

Incidence of Post-Operative Agitation after Otolaryngology Surgeries in Recovery State, Causes, and Management

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ABSTRACT

Introduction: Otolaryngology, also referred to as ENT surgery, focuses on surgically treating ear, nose, and throat conditions. Early recovery from general anesthesia is accompanied by agitation, confusion, disorientation, and violent behavior, which is known as “Emergence Agitation” (EA). The main objective of this study is to determine the incidence of Post-Operative Agitation after Otolaryngology Surgeries in Recovery State, Causes, and Management.

Method and Materials: The median age of the population 36 years and about quarter of the population was in old age state. The patient’s status is evaluated in terms of agitation in the recovery room using the Richmond Agitation Score and the method of sample selection was random sampling in this study. The inclusion and exclusion criteria were evaluated for each selected participant and any patients with missing data in their documents were excluded from the study, the exclusion criteria were Patient’s with Emergency cases, ASA III and more age less than (30) year and over (40) years. The data will be managed and analyzed using SPSS V. 27 software. Descriptive statistics, including frequency counts, percentages, mean, and standard deviation, were employed.

Findings: The results showed that the Incidence of Post-Operative Agitation for patients after Otolaryngology at most (50%) were mild with mean 1.31 (Min- Max 0-3). Also showed that there were significant statistical differences between the agitation incidences after laryngology surgeries with patient’s gender at $P < 0.05$ that demonstrated the female less agitation from male. Furthermore, showed that there were significant statistical differences between the agitation incidences after laryngology surgeries with patients’ duration of surgery at $P < 0.05$ that demonstrated the more duration less agitation.

Conclusion: Our study revealed that postoperative agitation is common condition. The prevalence of this irritability was induced even though the severity was in lower value and a greater frequency of emergence agitation was seen in surgeries lasting less than an hour. Male’s agitation state was higher in compare to females.

Keywords: Otolaryngology, ENT Surgery, Emergence Agitation, Richmond Agitation Score.

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INTRODUCTION

Otolaryngology, also referred to as ENT surgery, focuses on surgically treating ear, nose, and throat conditions. Otolaryngologists employ these techniques to address concerns or conditions affecting the nose, throat, and associated structures in patients. There are numerous possible processes, including bleeding, hemodynamic abnormalities, and other consequences. Additionally, agitation following ENT surgery in the phase of recovery is one of the most common consequences¹⁻³. Early recovery from general anesthesia is accompanied by agitation, confusion, disorientation, and violent behavior, which is known as "Emergence Agitation" (EA)^{4,5}. This post-anesthetic issue occurs in the early stages of General Anesthesia (GA) recovery, posing challenges in terms of both patient recovery delay and the complexities associated with assessment and management⁶⁻⁸. The volatile anesthetics (sevoflurane and desflurane) have generally been the focus of studies that have addressed EA as a postoperative complication in children. These investigations aim to comprehend the factors that contribute to effectively handle agitation when it arises. They have revealed that patients under anesthesia maintained by inhaled anesthetics are more prone to agitation compared to those whose anesthesia is sustained by propofol⁹⁻¹¹. Because the airway is contaminated with blood and the nasal airway is closed with surgical packs, ENT surgery is linked to a higher incidence of emerging agitation after nasal surgery. Awake extubation is therefore preferred. But conscious extubation may make emerging agitation stronger^{12,13}. The effects of benzodiazepines and dexmedetomidine on EA have been shown to have variable outcomes. Ketamine, an antagonist of the NMDA receptor, significantly decreased the prevalence of EA in young patients, but it also delayed their recovery. The main objective of this study is to determine the incidence of Post-Operative Agitation after Otolaryngology Surgeries in Recovery State, Causes, and Management. And the specific goal is to choose best techniques for decrease agitation in recovery room after ENT surgeries. Finally, it is important to note that one of the questions that are asked most often is: Does the possibility that a patient may experience post-GA agitation alter depending on whether they underwent ENT surgery while under volatile induction and maintenance of anesthesia or complete intravenous anesthesia? and this is what this study tries to find along with other relevant questions.

MATERIAL & METHODS

Setting of the study

This study conducted in Imam Al-Hussein medical city hospital in Karbala city, Iraq. The Karbala province and Karbala city located in the central part of the Iraq. The median age of the population 36 years, and about quarter of the population was in old age state. The patient's status is evaluated in terms of agitation in the recovery room using the Richmond Agitation Score, which is used

to assess irritability following procedures. This study was a school-based cross-sectional study.

