Managing dental fears: a tentative code of practice

Eric Jackson


Dental fear is acquired by a process of classical conditioning. This article lists rules for the prevention and management of pain.

The word "pain" should never be used. Instead, terms such as "discomfort" or similarly less loaded words should be substituted. Every possible means to prevent pain should be used, and if pain is anticipated, the patient should be warned. The dentist should never say that a procedure won't hurt unless he is absolutely sure that it won't. If at all possible, he should avoid doing things the patient doesn't like. Preferences and attitudes can be determined in part by a questionnaire. One example of a change made to please a patient is the use of a scent in the operatory that covers the typical medicinal smell.

If appropriate, the patient should be allowed to familiarize himself with the feared stimuli, things such as forceps, syringes, and so forth. If explanations of the functions of such items are given, they often become less frightening.

The patients should be taught a signal that they can use to ask the doctor to stop working momentarily, and new procedures should be conducted gradually and slowly.

Another technique for reducing dental fear is to keep the office cheerful and attractive. A relaxed and quiet atmosphere is conducive to calm attitudes on the part of the patients.

Should any accidental pain be induced, the procedure should be stopped immediately. Patients who display desirable behavior should be rewarded, and problem patients should never be punished, but encouraged whenever they respond in a positive fashion. The dental practitioner should move and talk slowly, thus maintaining a tranquil environment.

Effects of Ketamine and halothane on increased respiratory resistance provoked by ultrasonic aerosols

Charles L. Waltemath and Norman A. Bergman


Twenty adult surgical patients with no history of bronchopulmonary disease were studied. All patients were receiving general endotracheal anesthesia for lower abdominal operations. Measurements of compliance and resistance for the total respiratory system were obtained by thoracic inflation and subsequent passive exhalation. Flow, volume, and transthoracic pressure were recorded.

Respiratory resistance was artificially increased by ultrasonic aerosols. These aerosols, either of water or saline solution, significantly increase respiratory resistance. The effect is not progressive, and persists sometimes as long as 30 minutes after delivery is stopped. Because the increase in resistance is caused primarily by increased bronchial tone, the technique was a good one to use for study of anesthetic effects on increased respiratory resistance.

Halothane decreases increased respiratory resistance created by ultrasonic aerosols. Ketamine did not produce broncho-
dilation and did not improve respiratory compliance.

Increased resistance produced by ultrasonic mist is reversed rapidly by an isoproterenol (a bronchodilator) and halothane (an anesthetic) but not by ketamine.

Therefore, halothane is recommended for relief of bronchospasm in asthmatic patients, but ketamine should not be used for that purpose.

A new local anesthetic (Carticaine) from the thiopene-series

R. Muschaweck and R. Rippel

Pharmacological investigations were conducted with the new infiltration and conductance anesthetic carticaine (HOE 045, Ultracaine, 4-methyl-3-[2-({propylamino} propion-amido)-2-thiophenecarboxylic acid, methyl ester hydrochloride). A concentration-related (0.05-0.5% solution) efficacy in conductance anesthesia was demonstrated for carticaine on the exposed sciatic nerve of the frog (Rana esculenta).

Compared with lidocaine, there is a statistical difference in the slope of the regression line with a t-value > 2.75 (y = carticaine = 41.78 + 22.95 log x) (y = lidocaine = 30.85 + 13.62 log x). The activity ratio carticaine:lidocaine is 1.5. In comparison with procaine, there is a statistically significant difference in the slope of the regression line (y = carticaine = 45.41 + 23.19 log x) (y = procaine = 35.0 + 17.25 log x) with t > 2.02. The activity ratio carticaine:procaine is 1.9. No significant difference was recorded in a comparison with butanilicaine. Therefore, carticaine has a higher anesthetic activity than lidocaine and procaine. Tested on the cornea of the rabbit, carticaine shows a low efficacy in topical anesthesia.

