

The importance of analgosedation in postoperative periode

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ABSTRACT: We observed and noted clinical symptoms, and used screening tests as tools for evaluating the values of pain and neuropsychiatric changes. We introduced as instrument of measurements: rating numerologic scale of pain, Ramsay Sedation Scale (RSS), criteria of delirium diagnose, applied in early period of arousal (20 minutes- 4 hours) at the moment T1, at 4-7 hours: complete arousal (T2) and at 72 hours (T3). Our pathophysiological, prospective randomised, clinical study, was approved by Ethic Commission of UMF and of Hospital nr.1 Craiova. We selected 100 patients from Plastic and Reconstructive Surgery Department, with the agreement of head of this section and having the patient accord. The most important conclusion of our study was that: appropriate information of patients about surgery and anesthesia, reduces preoperative anxiety, post-operative pain and hospital stay length.

KEYWORDS: pain, analgosedation, neuropsychiatric changes screening tests.

Introduction

To the surgical patients, in early postoperative period, it was recorded: impaired memory and concentration, mild personality changes, cognitive changes, and emotional instability.

Changes in mental function after anesthesia and surgery have been categorized into two distinct syndromes[3]:

-Postoperative delirium, a transient fluctuating disturbance of consciousness that occurs shortly after surgery

-POCD: change in cognitive performance, categorized according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) as personality disorders, such as: schizoid, paranoid, histrionic, and depressive[1,2]. These personality disorders are the support for psychiatric complications, which may install as disease in time, discovered accidentally after a surgical intervention.

Materials and methods:

In our study 100 patients undergoing surgery at Plastic and Reconstructive Surgical operation room at Hospital nr.1 Craiova. We have obtained the best predictor of postoperative psychological distress in preoperative psychological manifestations, using by us, as selection criteria of patients:

- age: 15 ± 35 years old

- without comorbidity, (apparently healthy patients)

- acute trauma, referred to posttraumatic wound of hand

- apparently in a normal psychological and mental status.

- smokers and alcohol drinkers do not excluded from study.

- existing the conditions to induce the anaesthesia and realise the perioperative preparing a management plan to minimise the impact of risks factors: pain, thromboembolism and inadequate nutrition and hydration.

- having the possibility to maintain functional reserve in each organ system for parallel patient's capability to maintain homeostasis in the face of surgical stress and the actions of anaesthetic drugs.

- excluding the patients to whom it was a preexisting therapy with tricyclic antidepressants, because these ones combined with halothane or sevoflurane may increase catecholamine levels, and sympathomimetic agents should be not use in such situations. Monoamine oxidase inhibitors interfere with the breakdown of central nervous system depressants. Potentially fatal adverse reactions are known to occur with meperidine, atropine, or other anticholinergic agents and with barbiturates. Because monoamine oxidase inhibitors increase the level of catecholamines in peripheral nerve endings and potentiate the effect of sympathomimetic agents, hypertensive crisis may result from the use of pressors and the diet must be low in tyramine (which is especially high in aged cheese). Hypertensive

crisis may also occur when monoamine oxidase inhibitors are combined with other classes of antidepressants such as tricyclics, serotonin uptake inhibitors (e.g. fluoxetine), or bupropion.

Criteria of patients exclusion from study group: existence of chronic pain, abuse of analgesic and sedatives drugs, recognition of psychiatric diseases, diagnosed in the past, obesity (BMI > 30).

Methods

We applied the same kind of general anesthesia with oro-tracheal intubation. General anesthesia or programmed coma, could induce deep unconscious state, and provides a "quiet" operating field by reducing organ activity and muscle movement. During the period of maintenance of anesthesia, we combined sleep-inducing agents (hypnotics) with analgesics (relieve pain, but don't block other sensations), muscle relaxants, and medication to relieve anxiety (commonly used drug is midazolam), which causes drowsiness, relieves anxiety, and acts on the brain to help block any memory of the procedure. Propofol (Diprivan) is given to induce unconsciousness. We used continuous infusion with propofol because its activity is short installation of this one is rapid (usually within 40 seconds) and wears off quickly; thereafter during surgery.

Analgesics blunt the body's response to pain, helping steady the heart rate and blood pressure. While the patient is unconscious, the anesthesiologist monitors their vital functions and level of sedation and adjusts medications as needed. Following surgery, she may receive drugs to reverse the anesthesia or simply wake up as the medications wear off.

The anesthetic protocol was obtained by means of association realised by anesthesiologist namely: analgesia, hypnosis, antishock effect and relaxation. The adequacy of anesthesia could be observed in: hemodynamic stability, good oxygenation, maintenance of hydro-ionic and oxidant/antioxidant balances (redox).

The Ramsay scale-6 levels:

Usually RSS has been used as a research tool for the comparison of sedative agents and to express the variability of responses of different types of patients, submitted to anesthetic-surgical act.