Sample selection

The method of sample selection was random sampling in this study. List of the patients in included hospitals were collected for two months (May, June) in 2023. Simple random sampling was used to select the participants. The inclusion and exclusion criteria were evaluated for each selected participant. Patients with huge missing data in their documents were excluded from the study, and new participants were selected by random sampling method. The participants of this study were parturient who had admitted to OR of Imam Al-Hussein medical city hospital. The included criteria were Patients with Elective cases, ASA I, II. Also, Average age (30- 40) year and NPO. In addition, the exclusion criteria were Patient's with Emergency cases, ASA III and more age less than (30) year and over (40) years.

Sample size

Participations, which have recently under ENT surgeries will be included in this study, samples were selected as cross sectional by convince sampling. In this study, we will have a sample size about (70) patients was determined According to the method of the limited society, according to the formula Steven K. Thompson (Thompson, 2012) where $N = 80$

$$n = N \times (1 - p) / [[N - 1 \times (d2 \div z2)] + p (1 - p)]$$

$$n = (80(0.5(1-0.5))) / (((80-1) (0.002 \div 3.847)) + (0.5(1-0.5))) = 68.7 \approx 70$$

Where:

N = population n =sample size p =probability50%

d =error proportion 0.05 z =confidence level at 95% 1.96

Statistical analysis

The data will be managed and analyzed using SPSS V. 27 software. Descriptive statistics, including frequency counts, percentages, mean, and standard deviation, were employed. Pearson correlation test, analysis of variance, paired sample t-test, and independent sample t-test will be utilized to investigate differences and correlations between variables. In cases where the data do not exhibit normal distribution, nonparametric tests such as the Spearman correlation test, Mann-Whitney test, and Kruskal-Wallis test will be applied. Regression analysis will also be employed to estimate the relationships between variables.

RESULTS

The results showed that the most of the participants (57.1%) from 30-35 the age distribution ranged across years, with an average of 34.77 years. Concerning gender, a significant majority (54.3%) was observed. participants were female. According to the body mass index the high

percentage (54.3%) of the participants in healthy BMI (22 - 25 kg/m²) with mean 21.59 kg/m² Table 1.

The results showed that the Incidence of Post-Operative Agitation for patients after Otolaryngology at most (50%) were mild with mean 1.31 (Min- Max 0-3) Table 2.

The distributional difference in the types of surgical operations, where the predominance was cosmetic

surgeries at a rate of 60%, then direct intervention surgeries such as removing tonsils and others at a rate of 16%, and the remainder were separate and different operations at a rate of approximately Figure 1.

The results showed that there were significant statistical differences between the agitation incidences after laryngology surgeries with patient's gender at P < 0.05 that demonstrated the female less agitation from male.

Table 1. Distribution of the patient's socio demographic data and clinical data Characteristics.

Demographic Characteristics	Subgroup	Descriptive	
		f.	%.
Age group	30-35 years	40	57.1
	36-40 years	30	42.9
	Total	70	100.0
	Min – Max	30- 40 years	
		Mean ± SD 34.77 ± 3.477	
Gender	Male	32	45.7
	Female	38	54.3
	Total	70	100.0
BMI	18 – 21 kg/m ²	32	45.7
	22 - 25 kg/m ²	38	54.3
	Total	70	100.0
	Min – Max	17- 25 kg/m ²	
		Mean ± SD 21.59 ± 2.545	

Table 2. Distribution of the Incidence of Post-Operative Agitation for patients after Otolaryngology.

Richmond Agitation Score	Score	f.	%.
	0	8	11.4
1	35	50.0	
2	24	34.3	
3	3	4.3	
Total	70	100.0	
	Min – Max	0- 3 score	
		Mean ± SD 1.31 ± .733	

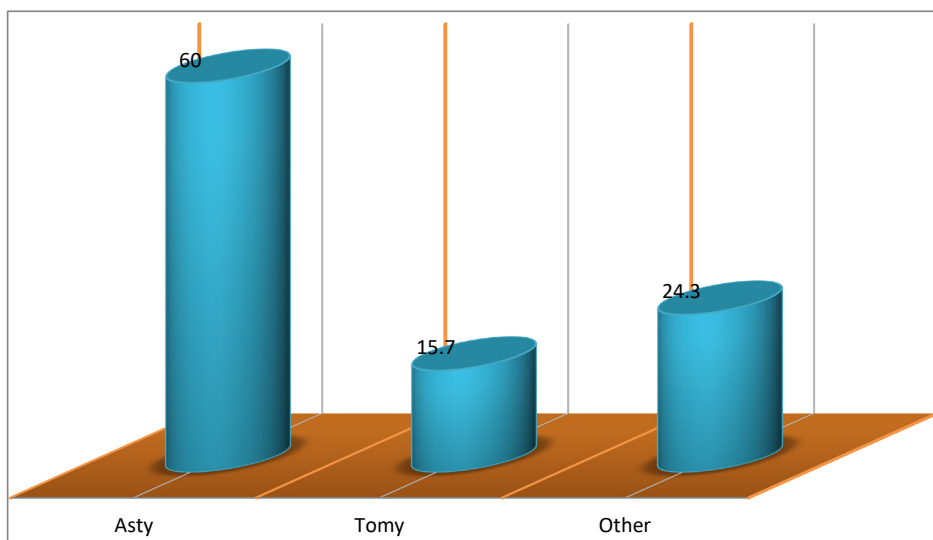


Figure 1: Percentage of the participant's type of operation.

