

TOPICAL NASAL ANAESTHESIA FOR FIBREOPTIC BRONCHOSCOPY: LIGNOCAINE SPRAY OR GEL?

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ABSTRACT

Lignocaine spray for anaesthetising the nasal mucosa for fiberoptic bronchoscopy often causes discomfort to the patient. We compared two techniques of applying nasal topical anaesthesia using either lignocaine spray (group A : 25 patients) or gel (group B : 30 patients) to assess patients' tolerance to the procedure. Both groups received 100 mg of lignocaine in the nostril, 40 - 50 mg to oropharynx, 120 mg to vocal cords and 40 - 100 mg to trachea and bronchi. Throat anaesthesia was the most common unpleasant part experienced by both groups of patients (34.5%), followed by examination of bronchi (30.6%) and nasal anaesthesia (21.8%). Significantly more patients in group A experienced discomfort or pain during nasal anaesthesia as compared to group B ($p < 0.001$). Patients' tolerance to the bronchoscopy was similar in both groups and the examination was performed satisfactorily in all patients. Thus, lignocaine gel is a simple technique, effective and less irritating as compared to lignocaine spray for topical nasal anaesthesia.

Keywords: Nasal anaesthesia, fiberoptic bronchoscopy, lignocaine spray, lignocaine gel.

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INTRODUCTION

Fiberoptic bronchoscopy was introduced in 1967. Among its major advantages over the rigid bronchoscope is the ease to perform without the need for general anaesthesia or the operation theatre. The safety record of the procedure is well established with mortality and complication rates of less than 0.1% and 0.3% respectively^(1,2). There are several methods of applying local anaesthesia for the procedure such as dropper instillation, transtracheal injection, local nerve block and 'spray as you go'⁽³⁾. 'The spray as you go' technique by and large is the most commonly adopted technique where anaesthetic spray is applied to the upper airway and anaesthetic solution injected through the bronchoscope to anaesthetise the vocal cords and lower airways. The application of nasal anaesthetic by spray often causes an unpleasant sensation to the nasal mucosa^(4,5). Lignocaine gel which is usually used to lubricate instruments including the bronchoscope can also be used to anaesthetise the nasal mucosa. We compared two techniques of applying nasal topical anaesthesia, namely lignocaine spray and gel to assess patients' tolerance to the techniques.

PATIENTS AND METHODS

Fifty-five consecutive patients (39 males, 16 females) aged between 17 to 80 years old (mean 49.6 years) were randomised to receive either lignocaine spray (group A, 25 patients) or lignocaine gel (group B, 30 patients) for nasal anaesthesia.

For group A, 100 mg of 10% lignocaine solution was sprayed to the right nostril and the bronchoscope was lubricated by water soluble jelly (K-Y jelly, Johnson and Johnson) prior to its insertion. For group B, 100 mg or 5 ml of 2% lignocaine gel was introduced to the right nostril using plastic syringe (5 or 10 cc syringe) at the time of patients' slow but deep inhalation while the left nostril closed. The nose was also massaged externally using a finger to evenly distribute the gel within the nasal cavity. All patients also received 40 - 50 mg of lignocaine 2% to vocal cords and between 40 - 100 mg lignocaine 1% to trachea and bronchial tree. Patients in both groups also received premedication with intramuscular pethidine 50 - 75 mg and atropine 0.6 mg, half an hour before the procedure. The bronchoscope was introduced through the right nostril in all patients and the examination was done by two experienced bronchoscopists. About half an hour after the completion of the procedure, an assistant who had no knowledge of the method of local anaesthesia assessed the patients' tolerance to the procedure using a questionnaire. The assessment included a question on the most unpleasant part of the procedure and a specific question on the nasal anaesthetic application. The bronchoscopists were also asked to assess patients' overall tolerance to the procedure.