Efficacy in infiltration anesthesia was studied by the guinea-pig weal test. Carticaine appeared to be markedly superior to the control compounds as shown by significantly different slopes of the regression line of carticaine (y = 30.94 + 23.12 log x) and lidocaine (y = 29.24 + 18.75 log x) and in comparison to procaine (y = 27.67 + 19.91 log x) and to the regression coefficient t = 2.79, p < 0.01.4. The expected reactions of the blood pressure after intravenous injection of local anesthetics in different dosages and injection rates were also elicited by carticaine. Carticaine, 5-10 mg/kg intravenously, can abolish the critical blood pressure drop after 25-40 mcg/kg veratrin as well as other local anesthetics. Carticaine, like other local anesthetics, has antispasmodic effects on the smooth muscle of the bowel. Carticaine and lidocaine have approximately the same vasodilating effects, while those of procaine are clearly higher. On the isolated perfused guinea-pig heart, coronary dilation and a transient negative inotropic effect are recorded, as with other local anesthetics.

The toxicity of the intravenous drip was calculated to be 2.09 (1.01-2.45 mg/kg/min) for carticaine. This ranges between lidocaine (1.09) and procaine (3.11). No formation of methemoglobin was found after intraperitoneal administration of 20, 40, or 60 mg/kg carticaine in rats and cats. The local tolerance of carticaine in spinal anesthesia in dogs was grossly and microscopically good. The acute toxicity of carticaine after intravenous administration to mice is 37.0, within the range of other very potent local anesthetics.

Studies on the tolerance of the new local anesthetic, carticaine


The acute tolerance of the new local anesthetic, carticaine, was tested without vasoconstrictors intravenously and intramuscularly in rats, dogs and rabbits, and orally in rats. The subchronic tolerance was also examined intravenously and intramuscularly (rats: 25 administrations; dogs: 30 administrations).

The toxic symptoms observed corresponded to those seen after administration
of other current commercial compounds; there were no indications of side effects still unknown. Teratological investigations made in intravenous administrations to rats and rabbits and in subcutaneous injections to cats showed that carticaine causes neither an increased rate of fetal death or malformations. Investigations of local toxicity reveal that carticaine, given with or without vasoconstrictors, is well tolerated in subcutaneous, intramuscular, intravenous, epidural, subdural and suboccipital administration. A treatment for intoxication is recommended in case of toxic symptoms.

**Effects of halothane on plasma catecholamines**

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One percent halothane anesthesia in man decreases cardiac output, stroke volume, mean arterial pressure, left ventricular minute and stroke work, and myocardial contractility, and increases right atrial pressure. Depression of the sympathetic nervous system would explain these effects, but this has not been proven. Halothane has not been found to have strong effects on the sympathetic nervous systems of animals. Although it may, experiments have been difficult because changes in adrenergic activity are hard to show convincingly. With the radioisotopic enzymatic technique used in this experiment, sensitivity was sufficient to show striking decreases in plasma catecholamines in normal rats and adrenalectomized rats anesthetized with halothane.

Catecholamine levels in plasma of anesthetized rats were much lower than in the same rats after they had awakened. Samples collected after rats were decapitated did not have significantly higher concentrations of catecholamines than when the rats were awake. Catecholamine content of plasma from cannulas of ten awake, adrenalectomized
Effects of halothane, methoxyflurane, and cyclopropane on activation of phosphorylase in skeletal muscle by epinephrine

Robert C. Reynolds


Isolated skeletal muscle from rat diaphragm was exposed to various concentrations of three anesthetic agents (halothane, methoxyflurane, and cyclopropane), stimulated with various concentrations of epinephrine, and analyzed for phosphorylase activity. Without epinephrine, none of the anesthetics (in concentrations normally used for surgical patients) had any effect on phosphorylase activity. In the presence of epinephrine, halothane decreased phosphorylase-stimulating activity of epinephrine. None of the concentrations of methoxyflurane either depressed or enhanced the metabolic activity of epinephrine. Cyclopropane, at concentrations of 8.7% significantly increased the effect of epinephrine, but did not effect it when given at higher concentrations (12.0 to 14.8%). At very high concentrations cyclopropane depressed metabolic activity.

