

CLINICAL EVALUATION OF NOVOCOL ANESTHESIC EFFICIENCY

AValiação Clínica da Eficácia do Anestésico Novocol

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This research had as main objectives evaluate NOVOCOL anaesthetic efficiency in odontological surgical proceedings and the occurrence of adverse reactions decurrent from its utilization. A total of 150 patients were included in the research, having the evaluation the following patterns: patient's age, his emotional condition before surgery, pre-anaesthetic medication, blood pressure, kind of surgery, anaesthetic technique, time of induction and duration, anaesthetic volume and, finally, patient's opinion about anaesthetic efficiency. Results showed that NOVOCOL was efficient in most of surgical proceedings (74,5%), induction time is satisfactory and duration time is sufficient to surgical manoeuvres. It wasn't observed efficiency in patients who had taken pre-anaesthetic medication and a better effect in calm or normotense ones. No adverse reaction was found in the patients who were tested. It was concluded that NOVOCOL fits into necessary patterns to the realization of surgical manoeuvres reported here as a safe and efficient anaesthetic.

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INTRODUCTION

One of the most important aspects of odontological practice is the control of pain elimination (ROBERT; SOWRAY,² 1995). The most largely used method in dentistry to control pain is the blockade of nervous impulses transportation ways and, to make it possible, anaesthetic solutions are used.

The nerve membrane is believed to be the action area of the local anaesthetic. According to the most accepted

explanation about the action mechanism, the local anaesthetic is linked to the specific receiver on the nerve membrane, and, like this, the permeability to sodium ion decreases and the impulse transportation is cut off (AYOUB et al.¹ 1992).

The research of new anaesthetic has been stimulating in order to make the odontological proceedings more painless and comfortable possible, mainly in bucomaxillofacial surgery area.

NOVOCOL, fenilefrine and lidocaine chloridate to

1:2,500, wasn't used anymore in the past. It was said to cause frequent adverse reactions, but there is only one literary essay reporting three cases of hypertension and migraine caused by NOVOCOL (SALATA; BARROS,²⁵ 1992).

The allergic reactions to local anaesthetics aren't very common, observed only in 1% of the cases (BENNET,² 1986; MONHEIN; BENNET,²³ 1989 and SILVA,²⁶ 1995). It was also observed and analysed that the reactions in patients that were under odontological treatment were more frequently a result of their anxiety than of the anaesthetic toxic components (AYOUB et al.¹ 1992).

Lidocaine is an anaesthetic from amide group, more potent than prilocaine, while fenilefrine is a synthetical sympathomimetic amide, with reasonable action reaction due to its sensibility. Its selectiveness to alpha receptors is 100% however, it may cause bradycardia, due to baroreceptors and vague nerve reflex action. Migraine isn't commonly observed, because it doesn't affect the central nervous system significantly (KING; SOKOLOFF; WECHSLER,³⁹ 1952, CHERASKIN; PRASERTSUNTARASAI,^{5,6,7,8} 1957, 1958 and 1959, KENNEDY et al.¹⁸ 1966, BOAKES et al.³ 1972, LILIENTHAL; REYNOLDS,²⁹ 1975, COWAN,¹⁰ 1977, WEINER,²⁸ 1980, GOLDSTEIN et al.¹⁴ 1982, CAWSON; CURSON; WHITTINGTON,⁴ 1983, CHERNOW et al.⁹ 1983, DIONNE; GOLDSTEIN; WIRDZEK,¹¹ 1984, MONHEIN; BENNET,²³ 1989, SMITH,²⁶ 1991, AYOUB et al.¹ 1992 and ZAMBRONO,²⁹ 1995).

In the concentration of 1:2,500 of fenilefrine, the total dose is limited to 4 mg, which means 10 ml of this solution. In people who suffer from heart problems, the maximum dose must be 1,6 mg (KEESLING; HINDS,¹⁷ 1963, GANGAROSA; HALIK,¹² 1967, EPSTEIN,¹¹ 1969, JASTAK; YAGIELA,¹⁶ 1983, MEYER,²² 1986 and HERSH,¹⁵ 1993).

So, according to pain control or its elimination, this research has as its objective evaluate clinically the efficiency of NOVOCOL in odontologic surgical proceedings, and also the occurrence of adverse reactions.

MATERIALS AND METHODS

The research observed 150 patients, from 9 to 71 years old, males and females. The presence of non-controlled medical implications was the judgment used to exclude some patients who were treated at Ambulatorial Clinic of the Specialization Course in Surgery and BucoMaxilloFacial Traumatology of FUNBEO at FOB-

USP.

The patients needed surgeries such as: simples extractions, retained tooth extractions, cysts excisions, byopsies, pre-prosthetic surgeries, and surgeries of certain complications decurrent of some buccal surgical proceedings as: residual root extractions, alveolar border fracture, alveolitis, etc...

