

Prevalence of Patients Allergic to General Anesthesia

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Abstract: This paper aims to knowing the Prevalence of patients allergic to general anesthesia in Iraq were. A cross-sectional study was conducted on patients in different hospitals in Iraq, and 20 patients were collected. The study was devoted to knowing the Prevalence of patients allergic to general anaesthesia. Distributed patients according to age between 25 years to 50 years, and through the statistical analysis SPSS IBM SOFT mean value and SD was for age 33 ± 6.1 . Positive results of the prick test It showed a high percentage of Meperidine for six patients, and positive results were distributed according to gender: 3 male patients and three female patients, and Morphine for four patients, according to sex (3 male patients and one female patient). Allergic reaction may be more severe in patients with asthma, heart disease, etc. Allergic reaction appears in most cases within minutes from the moment of exposure to the allergen.

Keywords: General anesthesia , IgE, Allergic, NSAID, Meperidine.

INTRODUCTION

The incidences of allergy to general anesthetics ranges between 1/350 in IRAQ [Ebo, D.G. *et al.*, 2007]. The incidence of perianesthetic allergic reactions estimated in 2006 in IRAQ was 1/9000, all drugs confounded, and the incidence of allergic reactions to NMBA was evaluated to be 1/6500 anesthesia . Allergic reactions can be benign or fatal in some cases (6%).

The problem of the development of adverse reactions as a result of the use of diagnostic and medicinal products in medicine is becoming increasingly relevant [Johansson, S.G.O. *et al.*, 2004; Savic, L.C. *et al.*, 2015; Husby, S. *et al.*, 1988].

So, according to different authors, such reactions are observed in 10-30% of the population; in 3% of cases, they are the reason for visiting doctors, [Bischoff, S. C. *et al.*, 2007; Abbas, A.K. *et al.*, 2008] in 5% - the cause of hospitalization, in 3% - the cause of intensive care, in 12% - they lead to an increase Significant in patients' length of stay in the hospital, and in 1% of patients overall can be the cause of death [7,8,9]. The frequency of true drug allergy (LA) only in the population ranges from 1 to 2%, which may Annually lead to 100-2000 deaths from drug anaphylactic shock [Dybendal, T. *et al.*, 2003; Brockow, K. *et al.*, 2002; Mertes, P.M. *et al.*, 2005]. Among subjects treated frequently and for a long time, LA is already observed in 15% of cases. Also, the clinical manifestations of LA interfere or interfere with the professional activities of medical

personnel, incl. 17% of junior nurses, 30-45% of intermediate and senior nurses, and 6-30% of physicians of various specialties [Tamayo, E. *et al.*, 2010; Gomes, E. *et al.*, 2004; MacPherson, R.D. *et al.*, 2006]. According to the World Health Organization, (2004) the mortality rate in drug therapy ranks fifth in the world after cardiovascular diseases, oncology, lung diseases, and injuries and is 0.1%, while in surgical interventions, it is ten times lower (0.01%).

MATERIAL AND METHOD

Patient Sample

A cross-sectional study was conducted on patients in different hospitals in Iraq, where 40 patients were collected, and the study was devoted to knowing the Prevalence of patients allergic to general anaesthesia.

Study Design

Design of the study was systematic by conducting a survey of the Prevalence of allergic to general anaesthesia, in which 20 patients were collected by relying on the electronic record in the hospital, and the inclusion criteria were positive history of patients such as allergic rhinitis and asthma and patients with Antihistamines. In addition, pregnant women and patients under 18 years of age were excluded.

To diagnose hypersensitivity to this group of drugs, it is recommended to use a skin test, in particular, an intradermal test and a prick test with different concentrations of muscle relaxants.

LA during anesthesia often occurs in the form of anaphylactic shock, bronchospasm or laryngospasm, and skin manifestations; the diagnosis is rather complicated and requires a thorough examination of the immunosensitivity of patients; this problem with anesthesia is associated with great difficulties since during anesthesia, the patient is under medical anesthesia and muscle relaxation, which greatly complicates the assessment of the clinical course of LA during surgery. And by evaluating the clinical symptoms through which the allergy was diagnosed in relation to other medicines.

