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Original article

Prevalence of positive prick test to anaesthetic drugs in the surgical population

Prevalence of patients with positive prick tests to anaesthetics occurred in 4.7% of the surgical population.

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Allergic reactions occurring during anaesthesia are always a concern for anaesthesiologists in all countries, because of the clinical repercussions as well as the medical–legal implications (1, 2). In Spain, in 1993, the High Court found an anaesthesiologist guilty for failing to carry out allergy tests on a patient who was about to undergo surgical intervention under general anaesthetic, and who subsequently suffered a serious allergic accident (2). Since then, many anaesthesiologists have begun to demand that allergy tests are performed for all substances used in surgical interventions, resulting in the collapse of allergy units. Allergy tests on anaesthetizing are indicated only among those patients who have a history of an adverse reaction to these; this is the case, in fact, with other drugs (2, 3). However, no information is available regarding prevalence of prick tests among the surgical population without the criteria mentioned.

The aim of this study was to assess the prevalence of positive prick tests to drugs used during anaesthesia in the surgical population and to analyse the contribution of risk factors in the presentation of positive prick tests to anaesthetic drugs.

A prospective study from 1 September 2003 to 30 July 2004 of 424 patients (146, 34.4% males and 278, 65.6% females) who attended consultation for preanaesthesia in two Valladolid Hospitals was performed. The study was approved by the Hospital Research Committee and the patients gave their consent in writing. The selection of patients was random. Every day, the first two patients over 18 years of age attending each of the two preanaesthesia consultations were asked if they would volunteer for a prick test for anaesthetic agents. If they agreed, patients were referred to the allergy unit for the prick test of the 30 substances listed in Table 1.

In order to evaluate the possible interactions among the independent variables, we carried out a logistic regression analysis (SPSS 11.5, Chicago, IL, USA). Odds ratio (OR) was established at 95% confidence interval (CI). A *P*-value of < 0.05 were considered statistically significant.

Twenty of the 424 (4.7%) patients had positive prick tests to one of the agents analysed (Table 1), the largest percentage being neuromuscular blocking drugs (2.8%). After the application of logistical regression for analysing risk factors (age, sex, history of atopy, history of allergic reaction to drugs, history of general anaesthesia and family allergy history), a history of allergy to drugs is the only factor, which was seen to have a predisposing influence on the presentation of a positive prick test to anaesthetic drugs (OR = 6.13, 95% CI: 2.25–16.76, $P < 0.0001$).

Unlike previous studies (4–6), this is the only study that determined the prevalence of positive prick tests to anaesthesia-related drugs in a random sample of the surgical population. We found that 4.7% of patients in our cohort had positive prick tests. These results were more frequent among patients with a prior history of allergy to drugs.

There is some controversy concerning the use of prick tests in anaesthesia (1, 3, 6) and the relevance of positive prick tests as a result of prick determinations. There are frequent cases of false-positive prick tests, positive prick

Table 1. Prevalence of patients with positive prick test and agents involved in the surgical population

Drug	$n = 424$	%	95% confidence interval	Concentration of drug (mg/ml)
Hypnotics	2	0.5	0.44–1.12	
Midazolam	0	0.0		1
Propofol	0	0.0		20
Etomidate	2	0.5	0.44–1.12	2
Thiopental	0	0.0		2.5
Diazepam	0	0.0		5
Ketamine	0	0.0		50
Opioids	0	0.0		
Fentanyl	0	0.0		0.05
Remifentyl	0	0.0		0.0
Alfentanil	0	0.0		0.5
Morphine	0	0.0		10*
Neuromuscular blocking	12	2.8	1.25–4.41	
Suxamethonium	8	1.9	0.59–3.18	50
Atracurium	2	0.5	0.44–1.12	10*
Vecuronium	0	0.0		1
Pancuronium	0	0.0		2
Rocuronium	2	0.5	0.44–1.12	10
Mivacurium	0	0.0		2*
Cisatracurium	0	0.0		2
Latex	2	0.5	0.44–1.12	0.5
Iodine	4	0.9	0.22–1.86	Dried 10% povidone-iodine solution
Local anaesthetics	0	0.0		
Mepivacaine	0	0.0		20
Bupivacaine	0	0.0		5
Lidocaine	0	0.0		20
Ropivaca	0	0.0		2
Coadjuvants (others)	0	0.0		
Atropine	0	0.0		1
Flumazenyl	0	0.0		0.1
Naloxone	0	0.0		0.4
Thalamonal	0	0.0		Droperidol 2.5 + fentanyl 0.05
Droperidol	0	0.0		2.5
Metoclopramide	0	0.0		5
Ranitidine	0	0.0		10
Total	20	4.7	3.68–8.40	

*For atracurium, mivacurium and morphine, were tested using a 1 : 10 dilution of the commercially available drug.

tests support, but do not necessarily confirm, the diagnosis of allergy, and there is an absence of clear internationally accepted guidelines on skin prick testing, especially in relation to threshold test concentrations. These aspects should be taken into account when evaluating the prevalence of a positive prick test.

This study shows that the prevalence of patients with positive prick tests to anaesthetics occurred in 4.7% in this prospective cohort. Of the various factors examined, only prior history of allergy to medications was shown to predict positive prick tests to anaesthetic drugs.

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