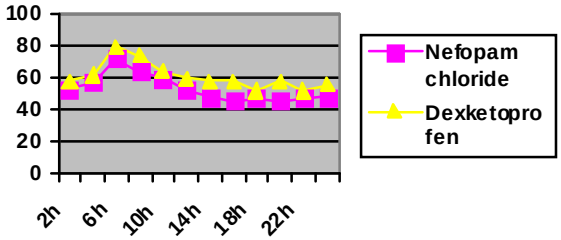
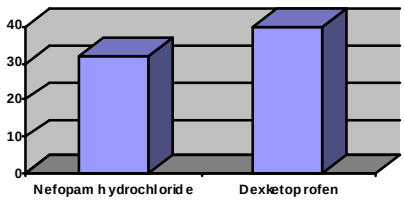


Figure no. 3. Medium dynamic VAS score



By comparing the additional administration of morphine to group 1, who also received Nefopam hydrochloride, it took only 30 mg of morphine compared to group 2, who received dexketoprofen where the supplementation of morphine was of 40 mg (figure no. 3) .

Figure no. 4. The need of morphine after the surgery



The Static and dynamic VAS scores were lower in the patients who received additional metamizole sodium (Algocalmin), intraoperatively, the dose being of 25mg/kg as (2 ml+8 ml saline => 100mg/ml) (Fig. 4, 5).

Figure no. 5. Static VAS score in association with Metamizole sodium.

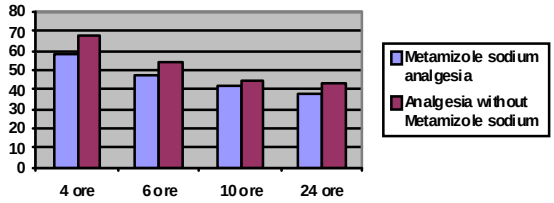
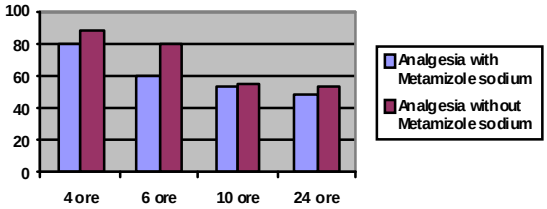
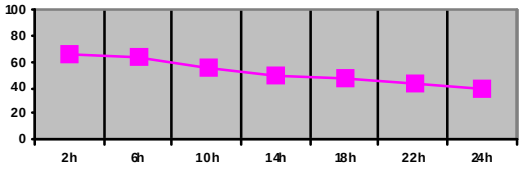


Figure no. 6. Dynamic VAS score in association with Metamizole sodium.



The highest VAS score > 40 was recorded after 2 hours, in 59.89% of the patients, continuing to increase even at 22 hours postoperatively, but in a smaller number of patients, approximately 42% (figure no. 6).

Figure no. 7. Medium static VAS score in all the patients.



There were some differences, especially in VAS > 80, between what the patient said and what the medical staff said. This difference in patient/staff was of 10% / 4% (tables no. 3 and 4).

Table no. 3. VAS appreciation (from maximum to minimum) by the patients

VAS SCORE	2 hours	24 hours
VAS > 80	10%	32%
VAS = (79-70)	17,98%	67,89%
VAS = (69-40)	55,78%	0,1%
VAS < 40	13,63%	0,1%

The sources of the pain were reported as either surgical wound (89%) or manoeuvring care (7.9%) or even as the surgical procedure itself (3.1%) despite making the dorsal penile nerve block previously.

Table no. 4. VAS appreciation (from maximum to minimum) by the medical staff

VAS score	2 hours	24 hours
VAS > 80	4%	14%

VAS = (79-70)	12%	87,20%
VAS = (69-40)	66%	0,1%
VAS < 40	17,98%	0,1%

Although gastric protection was administered with H2 receptor inhibitor (Ranitidine 150mg/day, 20% have shown signs of gastritis, a percentage very close to the literature data.(1,5,6)

Pain had a very important role in the administration of liquids and solids. Those who had lower pain intensity, a VAS < 40 could be hydrated orally every at 4 hours (38.5%), this percentage increasing to 61.5% at 6 hours after the surgery, compared with those with intense pain, which began to hydrate 6 hours later (approximately 15.5%) (table no. 5).