A positive dosage of the IgE specific to antibiotics was also used to confirm the diagnosis. However, a negative result didn't eliminate the diagnosis knowing the low sensibility of the IgE.

Study Period

Through cooperation with the relevant committees for the purpose of obtaining the required approvals for collecting patient data. The study period lasted a full year, from 16-6-2020 to 20-6-2021.

Aim of Research

This paper aims to knowing the Prevalence of patients allergic to general anaesthesia.

Statistical Analysis

Statistical analysis was carried out based on the SPSS IBM SOFT 25 program and Microsoft Excel 2013, where the statistical differences between groups of patients were calculated; in addition to that, the value and prevalence were calculated.

Table 1: Distribution of patients according to age

		Age			
		Frequency	P%	VP	CP
Valid	25.00	2	10.0	10.0	10.0
	26.00	1	5.0	5.0	15.0
	28.00	2	10.0	10.0	25.0
	29.00	1	5.0	5.0	30.0
	30.00	2	10.0	10.0	40.0
	31.00	2	10.0	10.0	50.0
	33.00	1	5.0	5.0	55.0
	35.00	1	5.0	5.0	60.0
	36.00	2	10.0	10.0	70.0
	37.00	1	5.0	5.0	75.0
	38.00	2	10.0	10.0	85.0
	39.00	1	5.0	5.0	90.0
	40.00	1	5.0	5.0	95.0
	50.00	1	5.0	5.0	100.0
Total		20	100.0	100.0	

RESULTS

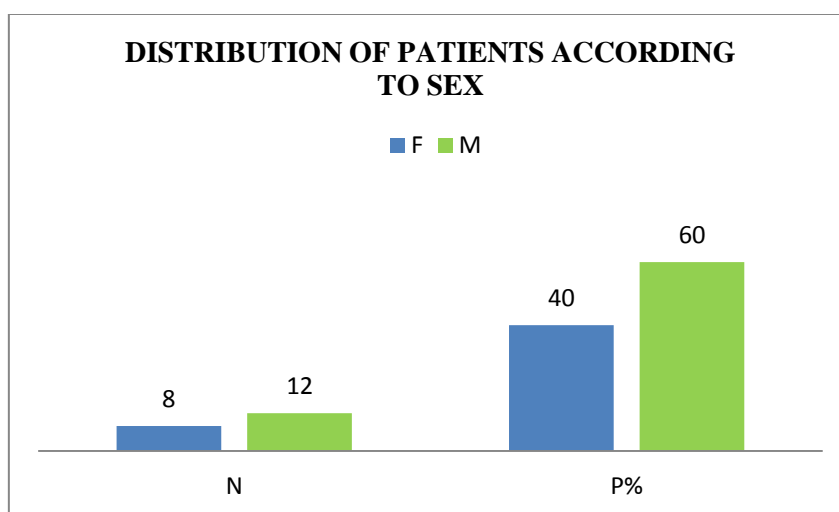


Fig 1: Distribution of patient according to sex

Table 2: results of patients according to prick test

		Prick test			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Alfentanil, Vecuronium	1	5.0	5.0	5.0
	Cisatracurium	1	5.0	5.0	10.0
	Cisatracurium and Vecuronium	1	5.0	5.0	15.0
	Etomidate	1	5.0	5.0	20.0
	Etomidate, Ketamine	1	5.0	5.0	25.0
	Meperidine	6	30.0	30.0	55.0
	Meperidine, Atracurium	1	5.0	5.0	60.0
	Morphine	4	20.0	20.0	80.0
	Propofol, Meperidine	2	10.0	10.0	90.0
	Sufentanil, Morphine	1	5.0	5.0	95.0
	Vecuronium	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

Table 3: Prevalence of allergy to patients

		Allergy			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Allergic rhinitis	2	10.0	10.0	10.0
	Allergy to cosmetics	1	5.0	5.0	15.0
	Allergy to eggs	1	5.0	5.0	20.0
	Asthma	5	25.0	25.0	45.0
	Asthma, allergy, Atopy	1	5.0	5.0	50.0
	Family history	2	10.0	10.0	60.0
	Metronidazole	1	5.0	5.0	65.0
	NSAID	3	15.0	15.0	80.0
	Penicillin anaphylaxis	1	5.0	5.0	85.0
	Seafood allergy	2	10.0	10.0	95.0
	Sulfamids	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

