

## REALITY OF ASSESSMENT PAIN IN PEDIATRIC SURGERY

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### Abstract

Post operative pain assessment study monitored a group of patients using assessment scales according to the protocol used painkiller category, minor and major surgery. The study group consisted of 47 patients aged 0 - 192 months, divided into four age groups and two categories according to surgical complexity.

The measurement scales used in the post operative pain evaluation study are: DAN, EVA, and CHEOPS.

At the age category, the assessment shows DAN lower score averages in children treated with meperidine and paracetamol compared to those treated with paracetamol, statistically significant differences due to surgical category. For the categories A, B, and C age group there were found statistically significant differences in pain scores according to the protocol used analgesic, but no clinical differences were found due to different type of surgical procedures (major, minor, plastic).

Pain scores were significantly lower with epidural analgesia than the others following the analgesic protocol, in the D age group.

**Key words:** scales, evaluation, post operative pain.

### Introduction

Acute postoperative pain (DPO) is a particular form of acute pain that occurs in response to tissue injury, visceral distension or disease. DPO is that expression of autonomic responses, psychological and behavioral causes unpleasant, undesirable sensory-emotional experience.[2]

Post operative evaluation strategy is complex in children. Post operative pain assessment and treatment is essential because the effectiveness of a patient and a particular type of surgery, it is impossible to predict the amount of felt pain and analgesic consumption.[6]

To treat pain adequately, it is essential to evaluate it in terms of presence and severity of the child and response to treatment. Assessment tools are reliable, valid and clinically sensitive and are available for infants and children by adapting pain assessment instruments to teenagers [10].

### Purpose

The aim is to evaluate effective means implemented to control postoperative pain of children in pediatric surgery service in Constanta County Emergency Hospital, as well as

to compare the requirements imposed by the reality of pain management, in order to identify specific targets for improving clinical practice with positive effects on patient satisfaction and the cost of hospitalization (reduce the medication doses, use of available medication, hospitalization period).

### Materials and methods

The research sample consisted of 47 children aged between 0 -192 months with an average of 71 months. The weight of the children in the study was from 2 kg to 97 kg, with an average weight of 23.200 kg.

The period in which the study was conducted was between December 2008 and January 2009.

The criteria for their inclusion in the study were as follows:

– Surgery patients are subjected to general or loco regional anesthesia;

– After surgery patients are monitored in the intensive care unit;

Children were divided into four categories according to age, as follows: Category A: neonates and infants between 0-6 months, B: infants and young children between 6 and 24 months; Category C: early childhood: 2 to 6 years; category D: children over 6 years.

The assessment of pain in our study was performed mostly on patients undergoing major surgery and receiving complex analgesic. Table I contains the distribution of population according to the age group and category of surgery. All the children treated with paracetamol were evaluated alone or in combination with other methods of providing analgesia.

The average dosage of paracetamol reported to the average weight of the included children, was 15 mg/kg on body weight and grip. Paracetamol was prescribed up to 4 injections in 24 hours. The average dosage of meperidine reported to the average weight of children was 1 mg / kg. It wasn't prescribed systematically but according to the patient's needs.

Morphine dosage was 0.1 mg / kg as a bolus, possibly repeated every 5 minutes as a re-injection of 0.025 mg / kg to achieve adequate analgesia. [ 5,9 ]

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Table I –The population distribution according to age and surgical category.

Age category	Minor surgical	Major surgical	Plastic surgical	Total number of children
Categ. A	2	4	1	7
Categ. B	1	4	0	5
Categ. C	2	12	3	17
Categ. D	0	17	3	20
<b>TOTAL</b>	<b>5</b>	<b>32</b>	<b>8</b>	<b>47</b>

0.125 to 0.25% bupivacaine dosage was about 2 to 2.5 mg epidural / kg initial bolus followed by an infusion of 0.25 -0.4 mg / kg / hour during the operation.[ 7]

Table II. contains the study of population distribution by type of post operatory analgesia.

Table II – Distribution of population by type of post operatory analgesia administration.

Age category	No. all children	Paracetamol	Paracetamol+ meperidin	Morfin + paracetamol	Epidural analgesia (bupivacain)
A	7	2	5	0	0
B	5	0	5	0	0
C	17	0	17	0	0
D	20	0	7	5	8

In 72% of the cases, the pain assessment scales were used for opioid analgesia and post operatory epidural analgesia.

The peripherals analgesics used in the study were paracetamol and those with centrally acting morphine and meperidine.

The distribution of pain assessment protocol based on the painkiller used is shown in Figure 1.

The assessments were made immediately after surgery at each nurses shift change, over a period of 48 hours. The evaluation of post operatory pain in our study was performed with EVA scale as a reference tool after 6 years (group D), the CHEOPS scale for age groups B and C and DAN scale for children under 18 months (group A). All the pain assessments were made for the case the patient is at rest.

The validation of the results was done by statistical analysis: Student t test.

**Results**

*1. The post operatory pain assessment for category D age group children*

It is noted that the pain seems well controlled for the analgesia with morphine in the epidural but the analgesia with acetaminophen and meperidine for pain control is of inferior quality, as highlighted by the values of EVA score above 3 in the first 36 hours post operatory. The pain control is better when using epidural anesthesia methods compared with other methods, the average score obtained was 28% lower. To check whether this difference is statistically significant we compared the mean score obtained for EVA pain therapy with morphine, meperidine and epidural anesthesia, using student t test.

The result shows that there is no significant difference between the mean pain score EVA, epidural analgesia in children compared to children treated with other analgesics protocols, (p <0.05), in the sense of better control of pain with epidural analgesia (Figure 2).

