EDITORIALS

Topical anesthesia: to use or not to use—that is the question

"Okay, open your mouth wide," instructs the endoscopist. "I'm going to spray the back of your throat to numb it up." This scene is played out in almost every endoscopy unit across the world every day. The use of topical pharyngeal anesthesia for upper GI endoscopy has been debated since its inception. Nevertheless, agents for topical anesthesia are widely used in practice. A nationwide survey in the United Kingdom found that 63% of endoscopists spray the patient's oropharynx with a local anesthetic before most upper GI endoscopic procedures on a regular basis.[1] Why? Several questions arise: does topical anesthesia really prevent gagging? Does it improve patient tolerance for the procedure? Does it indirectly allay patients' fears regarding the procedure, knowing their throat is going to be numb? Does it allow the endoscopist obtain a quicker, better examination? Of course, if you are Bill Clinton, it depends on your definition of the word. What is improved "tolerance"? What is a "better" examination?

Soma et al.[2] in this issue of *Gastrointestinal Endoscopy* evaluate the use of topical anesthesia for upper endoscopy and assess relative risks of patient discomfort with respect to pharyngeal anesthesia, anxiety, age, and first-time experience with the procedure. This prospective, randomized, double-blind, placebo-controlled trial enrolled 201 patients undergoing upper endoscopy without concomitant conscious sedation. The investigators found no significant difference overall between those who received topical anesthesia versus placebo for discomfort on intubation. Discomfort was greater in those patients age 39 or younger compared with older patients, but approached no statistical difference when comparing anesthesia versus placebo in those patients age 39 or younger. Discomfort was lower in the anesthesia group compared with placebo for first-time examinees, but the greater number of patients who were first-time examinees in the anesthesia group may have biased these results. They also noted that discomfort was higher but approached no statistical difference in those with higher anxiety scores versus those with lower scores. Certainly, the methodology of this study may have influenced the way in which the study data were obtained. For instance, discomfort measures were obtained after the procedure was performed, and therefore, the scores may reflect, in part, the tolerance to the procedure overall. A better method for measuring discomfort would

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have been to ask the patient to point to a scale immediately after intubation, rather than at the end of the procedure. Nevertheless, this study suggests that in younger patients who undergo upper endoscopy without conscious sedation, topical anesthesia may be effective. It may also be effective in those patients who are more anxious, but again, a compassionate, relaxed, physician with a soothing manner may allay fear more effectively than a topical spray does for many patients. It is in the eye of the beholder.

A number of other prospective studies of topical anesthesia have been performed. The results of most but not all indicate that it offers advantages in terms of patient tolerance. Any assessment of tolerance for an endoscopic procedure—whether measured by the patient, the endoscopist, an assistant, or an observer not directly involved in the procedure—is almost entirely subjective. Furthermore, tolerance is influenced by a number of factors in addition to medication as alluded to previously (i.e., physician-patient interaction).

Cantor and Baldridge[3] found no benefit for topical pharyngeal anesthesia in a randomized trial in which patients received viscous lidocaine gargle or placebo, or neither the drug nor the placebo. The double-blind placebo-controlled trial of Chuah et al.[4] also found no benefit in terms of ease of intubation and patient comfort. In a similar study of 150 patients, Lachter et al.[5] found no differences with regard to coughing, gagging, or difficulty of intubation when use of a topical anesthetic spray (Cetacaine) was compared with a placebo. In a subset of patients, intubation was thought by endoscopists to be easier in patients who were undergoing endoscopy for the first time. Gordon et al.[6] found that patients preferred topical anesthesia to placebo in a double-blind randomized trial in 111 consecutive patients undergoing EGD; endoscopists also rated patient tolerance as significantly better. In a randomized, double-blind, placebo-controlled trial in the United Kingdom, the acceptability of upper GI endoscopy was significantly greater ($p = 0.001$) in those patients who received lidocaine topical spray (50 mg) than in those who received a placebo.[7] However, the patients in all of these trials received conscious sedation in addition, which likely biases the assessment of the effects of topical anesthesia alone. It is highly likely that conscious sedation influences the patient's and the endoscopist's perception of tolerance. Indeed, in a prospective, randomized, single-blinded trial involving 95 patients, there were no significant differences between diagnostic upper endoscopy with conscious sedation with topical anesthesia versus upper endoscopy with no topical anesthesia with respect to ease of intubation, procedure performance, procedure duration, and dosages of midazolam or meperidine.[8]