Table 4: outcomes result of allergy with prick test

Cisatracurium and Vecuronium	Asthma, allergy, Atopy
Propofol, Meperidine	Asthma
Cisatracurium	Asthma
Meperidine	Asthma
Morphine	Asthma
Meperidine	Asthma
Meperidine	Allergic rhinitis
Sufentanil, Morphine	Allergic rhinitis
Etomidate	Allergy to cosmetics
Morphine	Family history
Meperidine	Seafood allergy
Propofol, Meperidine	Penicillin anaphylaxis
Alfentanil, Vecuronium	Allergy to eggs
Meperidine	NSAID
Morphine	Sulfamids
Morphine	Metronidazole
Vecuronium	NSAID
Meperidine	NSAID
Meperidine, Atracurium	Family history
Etomidate, Ketamine	Seafood allergy

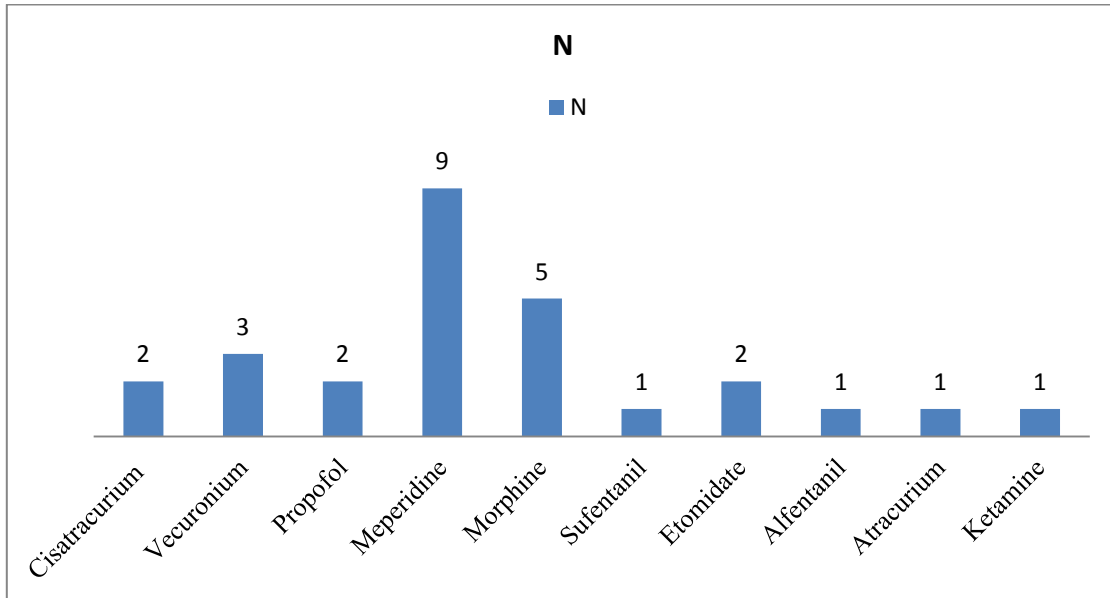


Fig 2: frequency to Prevalence of patients allergic

Table 5: relative risk

		CI 95%	Sig
Cisatracurium and Vecuronium	Asthma, allergy, Atopy	11 (6-18)	0.001
Propofol, Meperidine	Asthma	10 (8-14)	0.006
Cisatracurium	Asthma	5 (2-8.5)	0.05
Meperidine	Asthma	12 (9.9-15.2)	0.001
Morphine	Asthma	10 (9-12.1)	0.0022
Meperidine	Asthma	8.8 (6.6-11.1)	0.0098
Meperidine	Allergic rhinitis	9.8 (6-14.1)	0.001
Sufentanil, Morphine	Allergic rhinitis	7.6 (4.1-8.9)	0.098
Etomidate	Allergy to cosmetics	3.4 (1.2-6.1)	0.02
Morphine	Family history	2.7 (0.9-3.1)	0.04
Meperidine	Seafood allergy	1.5 (0.5-1.9)	0.06
Propofol, Meperidine	Penicillin anaphylaxis	2.5 (1.1-3.8)	0.04
Alfentanil, Vecuronium	Allergy to eggs	2.2 (0.8-40.4)	0.033
Meperidine	NSAID	6.5 (4.2-9.1)	0.055
Morphine	Sulfamids	4.4 (1.55-7.9)	0.01
Morphine	Metronidazole	5.8 (1.8-8.8)	0.01
Vecuronium	NSAID	4.7 (3.7-8.4)	0.02
Meperidine	NSAID	1.88 (0.54-3.34)	0.99
Meperidine, Atracurium	Family history	1.2 (0.3-2.2)	0.78
Etomidate, Ketamine	Seafood allergy	1.1 (0.3-1.88)	0.55

