



## Evaluation of the effect of GERD on eustachian tube function in OSA patients

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### ABSTRACT

This study focuses on evaluation of the effect of GERD on eustachian tube function in OSA patients

Where 50 patients were collected from different hospitals in Baghdad Iraq, where this study aimed at Evaluation of the effect of GERD on eustachian tube function in OSA patients.

The patients were divided into four groups: the control group, which included ten patients, the OSA group, which included 15 patients; the GERD group, which included 15 patients; and the OSA + GERD group, which included ten patients.

A statistically significant relationship was found between the four groups, and there were significant differences with the control group when compared.

**Keywords:**

OSA, GERD, patients, ENT, ETD-Q

### Introduction

Obstructive sleep apnea (OSA) It is a common disease associated with a severe decrease or complete cessation of breathing during the night's rest. The disease is characterized by a temporary collapse of the soft tissues of the upper respiratory tract, which leads to their complete overlap (obstruction) [1,2]. For this reason, for a certain period (from 2 to 60 seconds), a person stops breathing while maintaining respiratory muscle movements (in 80-90% of cases) [3,4,5].

OSAS does not pose an immediate threat to human life. During respiratory arrest, the

oxygen concentration in the blood decreases, and the amount of carbon dioxide increases [6]. After reaching the critical moment, the center in the medulla oblongata is stimulated, which leads to the resumption of breathing. At this stage, the patient begins to actively snore, and the number of respiratory movements increases. The number of such episodes per night can reach hundreds or more [7,8,9].

The danger of the disease lies in the partial awakening of the brain from sleep after each apnea. This leads to a violation of rest which affects the metabolism in every cell of the body [10,11,12].

Patients with OSA are at risk of developing cardiovascular disease (myocardial infarction), diabetes, obesity, and chronic respiratory disease. Lack of normal sleep reduces a person's ability to work, causes drowsiness during the day, and leads to a deterioration in the patient's quality of life. A sharp increase in the number of accidents in patients with obstructive sleep apnea has been established [13,14].

The development of OSAS depends on mechanical obstruction of the upper respiratory tract, which is a cause of obstructive sleep respiratory syndrome and is due to relaxation of the soft tissues of the oropharynx and nasopharynx during sleep [15].

## Patient and method

### Patient sample

Fifty patients were collected from different hospitals in Baghdad Iraq, where this study aimed to Evaluation of the effect of GERD on eustachian tube function in OSA patients.

### Study design

After obtaining all ethical approvals for this study, 50 patients were grouped and divided into four groups, the control group, which included ten patients; OSA group, which included 15 patients; the GERD group, which included 15 patients; and the OSA + GERD group, which included ten patients.

### Study period

The study period included ethical approvals, in addition to collecting samples and analyzing them statistically. The study period was from 11-11-2019 to 9-9-2020

The statistical analysis program SPSS soft 20 and EXCEL 2013 Windows 7 were relied on

In the analysis of demographic data and parameters of patients, information about patients was collected by relying on a survey and using electronic information in the hospital (age + gender + diagnosis of obstructive sleep apnea). Patients with allergic symptoms and a previous history of any head and neck were excluded

The first stage of diagnosis is a polysomnography study, which is performed during the patient's sleep and consists in determining the number of episodes of snoring and sleep apnea. On the basis of the data obtained on respiratory failure, the diagnosis and severity of obstructive sleep apnea were established.

Polysomnography is the "golden" standard for the diagnosis of obstructive sleep apnea (OSA); it allows differential diagnosis with central sleep apnea and obtaining the most complete information about the functioning of different body systems during sleep. According to the results of the study, the doctor determines the staging and cyclical nature of sleep its duration and draws attention to how various physiological indicators relate to the stages of sleep.

### Aim of research

This study aims to Evaluation of the effect of GERD on eustachian tube function in OSA patients.

## Results

Table 1- MEAN± SD age of patient

Statistics		control	OSA	GIRD	OSAWITHGIRD
N	Valid	10	15	15	10
	Missing	5	0	0	5
Mean		44.4000	47.0000	48.5333	49.1000
Median		45.0000	46.0000	49.0000	48.5000
Std. Deviation		8.19485	5.07093	3.58303	3.17805
Range		24.00	17.00	13.00	10.00
Minimum		33.00	40.00	41.00	45.00

Maximum		57.00	57.00	54.00	55.00
Sum		444.00	705.00	728.00	491.00
Percentiles	25	36.5000	44.0000	46.0000	46.7500
	50	45.0000	46.0000	49.0000	48.5000
	75	51.2500	50.0000	51.0000	51.5000