What about patient preference regarding topical anesthesia? In a prospective study carried out in Sweden, 200 ambulatory patients undergoing EGD without sedation were randomized to receive either topical anesthesia or placebo.[9] Although no significant difference in throat discomfort was found between the 2 groups, a majority of patients preferred, when given a choice, that any subsequent endoscopic procedures be performed with topical anesthesia. In a similar study from Greece, 140 consecutive patients undergoing EGD were randomized to receive one of the following regimens: (1) diazepam, 10 mg intramuscularly (IM) 30 min before endoscopy, and 10% lidocaine spray for topical pharyngeal anesthesia, (2) 10 mg diazepam IM, (3) 10% lidocaine spray, or (4) no premedication.[10] Upper endoscopy was well tolerated without sedation, and no statistical difference was found between the groups. However a tendency toward better tolerance was seen in those patients who received topical pharyngeal anesthesia. Both low-dose midazolam and lidocaine spray had an additive beneficial effect on patient tolerance in another study of comparable design from Switzerland of 200 patients undergoing diagnostic EGD on an ambulatory basis.[11] A prospective evaluation of 2000 upper GI endoscopic examinations performed without sedation in the Middle East concluded that topical pharyngeal anesthesia alone (10% lidocaine spray) resulted in a safe, quick, and well-tolerated procedure.[12] Thus a documented although controversial basis exists for the common belief that patient tolerance for upper endoscopy is improved by the use of topical analgesia. This is clouded by patient and physician expectations. Certainly if a patient was given topical anesthesia for a prior procedure, he or she may well expect to receive it again for a future procedure. However Soma et al.[2] found that patient discomfort lessened in those who had undergone previous examinations, which may reflect a reduction in anxiety regarding gagging.

How is topical pharyngeal anesthesia administered? Topical anesthesia may be obtained with a variety of different agents, either by spray, gargle, painting, or lozenge. Commonly used topical anesthetic agents include tetracaine (Pontocaine, Sanofi Winthrop Pharmaceuticals, New York, N.Y.), tetracaine plus benzocaine (Cetacaine, Cetylite Industries, Inc., Pennsauken, N.J.), benzocaine (Hurricaine, Beutlich, Inc., Waukegan, Ill.), and lidocaine (Xylocaine, Astra Pharmaceuticals, Wayne, Pa.). Smith et al. compared preferences for 3 topical anesthetic

sprays (tetracaine plus benzocaine, benzocaine, and 10% lidocaine spray) and 3 gargles (2% lidocaine, and 2 combinations of 2% lidocaine diluted 1:1 with mouthwash) in a randomized study of normal subjects who had previously undergone upper GI endoscopy.[13] Subjects underwent repeated procedures without additional premedication and then ranked the agents in order of preference. Although individual subjects had strong preferences, no consensus of opinion was reached as to a preferred agent with regard to taste, degree of pharyngeal anesthesia, and tolerance for passage of the endoscope. However most subjects preferred administration by spray rather than gargling.

How much of the topical pharyngeal anesthetic should be given? The optimum dose of topical pharyngeal anesthesia has been evaluated prospectively. Jameson et al.[14,15] randomly evaluated 3 different doses of lignocaine spray (50 mg, 100 mg, or 200 mg) in 60 consecutive patients undergoing EGD. These studies, reported in abstract form, found that lignocaine spray in the 100-mg dosage improved patient tolerance for upper GI endoscopy compared with the 50-mg dose; no added benefit was achieved with the 200-mg dose. The patients in these studies received midazolam for conscious sedation, which reduces the strength of the conclusions reached. Optimum dosing may be of clinical importance because topical anesthetic agents are known to be absorbed in some degree into the systemic circulation although their potential for toxicity is rarely noted.[16] In 20 patents who received topical anesthesia before upper GI endoscopy, serum concentrations of lidocaine and its metabolite monomethylglycinexylidide were noted to be lower in those who received lidocaine as a 2% gel than in those who gargled with a 2% lidocaine solution.[17] Although no untoward effects were observed in either group, the investigators recommended the gel form of lidocaine to minimize systemic absorption. Nevertheless most endoscopists prefer spray application because the anesthetic agent can be directed to the posterior pharyngeal wall to suppress the gag reflex. A helpful tip: do not ask the patient to say "aah" because this might expose the larynx to the anesthetic agent, thereby suppressing the cough reflex.

What are the potential risks associated with topical pharyngeal anesthesia? Complications related to use of topical anesthetic agents are rare but potentially lethal. Anaphylactoid reactions and systemic toxicity to topical anesthetics have been reported.[18,19] An unusual complication that has been described is methemoglobinemia.[20-25] A link between the use of local anesthetic sprays and the development of pneumonia after upper endoscopy may exist, presumably because of the loss of the cough reflex.[26] Infrequently, the anesthetic effect can last for more than 30 to 40 minutes after the procedure has ended. Patients should be encouraged to fast for about an hour after the procedure until water can be swallowed easily. Certainly, the risk of aspiration is minimal during diagnostic endoscopy. Aspiration is particularly likely when protective reflexes are blunted by excessive sedation or encephalopathy, when significant amounts of fluid or food are still in the stomach, as in patients with diabetic gastroparesis and in the setting of emergency treatment of upper gastrointestinal hemorrhage[27] and percutaneous endoscopic gastrostomy placement. In these cases, the use of topical anesthesia should be avoided.

In summary, the need to use topical pharyngeal anesthesia is still debatable. Where it may be useful is with patients who are anxious or undergoing upper endoscopy for the first time without sedation. In practices that use conscious sedation, it is not beneficial. In fact, many patients may dislike it because of its taste, the burning sensation that accompanies anesthesia, and the anesthetic feeling itself. In addition, in the era of thinner, newer-generation endoscopes, it is unlikely to make a difference for patients receiving sedation. Further studies are needed in patients who undergo transnasal endoscopy without sedation as cost-containment concerns continue to influence practice. But no matter what the circumstances, the power of the physician-patient interaction regarding tolerance and performance of upper endoscopy procedures should not be underestimated.

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