RESULTS

The mean dose of lignocaine used in our study was 334 ± 54 mg (range 260 - 440 mg) for group A and 365 ± 80 mg (range 230 - 590 mg) for group B. Nineteen patients (34.5%) felt that anaesthesia of oropharynx or throat was the most unpleasant part of the bronchoscopy. This was followed by examination of the bronchi (30.1%) and nasal anaesthesia (21.8%). Significantly more patients in group A as compared to group B felt nasal anaesthesia as the most unpleasant part of the procedure ($p < 0.05$). Other parts of the bronchoscopy which were found to be most unpleasant by some patients are listed in Table I. When patients were asked specifically to comment on the nasal anaesthetic application, significantly more patients receiving the spray felt it was either painful or associated with some discomfort and more patients who received the gel felt nasal anaesthesia was not at all unpleasant (Table II).

Assessment by the two bronchoscopists showed that examination could be performed satisfactorily in all patients in either group and no difference was noted in terms of patients' tolerance to the bronchoscopy (Table III).

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Table I - Replies from 55 patients to the question on the most unpleasant part of the bronchoscopy

Part of most discomfort	Group A (Spray)	Group B (Gel)	p value
1. Nasal anaesthesia	9	3	0.04
2. Throat anaesthesia	12	7	NS
3. Passing through vocal cord	2	7	NS
4. Examination of bronchi (\pm biopsy \pm brushing \pm lavage)	7	10	NS
5. Passing through the nose	1	2	ND
6. Withdrawal of bronchoscope	1	1	ND
7. No discomfort	0	5	ND
Total*	32	35	

* Total more than 55 as 10 patients gave two or more answers.
NS = Not significant
ND = Not done

Table II - Patients' responses to the specific question on nasal anaesthetic application

	Spray	Gel	p value
Pain/discomfort	18	6	<0.001
No discomfort	7	24	<0.001

Table III - Bronchoscopists' assessment of patients' tolerance to bronchoscopy

	Spray	Gel	p value
Good - minimal coughs or movements	14	15	NS*
Reasonable - some cough or movements but examination was completed satisfactorily	12	14	NS*
Bad - frequent coughs or movements and examination was not completed or satisfactory	0	0	-

NS *= Not significant

DISCUSSION

For topical anaesthesia to be effective, three criteria must be satisfied. The topical agent and its administration must produce adequate anaesthesia, the procedure must be safe and the technique should be easy for the patient as well as for the

physician. This is true not only for bronchoscopy but also for other procedures.

The most frequently used anaesthetic agents are lignocaine, cocaine and prilocaine. Lignocaine is by far the most popular agent used and the total dose used by bronchoscopists ranged from 100 to 1180 mg, as reported in one large postal survey⁽⁶⁾. In this survey, a total of 39,564 bronchoscopies were performed and only two serious reactions to lignocaine were reported. However, the maximum dose regarded as safe should not exceed 300 - 400 mg^(3,6,7), although Martindale suggests 600 mg⁽⁸⁾. In our study the total dose ranged between 230 - 590 mg but most patients received a dose of less than 400 mg. No side effects of toxicity was observed in any of our patients. It is likely that the actual dose received by the patients was much less than what was given as a significant proportion of it was sucked back through the bronchoscope or swallowed during the anaesthesia of the oropharynx and vocal cord.

Cricothyroid puncture for instillation of the anaesthetic agent is effective and requires a lower dose of the agent. The procedure however is quite unpleasant and may be associated with bleeding from the puncture site^(9,10). It is therefore less popular. The spray technique is the most popular technique but the set-back of the procedure is the unpleasant effect associated with prying of the nose. The use of lignocaine gel as in our study can overcome this problem. This has also been shown by others⁽¹¹⁾. Another part of the bronchoscopy which was noted to be unpleasant in some of our patients is the application of anaesthetic spray to the oropharynx. The discomfort is due to both pain and bad taste. We feel this can be overcome by not giving anaesthesia to the oropharynx. Our own experience with some patients who do not get oropharyngeal anaesthesia suggests that oropharyngeal anaesthesia is not quite necessary as patients could tolerate the bronchoscopy reasonably well. In experienced hands the throat is seldom touched when the bronchoscope is being inserted. However we feel throat anaesthesia should be applied when the bronchoscopy is carried out by less experienced bronchoscopists. In conclusion, we feel the application of lignocaine gel is a useful technique for topical nasal anaesthesia as it is easy to perform, effective and associated with less discomfort to the nose.

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