Table 3. The relationship between the agitation incidence after laryngology surgeries with patient's socio demographic data and clinical data.

Demographic	Subgroup	Mean	S.D	Analysis	P. value	Sig.
Age group	30-35 years	1.40	.744	t= 1.132	.262	NS
	36-40 years	1.20	.714			
Gender	Male	1.50	.762	t= 1.986	.049	S
	Female	1.16	.679			
BMI	18 – 21 kg/m ²	1.31	.644	t= -.019-	.985	NS
	22 - 25 kg/m ²	1.32	.809			

Table 4. The relationship between the agitation incidences after laryngology surgeries with patient's operation data characteristics.

Demographic Characteristics	Subgroup	Mean	S.D	Analysis	P. value	Sig.
Type of operation	Asty	1.33	.754	.134	.875	NS
	Tomy	1.36	.505			
	Other	1.24	.831			
Duration of surgery	< 1 hours	1.44	.607	4.777	.011	S
	1 hours - 2 hours	1.41	.666			
	3 hours - 4 hours	.75	.965			
Types of Anesthesia in Maintenance	TIVA	1.37	.782	.509	.603	NS
	TIVA , Inhalation	1.29	.756			
Recovery time after Ex- tub	Inhalation	1.14	.535	1.408	.250	NS
	10 MIN - 15 MIN	1.46	.744			
	16 MIN - 30 MIN	1.21	.717			
Respiratory Complications	None	1.30	.750	-1.280-	.205	NS
	Abnormal Breathing	1.63	.518			
Side effects of drugs	yes	1.56	.726	1.059	.205	NS
	No	1.28	.733			

This is one of the most important diagrams of this study, as it explains the relationship of the agitation that's resulting after recovery to the patient's sex, weight and age. It confirmed the existence of a definite correlation between the patient's sex and the occurrence of this disorder, and males predominated in the occurrence of this condition Table 3.

The results showed that there were significant statistical differences between the agitation incidences after laryngology surgeries with patients' duration of surgery at $P < 0.05$ that demonstrated the more duration less agitation Table 4.

DISCUSSION

Our study conducted the incidence of agitation post laryngology surgery. These surgical operations involved septoplasty, tracheostomy and other surgeries related to ear and nose. Also our study revealed that postoperative agitation is common condition. The prevalence of this irritability was induced even though the severity was in lower value. The significance could be seen in the term of demographic variables characterize by gender table³ (P -value < 0.05). Male's agitation state was higher in compare to females. Most of previous studies showed that males consume more analgesic supplements after general anesthesia¹⁴. One of this results aliens with¹⁵ Daihua Yu. et.al, that showed agitation incidence was lower in females, but, contrast to our study, they examined these results for any patients scheduled for general anesthesia with tracheal intubation. Furthermore,

the significant was seen in the distribution of patients according to the duration of surgery and this elaborate that the longer the duration of surgery is the lower the incidence of agitation. We assumed that this might related to the early cutting-off of the anesthetic drugs due to the shortness of time consumed to perform the surgical procedure. A greater frequency of emergence agitation was seen in surgeries lasting less than an hour. However, this recent study done to evaluate agitation percentage for children, while our study setting was for age groups 30-40 years old and that's can explain the differences in the results on this term, as that's in study of¹⁶ Denberu Eshetie et.al. Moreover, in the terms of hemodynamic variables described (SPO_2 , MAP, HR), our current study indicated highly significant differences between intraoperative and postoperative records. Heart rate and mean arterial pressure showed significant also during the emergence from anesthesia. Again, this could be the complication of agitation state that affected all participants in this study.

ETHICAL APPROVAL

Ethical approval for the study was obtained from ethic committee of Tehran University of Medical Sciences (TUMS). Declaration of Helsinki was observed (ethical code: IR.TUMS.SPH.REC.1402.097) in all procedures of the study. All of the collected information was published as group data (rather than individually). Finally, the required data were lacks identity information such as name, ID number, national code or any other identity data.

CONFLICT OF INTEREST

The authors say they have no conflict of interest.

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