Table 2- result of patient according to BMI

Statistics		BMI CONTROL	BMI OSA	BMI GRID	BMI BOTH
N	Valid	10	15	15	10
	Missing	5	0	0	5
Mean		24.2000	31.9333	28.0000	32.7000
Std. Deviation		2.20101	3.45309	2.92770	2.71006
Minimum		22.00	26.00	23.00	29.00
Maximum		28.00	37.00	33.00	37.00

Figure 1- distribution of patient according to sex

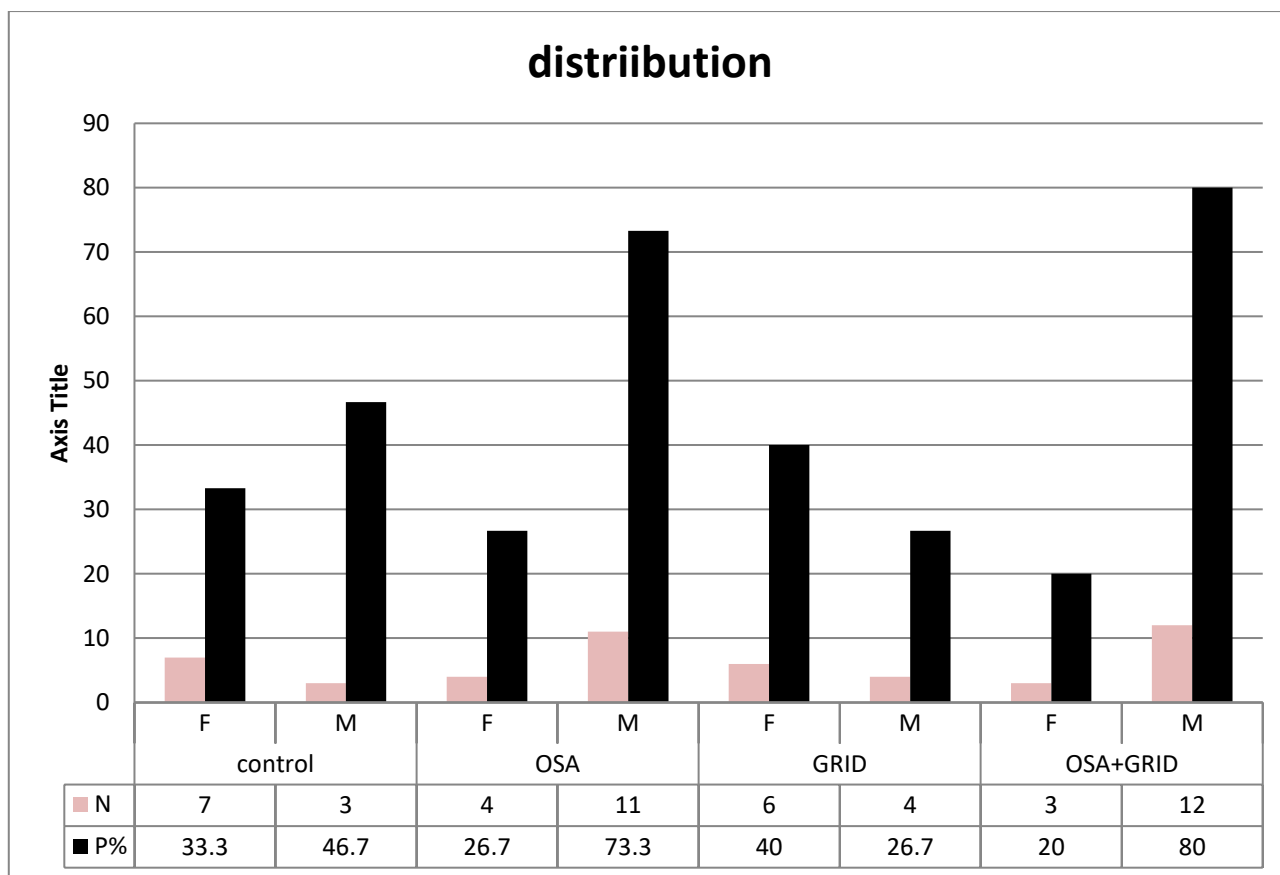


Table 3- demographic result of control

P	N	P%
Smoking		
yes	3	30

No	10	70
Drinking		
yes	1	10
No	9	90
Rhinomanometry,		
Normal	8	80
UA	1	10
BA	1	10
Eustachian tubes S-7		
N	8	80
UA	2	20
BA	0	0

Table 4-results of patient according to OSA

P	N	P%
Smoking		
NO	10	66.7
YES	5	33.3
Drinking		
yes	3	20
No	12	80
Rhinomanometry,		
Normal	4	26.7
UA	5	33.3
BA	6	40
Eustachian tubes S-7		
N	10	66.6
UA	3	20
BA	2	13.3