DISCUSSION

Twenty patients were collected from the hospital, where a cross-sectional study was conducted on patients. In Table 1, in which patients are distributed in consideration of age, we find between 25 years to 50 years, and through the statistical analysis, SPSS IBM SOFT mean value and SD were for age 33±6.1, as shown in the table below.

Statistics		
Age		
N	Valid	20
	Missing	0
Mean		33.2500
Median		32.0000
Std. Deviation		6.19741
Range		25.00
Minimum		25.00
Maximum		50.00

Table 6: mean SD AGE of patients

The percentage of male patients was more than females, and the patients were distributed according to gender (males 12 patients with 60% 4% and females eight patients with 40%) as shown in Figure 1.

Positive results of the prick test It showed a high percentage of Meperidine for six patients, and positive results were distributed according to gender: 3 male patients and three female patients, and Morphine for four patients, according to sex (3 male patients and one female patient) as shown in table 7.

Table 7: distribution of Prick test according to sex

Prick test * sex Cross tabulation				
Count				
		sex		Total
		F	M	
pricktest	Alfentanil, Vecuronium	1	0	1
	Cisatracurium	0	1	1
	Cisatracurium and Vecuronium	0	1	1
	Etomidate	1	0	1
	Etomidate, Ketamine	0	1	1
	Meperidine	3	3	6
	Meperidine, Atracurium	1	0	1
	Morphine	1	3	4
	Propofol, Meperidine	0	2	2
	Sufentanil, Morphine	1	0	1
	Vecuronium	0	1	1
Total		8	12	20

The most common allergens associated with anesthesia were Meperidine, which was present in 9 patients, then Morphine in 5 patients, especially patients with asthma, and Vecuronium in 3 patients, especially those who were allergic to the following factors: Asthma, allergy, Atopy, NSAID and Propofol, Etomidate for 4 Patients.

An article published in the Singapore Medical Journal in 2008 mentioned that 65% of patients are actually allergic to the NMBA.

This result matches the value found in other studies. This is best explained by the presence of quaternary ammonium common to all NMBA, which is responsible for this kind of allergy

CONCLUSION

We conclude from this study that scientific studies of sensitivity to general anesthesia are very few, and NMBA is the most common in Iraq.

According to studies, risk factors for allergic hypersensitivity associated with anesthesia include the gender and age of the patient, the presence of a history of other types of allergies, and external factors [Demoly, P. *et al.*, 2001; Mertes, P.M. *et al.*, 2005].

More than 50% of patients who reported anaphylactic reactions to neuromuscular blocking agents had not previously received these drugs. This means that IgE antibodies that the body makes as a result of contact with other compounds participate in the formation of such an allergic reaction.

According to studies, hypersensitivity to non-anesthesia drugs cannot cause intraoperative anaphylaxis. But any life-threatening reaction during anesthesia administered early can be sensitive [Johansson, S.G.O. *et al.*, 2014].

RECOMMENDATIONS

In fact, the field of anesthesia today is a safe and low risk; however, there are a number of ways that can be taken to reduce the potential risks of exposure to anesthesia, and these methods include the following:

Ensure that there is a family history of a bad allergic reaction to the anesthesia.

One of the most important ways to avoid allergies is not to use medications that cause it; with careful observation of the patient's breathing and to increase the proportion of inhaled oxygen, the patient must take plenty of fluids to maintain the normal rate of blood pressure.

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