Table no. 5. The resumption of liquids according to VAS

VAS SCORE	4 hours	6 hours	8 hours	12 hours	24 hours
VAS > 80	38,5%	61,5%	88%	99%	99%
VAS = (79-70)	13,96%	43%	73%	86%	99%
VAS = (69-40)	-	15,55%	15,55%	32,95%	84,1%

Those who had pains of a lower intensity resumed the intake of solids after 6 hours, as compared to the patients with VAS score > 80, when the resumption was even 12 hours after the surgery (table no. 6).

Table no. 6. The resumption of solids according to VAS

VAS SCORE	6 hours	8 hours	12 hours	24 hours
VAS > 80	38,5%	57,14%	87,5%	87,5%
VAS = (79-70)	43%	51,96%	67,43%	70%
VAS = (69-40)	-	-	15,5%	15,5%

DISCUSSIONS

An important goal to pursue for the development and postoperative healing is represented by the pain treatment during the immediate postoperative period. To avoid the prolongation of hospitalization due to limited patient mobilization, limited respiratory effort, increased risk of pulmonary embolism, and pneumonia, as well as to avoid unfavourable postoperative evolution, we must consider the appropriate treatment of acute pain (7).

Circumcision is usually a short duration surgery. Among the postoperative complications, we can include intense pain, vomiting, urinary disorders involving even excitement. So, with circumcision, one of the postoperative complications is represented by pain, which, besides its impact on development and healing, has also an impact on the resumption of solid and liquid food, as well as on the diuresis. Analgesic therapy was administered according to the doses, but the VAS score was assessed 2 hours postoperatively, recording the following results: 57.9% had a VAS > 40, this score being smaller after 24 hours, that is static VAS of about 39%, dynamic VAS score of about 42%.

Toma's research published in 1996 and AD Husband's research published in the same year referred to the fact that the infiltration of the wounds with local anesthetic from the very beginning has an effective postoperative analgesic effect.(2,12) Comparing the percentage of patients who were investigated in this study and the percentage published by the two authors, the results are somehow higher, because they relate to infiltration with lidocaine of the plans at the level of the head, where there are rich innervation and vascularization in comparison to the penile region, which has terminal type vascularity.(14)

Comparing the methods of postoperative analgesia, that is the efficacy of the treatment using NSAIDs, as against the efficacy of acetaminophen, the literature data published by Hyllested in 2002 are similar to the results of this study, namely the VAS score is not very different in the patients receiving dexketoprofen.(16) There are publications that show that NSAIDs and acetaminophen may have similar efficacy.(10) Comparing the static and dynamic VAS score in the patients who received Nefopam hydrochloride with those who received dexketoprofen, VAS in the first category was lower than in the second category of received analgesics, a difference which was significant only in the first 18 hours and which has not been subsequently observed. This result is found by Issioui too, in 2002, which means that acetaminophen is not more efficient than COX-2 inhibitors in the prevention of pain.(3) Analgesic medication of choice, provided in one day surgery is represented by NSAIDs, which can be used as a unique medication in mild to moderate pain, because they have a high analgesic potency. In addition to the analgesic effect, they also present anti-inflammatory properties, helping to reduce, where appropriate, local edema. The quality of analgesia provided by NSAIDs increases when combined with opioids, NSAIDs reducing the opioid requirements by about 25%.

The most important element of the inflammatory processes is represented by the arachidonic acid metabolism. Its locking is achieved by the action of NSAIDs. Inflammation may lead even to tissue damage, thus releasing the lisosomale enzymes. Among the most important lisosomale enzymes that release arachidonic acid, phospholipase A2 is worth mentioning. The arachidonic acid is released from phospholipid structures of cell membranes and then transformed in 2 ways

- by means of cyclooxygenase, which result in prostaglandins
- by means of lipoxygenase which result in leukotrienes.(17)