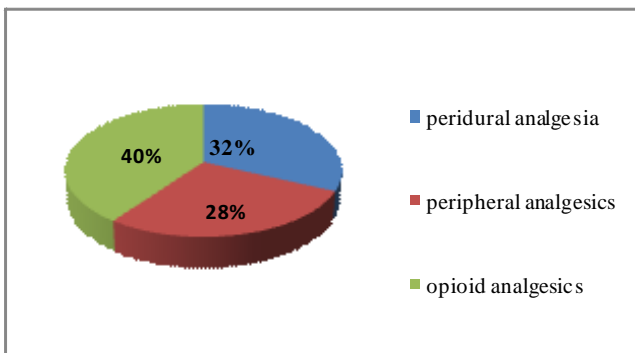


Figure1– The distribution of pain assessment according to the protocol used painkiller.

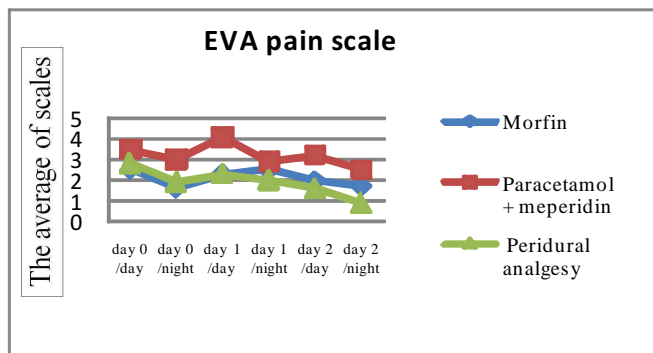


Figure 2 – Pain score Eva.

2. Post operative pain assessment in the category A age group children

It is noted that, the mean pain intensity is below the minimum which leads to a required additional therapy and surgical category regardless of the used analgesia.

We compared the mean score obtained DAN meperidine therapy and the painkiller peripheral and the peripheral therapy. It is noted that the DAN pain score was 47% lower when using peripheral painkiller only due to the differences in the complexity of the surgery. The statistical interpretation of the results shows a significant difference between the two groups at a  $p < 0.01$ . However, because the two groups of patients were undergoing various surgeries, the interventions that major and minor difference in terms of pain control, represented by the values obtained with DAN pain score can not be regarded as significant (Figure 3).

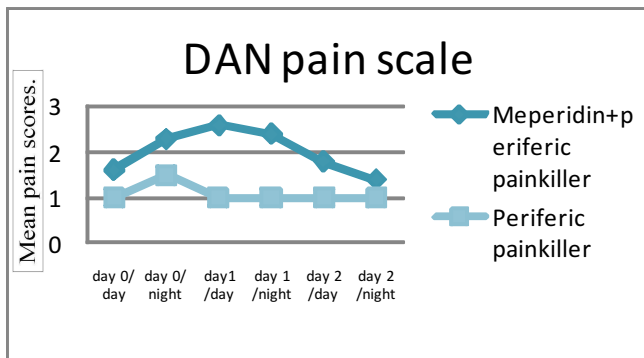


Figure 3 – DAN Pain score assessment.

3. Post operative pain assessment in categories B and C age group children

From Figure 4 we see that the mean pain intensity is below the minimum (3) the additional therapy is required. Patients were treated postoperatively with an average score painkillers peripheral Cheops less than 50% compared with those who received treatment with opioids. The difference recorded between the mean pain score for children treated with opioids and the peripheral pain relievers (1.82), respectively peripheral pain relievers (0.92), is highly statistically significant ( $p < 0.001$ ), which is also due to the difference the complexity of the surgery. But the difference is explained by the fact that patients were treated according to the type of painkiller that the surgery was subjected to (opioids for major, minor peripheral pain relievers).

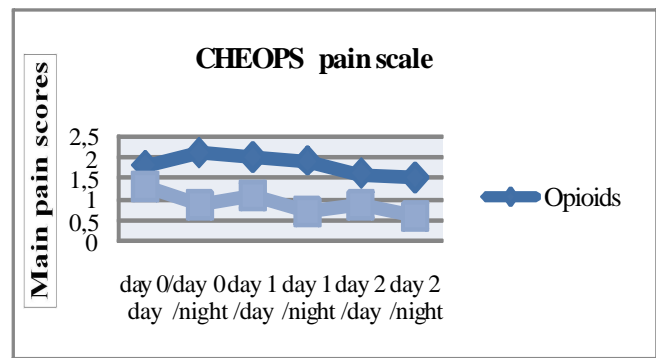


Figure 4 – Cheops pain assessment score.

**Conclusions**

Due to the differences in the emotional and cognitive development, the evaluation is more difficult for children.

The EVA self-assessment is reliable and accurate in many studies and has the advantage of being able to be reproduced in time [10]. Manifestations due to child fear (crying, agitation) often present even before puncture less influenced by the child the value of the scale proposed by maneuver.

The maximum average of the pain intensity for children over 6 years (4.1) was recorded in the first post operative day for both groups, a fact which I attributed to mobilize children. The average values EVA decrease in the pain scores after 36 hours post operative probably due to the natural resolution of the inflammatory phenomena, but in

the meperidine analgesia with paracetamol and still remains higher than 3, suggesting that the dose of opioid seemed adequate was often too small to be useful in severe pain.

In our study, the Cheops and DAN scores fall in the same trend of over estimation of pain management by the medical staff, they are falling below the minimum which is required in the therapeutic intervention, regardless of the type of analgesia used.

Pain assessment within the 48 hours after the surgery should be performed systematically at small intervals of time (4-6 hours), regardless of the clinical situation and the therapies used, which is the only available means to refine observations [8].

The pain assessment must be made by qualified and constant training in pain therapy [4].

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