Results

We identify six groups of patients reactions:

-60% patients did not remember anything of the period between loss of consciousness (period

of induction and maintenance of anesthesia) and regaining it. For these patients it was administered only local analgetics, no sedatives, or analgesics, in postoperative period.

-10% have had the memory of tracheal tube. This group, named the group with the experience of "recall / wakefulness, received perianesthetic, ketamine or fentanyl, or a combination from both, (fentanyl was antagonised with: naloxon). To this group it was given: meperidine, in T1 and T2, depending of their needs.

-15% cases: have had dreams and nightmares. They need local analgesic therapy in T1, (for those with dreams) and sedatives and analgesics for those with nightmares.

-3% cases hallucinations and suicidal tentatives, had needs of psychiatric consultations, psychiatric therapy and they were transferred to the psychiatric hospital They was considered to manifest a crisis of delirium

-10% Anxious patients evidenced their misconceptions about surgery, reflected in their reactions to trauma. We have prescribed benzodiazepines, for preoperative anxiety, but the best effect obtained, in reducing preoperative anxiety and have additional post-operative benefits, was the dialog between psychologist, surgeon, anesthesiologist and patients.

Phobias: appear in five men as: needle phobias.

We appreciated that an efficient treatment of their anxiety has could be the contact with others who have successfully completed a similar operative procedure.

-2% For patients who have had chronic anxiety disorders we administered anxiolytic agents, and obtained a favourable effect.

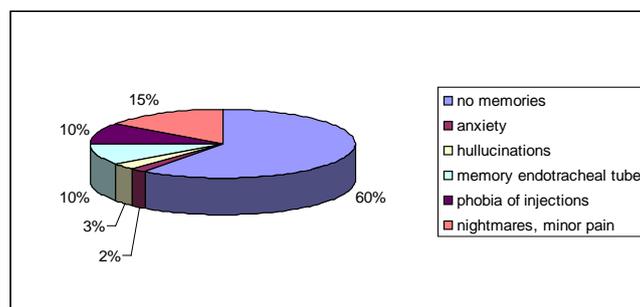


Fig. 1. Postoperative patients reactions

Cognitive impairments have metabolic origin, especially in alcoholism, and we observed to be associated with the risk of postoperative delirium (7% cases). and suicidal tentative (2% cases).

Surgical recommendation to treat local wound using: non-steroidal anti-inflammatory

drugs and local anaesthetics was associated with opioids such : meperidine, in fractioned doses (25 mg/ 4 hours), from early arrousal until 24 hours postoperative (20% cases).

In the postoperative period, a confluence of factors , such as drug effects, poor pain control, unfamiliar environment and sensory deprivation, increased the prevalence of delirium to 17% of patients. In this situations, we observed that majority of patients shows the benefits of multi component therapy aimed at each ones, of the known risk factors, that include:

- immobility
- dehydration
- cognitive impairment
- sleep deprivation.

For chronic patients with anxiety, sudden cessation following administration of anxiolytics was associated with rebound anxiety as well as by withdrawal symptoms (4% cases). Administration of benzodiazepines provided sedation. Intravenous lorazepam are equipotential for the treatment of generalized anxiety.The number of patients diagnosed as having delirium, in relation to the total score of checklist was of two cases (2%).

We analysed the perioperative and postoperative values of the parameters,such as:

- pain appearance (Fig.2)
- incidence of recall, in early postoperative period and therapy applied

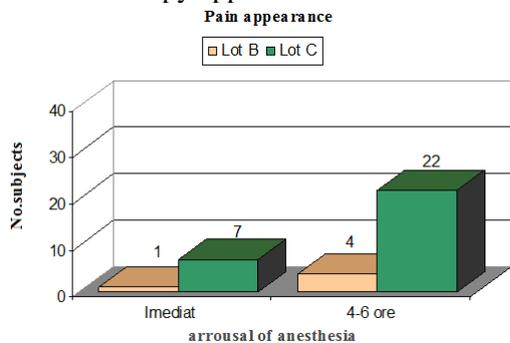


Fig.2.Pain appearance

Table 1.Incidence of recall, in early postoperative period and therapy applied.

Event	T1	T2	T3
Recall	43(dyn)	-	-
No recall	20(mep)	5(mep)	2(mep)
Dreams	10(Dyn)		
Nightmares	5(S A)	2(S)	
Hallucinations	2(prop)	2(psy)	2(psy)

Legend: Dyn: dynastat (80 mg), MEP: meperidine(100 mg), S: sedatives (diazepam), A: Analgesics Prop: propofol: 100 mg..Psy: Psychiatric consultation.