The following clinic-anaesthetic card was used to get necessary data:

Anaesthesiology Card

Anaesthetic used:
Patient's name:
Patient's age:
Blood pressure:
Emotional state before anaesthesia:
Pre-anaesthetic medication:
Kind of surgery:
Anaesthetic technique:
Induction time:
Duration time:
Number of test tubes:
Patient's opinion about anaesthesia efficiency:
OBS:

The considerate age for each patient was the one completed at his last birthday, in entire numbers. It was evaluated if the patient was normotense, hypotense or hypertense, according to the following formulas:

$$\max AP = \text{age} + 100$$

$$\min AP = \frac{\max AP + 10}{2}$$

The patient was also asked about his emotional state, before taking anaesthesia, being the answers from calm and tense patients, because these were the most common answers.

Pre-anaesthetic medication was considered present when the patient had previously taken painkillers, antibiotics and antinflammatories associated one to another or not.

If the patient didn't feel pain during the surgery, the anaesthetic was considered efficient.

The applied anaesthetic and surgical techniques were described by MARZOLA²¹ (1992) with the total sample divided into three groups: terminal infiltrative anaesthesia,

local blockade and both techniques association.

As to the kind of surgery, the proceedings evaluated were: simple extractions, retained tooth extractions, cysts excision, biopsies, pre-prosthetic surgeries and other determinate problems previously mentioned.

The induction time was figure out from the beginning of anaesthetic application to the beginning of sensibility loss.

The duration time was evaluated from the beginning of sensibility loss to its return.

These data was processed by using programme Excel 5.0. Association and variety tests were used in statistical analysis. It was used $p=0.05$ in significance level.

RESULTS

Results are shown on the following tables:

Table 1- Evaluation of anaesthetic efficiency according to sex

sex	number of patients	efficiency	tubes	induction time (sec.)	duration time (min.)
female	105	78%	2.638	69.10	175.82
male	45	71%	3.090	74.07	147.50

Table 2- Evaluation of anaesthetic efficiency according to anaesthetic technique

technique	number of patients	efficiency	tubes	induction time (sec.)	duration time (min.)
both	106	80%	2.95	75.78	178.75
blockade	27	66%	2.48	60.33	153.11
terminal	17	82%	2.12	54.52	112.00

Table 3- Evaluation of anaesthetic efficiency according to kind of surgery

kind	number of patients	efficiency	tubes	induction time (sec.)	duration time (min.)
biopsies	2	100%	0.50	55.50	51.00
cysts excision	3	0%	7.66	47.33	—
complications	4	75%	3.25	81.25	—
pre-prosthetic	11	81,8%	2.45	62.73	133.33
simple exo.	14	71,4%	1.93	81.00	41.00
retained exo.	116	80,2%	2.80	70.58	187.29

According to patient's opinion, the anaesthetic was efficient in 74,5% of them, i.e., patients don't detect pain

during surgical proceedings. In 25.5% of cases, the anaesthetic was considered inefficient, i.e., there was pain occurrence. All patients were warned about the difference between pain sensation and pressure.

As to sex, differences in efficiency and induction time weren't considered statistically significant. Tube average to males was 3.09 per surgical proceeding and for females, 2.64.

Efficiency differences weren't considered statistically significant according to anaesthetic technique, blood pressure, pre-anaesthetic medication presence, and patient's emotional condition.

As to evaluation of anaesthetic efficiency according to kind of surgery, differences were considered significant ($p<0.05$). NOVOCOL was more efficient at encosed extractions than at cysts excisions. However, this result effectiveness is considered doubtful because between the groups where the differency in efficiency was considered significant, there's different number of evaluated patients: 116 patients in retained extractions groups and only 03 patients in cysts excisions group. Anaesthetic volume changed a lot from retained extractions (an average of 2.8 tubes was used) to cysts excisions (7.66 tubes).

DISCUSSION

The analysis of results allows to conclude that the anaesthetic was very efficient in most of surgical proceedings, as no problem about migraine or hypertension was reported like it had reported by SALATA; BARROS²³ (1992) in spite of the small number of evaluated cases (03).