Within the cyclooxygenase group, two isoforms have been identified: COX-1 and COX-2. COX-1 is responsible for the homeostatic effects and it is located in kidneys, stomach, intestine and platelets. COX-2 is responsible for fever, pain, swelling and it is located in macrophages, fibroblasts, endothelial cells, but it also has a role in inflammatory pain mechanisms, its role being central and peripheral. Inflammation, fever and pain are mediated by the growth of prostaglandins, growth achieved by inflammatory stimuli, which, in turn, on the one hand regulate the action of COX-2, on the other hand induce the action of COX-2 in the CNS in sensory neurons, thus explaining the central and peripheral role of COX-2. The prostaglandin level initially synthesized and then released is directly proportional to the size of the damage. The painful stimulus, once generated, creates the inflammatory process, which in turn leads to primary hypersensitivity phenomena, explaining the inflammatory component of the postoperative pain. Secondary hypersensitivity, also called central sensitization, occurs after the processing of nociceptive information in the deutoneurons from the posterior horn of the spinal cord as a result of the action of prostaglandins. Postoperative pain has as neuro-physiological and neuro-biochemical basis two types of hypersensitivity. Primary peripheral hypersensitivity is considered responsible for the inflammatory process, whereas secondary hypersensitivity is central (spinal). Dexketoprofen action, especially on COX-2 by inhibiting them, less than COX-1 and this explains why gastrointestinal effects are more reduced than those after other

NSAIDs (eg, aspirin). Although COX-2 selective inhibitors act on inflammatory cells and give no side effects as other NSAIDs, they are associated on long term with high cardiovascular risk, nowadays having prescribing restrictions.(4,8) Nefopam hydrochloride has been used successfully; its anti-inflammatory action is superior to other NSAIDs. It acts at the level of CNS, but has a different action than other analgesics with central action (morphine, codeine, pentazocine), meaning that it does not give respiratory depression, so we can say that it can be used as an alternative to opioid analgesics. It is used with satisfactory effects in the treatment of chills. As it can give some side effects, including tachycardia, drowsiness, dizziness, urinary retention etc., it should be used under supervision and cardiac and respiratory monitoring. There were differences, especially in VAS > 80 between what the patient said and what medical staff said. This happened either because of the under dosing of the analgesic or because of its delayed administration. Although gastric protection was administered (Ranitidine 150mg/day), 20% had gastritis phenomena, a percentage very close to the literature data.(1,5,6) The sources of pain were reported as either surgical wound (89%) or nursing manoeuvres (7.9%) or even as invasive procedure (3.1%), despite making dorsal penile nerve block previously.

Circumcision is usually of a short duration surgery. Among its postoperative complications, we can include high intensity pain, vomiting, urinary disorders involving even excitement. In order to reduce the length of hospital stay and the rapid resumption of moisture and solids, effective analgesia is the main objective to be pursued in the immediate postoperative period. Pain had a very important role in the administration of liquids and solids. Those who had lower pain intensity, a VAS < 40 could hydrate orally every 4 hours (38.5%). This percentage increased to 61.5% 6 hours after the surgery compared to those with severe pain, which begin to hydrate 6 hours later (approximately 15.5%). Although circumcision can be included among one day surgeries, it can be considered an intervention that does not have a great systemic impact and does not imply deadly risks, while the patients are usually young, with no co-morbidities. However, postoperative pain and discomfort caused by this surgery are large and represent important elements that influence the postoperative evolution. Therefore, analgesia and sedation are essential components of postoperative management.(11)

CONCLUSIONS

1. Postoperative pain treatment is very important, influencing the development and healing.
2. Static VAS was scored very low in the first 2 hours postoperatively, due to the analgesia given by the dorsal penile nerve block.
3. A lower VAS was achieved only in the patients who received Nefopam hydrochloride compared to those who received dexketoprofen, all patients benefiting from the dorsal penile nerve block.
4. Ramsay score, calculated for the first 2 hours was different: a higher percentage (45%) had a lower sedation score (2), so they were conscious and cooperative, a smaller percentage (23-32%) had a sedation score of 3 or 4, they were sleepy, responding only to loud commands.
5. This difference was maintained in the first 18 hours, after which the differences in VAS scores in the 2 groups of patients were insignificant.
6. Improvement of pain, relief of suffering, so the correct treatment of painful syndromes is very important in ICU.
7. Although circumcision can be included among the one day surgeries, it is considered an intervention with no special systemic impact and no vital risk, while the patients are generally young without co-morbidities. However, postoperative pain and discomfort caused by this pain are large and represent important elements influencing the postoperative evolution.
8. For a large number of patients, the surgical wound was considered a cause of the pain (89%), while for fewer (3.1%) the cause of the pain was due to the care manoeuvres.
9. The differences between VAS scores in the patients who received Nefopam hydrochloride, as compared to those who received dexketoprofen were different, being better when using Nefopam hydrochloride.
10. Therefore, analgesia and sedation are the main objectives in the immediate postoperative period.

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