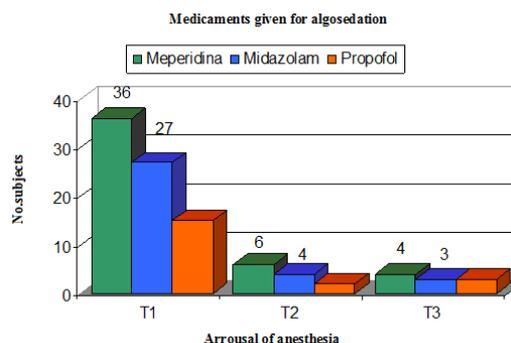


Fig.3. Types of algosedation used

No sedation 70 cases.

Patients who experienced wakefulness were youger.

Patients who remembered dreams needed longer sedation

-biological parameters: The values of ROS increase progressively from T1 to T3, inducing the excessive consum of endogenous antioxidants. NO production decrease, so vasoconstriction, hypoperfusion and hypercoagulability of plasma can appear. Amplification of these events influence in a nefavourable manner the evolution of wound healing.

Table 2. Value of ROS, NO

GR.	T1- ROS	T1-NO	T2-ROS
A	0,2 ± 0,011	0,75 ± 4,76	
B	0,24 ± 0,096	0,22 ± 4,41	0,75 ± 0,157
C	0,43 ± 0,235	0,10 ± 3,14	0,60 ± 0,298
GR.	T2-NO	T3-ROS	T3-NO
A	-	-	-
B	0,13 ± 0,22	0,23 ± 0,541	68 ± 0,237
C	0,06 ± 0,52	1,04 ± 0,45	0,321 ± 0,345

Discussions

Pain, as a dual manifestation: periferic and central. is presented in postoperative period, usually associated with sympathetic hyperactivity reflected in increasing of heart rate, arterial pressure, myocardial oxygen consumption, all of these ones, leading to myocardial ischaemia. The reducing of the movements of the chest wall and diaphragma causes the postoperative atelectasis, which could be installed, frequently.Because of these manifestations, analgesia is necessary not only to ameliorate the amplitude of respiration. but also, for extubation, when patient is weanned from mechanical ventilation to spontaneous respiration and endotracheal tube is removed. Continuing the sedation can attenuate the cardiovascular stress response, over extubation.

The benefits of algesedation are referred to the favourable effects upon the neuroendocrine stress response, including: release of adrenocorticotrophic hormone (ACTH), prolactin, growth hormone, vasopressin (from the pituitary gland), cortisol, aldosterone and catecholamines, from adrenals associated with glucagon secretion and insulin suppression [4,5]. This endocrine axis increases the inflammatory response, that means cytokines, prostaglandins, and P substance liberation, creating a vicious circle, amplifying pain and conditions for infectious complications appearance. The degree of traumatic or postoperative injuries is obtained evaluating the peripheral pain, (clinical local aspect, morpho-pathologic, biochemical parameters) sensitivity to pain is very complex from each to other, and because of this characteristic analgesic and the psycho-affective colour of this one, as central pain. The patient strategies have to be individualised. Usually it is recommended to associate: opioids, with non steroidal anti-inflammatory drugs and may be with local anesthetics.

Pain is associated with sympathetic hyperactivity, and for that, decreasing sympathetic tone and oxygen consumption, could stabilise the haemodynamics and treat agitation and motor activity. Sedation and analgesia correctly administered in postoperative period, protect patient against stressful stimuli and provide anxiolysis, nocturnal sleep and amnesia. Propofol approaches the ideal sedative drug, having favourable effects on intracranial haemodynamics, but hypotension, primarily appeared because of systemic vascular resistance reduction, may compromise cerebral perfusion pressure and negate its benefits.

Benzodiazepines, used for anxiolysis and sedation, bind to receptors on macrophages and inhibit their ability to produce IL1, IL6 and TNF-alpha [6,7]. Supplementally these kind of substances, the same, like propofol, have an important antioxidant effect [8]

Conclusions

1. The disproportion between the intensity of pain and local morphopathological changes of surgical wound is due to the differentiation between the peripheral segment, which need an anti-inflammatory medication and central segment, emotional one, which need sedation.

2. Sedation and analgesia protect patients from the noxious stimuli, provide anxiolysis,

nocturnal sleep and amnesia and also, decrease the sympathetic tone, oxygen consumption, maintain haemodynamic stability and eliminate motor agitation.

3. Alimention reflects social conditions, education, behaviour and could influence the wound healing, especially for those who include antioxidants elements, in their diet, represented by vegetables and fruits.

4. Preoperative participation of a psychiatrist may be especially helpful in high risk procedures and when there is a critical demand for patient monitoring; whenever the surgeon suspects significant psychopathology, or when there is a prior history of postoperative psychiatric difficulty (such as amputation of one segment finger, or of hand).

5. To select an effective medical agent, means that this one to have the ability to reduce and make reversible the consciousness level.

6. It is necessary to select a safe drug: to have no effect on the cardio-vascular, respiratory systems and metabolism, to do not exacerbate neuro-vegetative effects hypersensitivity reactions, histamine release and pain on injection at the site of venous puncture.

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