Table 5- results of patient according to GIRD

P	N	P%
Smoking		
NO	5	33.3
YES	10	66.6

Drinking		
yes	6	40
No	9	60
Rhinomanometry,		
Normal	8	53.3
UA	5	33.3
BA	2	13.8
Eustachian tubes S-7		
N	12	80
UA	2	13.3
BA	1	6.7

Figure 1- Eustachian tubes OSA+GIRD

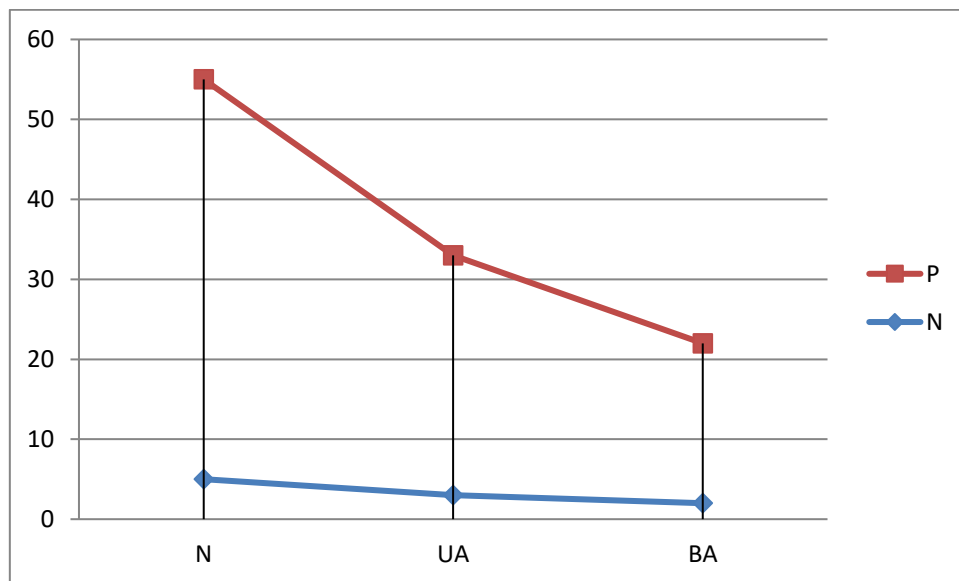


Figure 2- distribution of patient according to result of ETD-Q (abnormal)

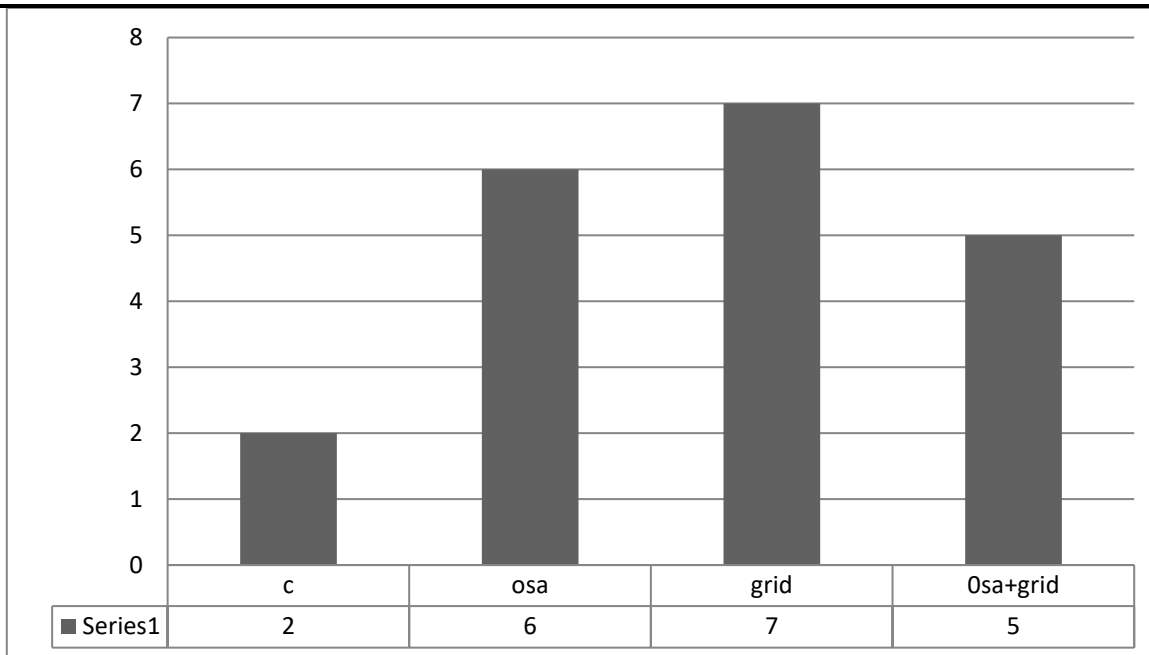
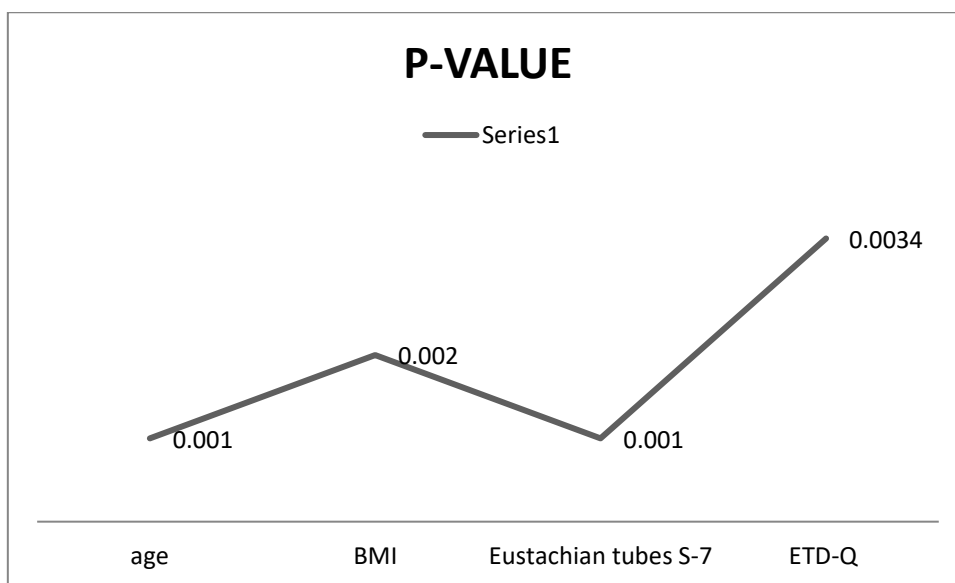