There was no evidence that the anesthetics directly stimulated beta-adrenergic activity. However, results suggest that they may produce altered sympathetic activity by direct influence of the effector organ.

Carticaine in regional anesthesia; brachial plexus block by supraclavicular approach

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Operations for arm and hand injuries were performed on 26 patients in conductone anesthesia with 20 ml of 2% carticaine solution without addition of vasoconstrictors. Complete analgesia (anesthesia) occurred in all patients 4-7 minutes after injection of the local anesthetic and lasted 90-140 minutes.

In 16 patients, complete analgesia ceased 5-15 minutes before the end of the surgery. Eight patients were given general anesthesia for 40-120 minutes (duration of the surgery: 105-255 minutes). With 20 ml of the 2% carticaine-solution with 1:200,000 epinephrine, the complete analgesia lasted 3.5 hours (mean) in patients with blockage of the supraclavicular plexus; in 24 subjects it lasted longer than the surgery. No side effects were observed. All anesthesias were performed and checked by the same investigator.

Gasserian ganglion injection for trigeminal neuralgia

M. Bernard Winkler


Thirty-one patients with tic douloureux were anesthetized with droperidol and fentanyl (Innovar) intramuscularly and intravenously. They then were injected in
the Gasserian ganglion with 0.5 ml boiling water.

Almost all patients had previously experienced recurrence of pain after carbamazepine treatment, and 60% of those injected had been treated with surgical avulsion of the infraorbital or inferior alveolar nerve. In most cases this gave temporary relief, and it also accustomed the patient to facial numbness before it was permanent and was helpful in confirming the diagnosis.

Patients were tested for sensory loss over face, for corneal reflex, and for jaw and eye movement. Twenty-seven of the patients (87%) were relieved of pain, two had paresthesia, one had occasional dull pain, and another had no relief. Partial function had returned by the following day, and most patients were discharged that morning.

**Thermographic representation of the vascular effects of local anesthetics**

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Most anesthetics used by dentists have a vasoconstrictive effect, to delay absorption and distribution of the anesthetic, and to produce an operating field that is relatively bloodless. However, for patients with coronary insufficiency, fresh myocardial infarction, or thyrotoxicosis, vasoconstrictors are not desirable. Therefore, anesthetics used should be locally active only.

Because vasoconstriction produces a localized temperature drop, infrared thermography can be used to record temperature fields, and thus, regions of activity.

A Bofors IR camera was used to scan temperature fields, and with inverted representation, low temperatures showed as dark shades of grey, and high temperatures as light shades.

Procaine (Novocain) and butacetolulide (Hostacain) caused a significant local increase in blood flow, and lidocaine (Xylocain) also increased blood flow. Xyloest (prilocaine) had no vascular effects. Mepivacaine (Scandicain) was vasoconstrictive and cooling of the skin resulted from reduced blood flow. Thus, for high-risk patients, mepivacaine, which did not have a vasodilatory effect, is the agent of choice. Because it does not increase blood flow, the anesthetic remains in contact with nervous structures longer. The non-vasodilatory agents must contain a vasoconstricting additive that can be much lower in concentration than the vasodilatory anesthetics.

Infrared thermography of the jaw close to the skin is useful for obtaining information about blood flow in the tissues.

**Acupuncture anesthesia in surgery for trigeminal neuralgia**

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Neurological examination of a man, aged 63 yr, who had experienced intermittent right facial pain for 10 yr and had been treated with carbamazepine (Tegretol) for 4 yr with temporary relief, revealed a trigger point at the right side of the mandible.

He was given daily acupuncture therapy for a month in a Hong Kong hospital. Subsequently, right temporal craniotomy was performed, with the patient under acupuncture anesthesia, for the removal of a bony spur projecting into the Meckel's cavity pressing on the gasserian ganglion. The patient experienced no pain except when the deep structure was touched. Anesthesia obtained under acupuncture and an electrical stimulation procedure was comparable clinically to local anesthesia.