It is observed through Table 2 that as infiltrative terminal anaesthetic as local blockades and their association seems to show anaesthetic efficiency. It is also observed that tube average was almost the same in different anaesthetic techniques and induction times are small (differences among these times weren't considered significant) what seem to cause "less" total surgical time, because if the injection is slow, 1 ml per minute, at the end of application the patient will be showing loss of sensibility and the surgery can be initiated. Intravascular application and involuntary

Table 4- Evaluation of anaesthetic efficiency according to blood pressure

blood pressure	number of patients	efficiency	tubes	induction time (sec.)	duration time (min.)
high	6	50%	2.83	57.50	—
low	14	85,7%	2.64	63.29	90.50
normal	130	78,5%	2.79	71.99	167.97

Table 5- Evaluation of anaesthetic efficiency according to pre-anaesthetic medication

medication	number of patients	efficiency	tubes	induction time (sec.)	duration time (min.)
absent	130	78,5%	2.77	70.45	170.06
present	20	75%	2.80	71.50	131.00

Table 6- Evaluation of anaesthetic efficiency according to patient's emotional state

emotional state	number of patients	efficiency	tubes	induction time (sec.)	duration time (min.)
calm	94	81,90	2.73	74.37	149.77
tense	56	71,4%	2.84	64.25	194.50

increase of speed and injection pressure (as it occurs in peridental anaesthesias) may seem factors that may favour systemic absorption of fenilefrina in higher levels, although it's been very little reported (LILIENTHAL; REYNOLDS,²⁰ 1975).

Table 3 seems to show anaesthetic inefficiency in cysts excisions, but no safe conclusion could be observed in only three clinic cases, because nervous vascular bundle inferior and/or mentoniane nerve exposition caused by cyst surgery duration occurred during long duration of cyst surgery. In another surgical proceedings the anaesthetic was considered satisfactory.

Anaesthetic efficiency was satisfactory in a 71.4% average of normotense, hypertense and hypotense patients, contrary to SALATA; BARROS²⁵ (1992) data. There was no significant difference in efficiency in these groups. All hypertense patients had their blood pressure controlled by medicine.

It is observed through Table 4 that pre-anaesthetic medication presence didn't change anaesthetic efficiency significantly. Nevertheless, it can be important to future researches.

Patient's emotional condition didn't change the anaesthetic solution efficiency significantly, although anaesthetic absorption may occur more rapidly in nervous

or stressed patients (DIONNE; GOLDSTEIN; WIRZED,¹¹ 1984 and MEYER,²² 1986).

Patient were asked, during anamnesis, about previous hypersensitivity to some anaesthetics. Among the patients who were taken care during a period of 1.5 years in this clinic, just one reported to be allergic to some anaesthetic solutions. This patient went through allergic test which showed that he was allergic not only to NOVOCOL, but also to many others anaesthetics, having used only Scandicaine. By this way, it was possible to stablish an alarm about this problem as it's been preconized lately (SILVA,²⁷ 1995).

During all surgical proceedings, patient were observed as to adverse reactions to the anaesthetic and no change was detected.

The presence of much adipose tissue is a variable that wasn't taken into consideration, because its measurement couldn't be taken by simple methods of visual observation or by patient's weigh and heigh. Nevertheless, if the technique is well conducted (and it was in this case), solution may be deposited very close to the nerve, decreasing the effect of this variable.

CONCLUSIONS

Through the results gotten it is licit to conclude that:

1. Average time of anaesthesia duration to all patients was 163.89 minutes, which is sufficient to the realization of more common surgical proceedings.
2. Induction time was also very satisfactory.
3. Average necessary tubes to a surgery was good according to most dosage of indicated anaesthetic, not only to healthy patients but also to cardiac ones.
4. As to adverse reactions, nothing was observed among the 150 patients.
5. Results seem to show that NOVOCOL fits into very acceptable patterns to the realization of surgical proceedings.

Meanwhile, the correct indication of the anaesthetic used is more important than its utilization, besides perfect realization of anaesthetic technique.

RESUMO

Avaliou-se a eficácia do anestésico NOVOCOL em manobras cirúrgicas odontológicas, assim como a ocorrência de reações adversas decorrentes da sua utilização. Foram incluídos na pesquisa 150 pacientes, sendo que a avaliação seguiu os seguintes padrões: idade do paciente, seu estado emocional antes da anestesia, medicação pré-anestésica, pressão arterial, tipo de cirurgia, técnica anestésica, tempos de indução e duração, volume anestésico e finalmente, a opinião do paciente sobre a eficiência do anestésico. Os resultados mostraram que o NOVOCOL foi eficiente na maioria dos procedimentos cirúrgicos (74,5%), o tempo de indução é satisfatório, e o tempo de duração é suficiente para realização das manobras cirúrgicas. Não se observou aumento da eficácia em pacientes que receberam medicação pré-anestésica, nem um melhor efeito em pacientes calmos ou normotensos. Entre aqueles pacientes avaliados, nenhuma reação adversa foi observada. Concluiu-se que o NOVOCOL encontra-se dentro dos padrões necessários para a realização das manobras cirúrgicas aqui relatadas, sendo um anestésico seguro e eficaz.

UNITERMS: Anestésico; Anestesia; Anestesiologia; Novocol.

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