Figure 3- p-value



**Discussion**

Fifty patients were collected and distributed to 4 groups. We note from Table 1 that the control group was ten patients, the second group OSA was 15 patients, the third group was 15 patients, and the fourth group that included OSA + GIRD was ten patients, and the statistical analysis program SPSS SOFT 20 was used that the average age of patients ranged Between 33 to 57 years old, as shown in Table 1.

It follows from these findings that weight loss is an effective way to reduce the severity of obstructive sleep apnea in people who are overweight. Conversely, weight gain contributes to the development of OSA in individuals without sleep apnea and accelerates its development in people with sleep apnea. Several investigators have demonstrated an association between weight loss and lower OSAS. However, AHI in obese patients is rarely

significantly reduced by dietary intervention alone.

Local researchers revealed a high incidence of a combination of obstructive sleep apnea and obesity. A direct relationship between BMI and AHI has also been established. In addition, the authors found that with an increase in body weight of 10 to 20 kg after the onset of snoring, it is possible to assume a severe degree of OSA in 50% of patients. And if the body weight gain is more than 20 kg, then 90% of patients can assume a severe degree of obstructive sleep apnea.

In the other tables presented a comparison between the results of the control group and patients. The percentages of patients with abnormal results for ETS-7 were higher in the GERD and OSA±GERD groups compared to the control group, and statistically significant differences were found between the four groups with a value of 0.001

Difficulties associated with retraction of the tongue in the root zone can be due to the large size of the tongue and its root part and the small "sloping" posterior shape of the lower jaw, in which case the position of the tongue is behind or despite the usual anatomy of the tongue and jaw. Weakness of the laryngeal muscles occurs during Sleep, which leads to retraction of the tongue and blockage of the airways. All patients diagnosed with sleep apnea should have a sleep endoscopy in addition to the standard ENT examination and examination of the nasal cavity and nasopharynx using a thin-tube endoscope device.

To detect chronic obstruction of the respiratory tract. The drug-induced sleep screening method allows you to determine an effective treatment plan for the patient, and provides additional and useful information in case of need for surgical intervention for snoring and obstructive sleep apnea.

### Conclusion

This study discusses the abnormal factors for ETS-7 and ETD-Q

It is GERD and a statistically significant relationship was found between the four groups 0.001 and some doctors believe that obstructive sleep apnea may cause certain changes in the

internal pressure of the airways, which may stimulate the incidence of GERD.

### Recommendations

1. pulse oximetry - determination of the saturation of blood with oxygen during sleep. This method makes it possible to indirectly judge the obstructive sleep apnea syndrome by reducing the oxygen saturation in the blood.
2. The method does not require special preparation, is carried out during sleep, is carried out calmly and practically does not cause inconvenience to the subject.
3. Polysomnography is the "golden" standard for the diagnosis of obstructive sleep apnea - a method for long-term recording of the various functions of the human body while sleeping at night

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