Journal of Prevention, Diagnosis and Management of Human Diseases
ISSN: 2799-1202
Vol: 03, No. 06, Oct - Nov 2023
http://journal.hmjournals.com/index.php/JPDMHD
DOI: https://doi.org/10.55529/jpdmhd.36.23.31

A Prospective Cross-Sectional Study in Iraq to Determine the Outcomes for Patients with High Blood Pressure and Allergic Rhinitis

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Received: 18 July 2023 **Accepted:** 05 October 2023 **Published:** 21 November 2023

Abstract: Background: In most parts of the world, allergic rhinitis and hypertension are health risks that affect patients' quality of life. This paper aimed to analyze and assess the clinical outcomes of patients with disordered blood pressure and allergic rhinitis.
Patients and methods: Data was collected from different hospitals in Iraq to cover the diagnosis and evaluation of the health status of patients from 6th August 2022 to 15th April 2023 for patients between the ages of 30 and 60 years. A total of 100 patients were recruited, including 50 patients with hypertension and allergic rhinitis and a control group of 50 patients. The research data showed basic demographic results in terms of age, gender, symptoms, comorbidities, smoking factor, and obesity factor. This study evaluated the outcomes related to the quality of life of patients with blood pressure disorders based on the SF-36 health status questionnaire.
Results: The study discovered a notable rise in the prevalence of asthma patients, with rates reaching 48% for the patient group and 28% for the control group. Specifically, the systolic blood pressure rate in the control group stood at (110.47 ± 3.78), whereas the patient group witnessed a substantial increase, peaking at (123.68 ± 5.48). There was also a fluctuation in diastolic blood pressure among both genders, with an average diastolic blood pressure of (77.41 ± 10.23) for males and (78.10 ± 9.91) for females.

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Conclusion: The study demonstrated that the co-occurrence of allergic rhinitis and asthma leads to a noticeable and significant deterioration in the quality of life for individuals with irregular blood pressure due to the exacerbation of symptoms. Furthermore, our findings indicate that male patients with hypertension are more notably affected by allergic rhinitis than their female counterparts.

Keywords: Allergic Rhinitis, SF-36 Health Status Questionnaire, Blood Pressure (SBP, DBP).

1. INTRODUCTION

Allergic rhinitis is clinically defined as a symptomatic disorder of the nose caused by allergen exposure leading to IgE-mediated inflammation of the nasal mucosa [1,2]. It is a significant global health issue, affecting 5-50% of the population, with prevalence rates increasing. Rhinitis, while not life-threatening, significantly impairs quality of life by disrupting social life and hindering work performance [3]. The severity of the disease can be determined by assessing the degree of this impact on quality of life. As rhinitis is prevalent among young people, decreased quality of life not only affects social interactions but also professional life, resulting in absenteeism, reduced productivity, and reduced concentration. [4-7]

A prior study revealed conflicting results on the impact of high blood pressure and allergic rhinitis on patients' health-related quality of life [8]. While both conditions had a moderate effect, allergic rhinitis exhibited a greater impairment in daily activities compared to hypertension [9]. Treating allergic rhinitis may, therefore, improve blood pressure management. No statistically significant correlation was discovered between allergic rhinitis and hypertension or arterial blood pressure. The allergy group involved adults with a minimum of one allergic condition, such as asthma, gastrointestinal allergies, skin allergies, respiratory allergies, and other allergies [10-13]. The study collated data from over 34,417 adults, with the majority being female and an average age of 48.5 years. The allergy group consisted of 10,045 adults. The results were adjusted for age, sex, race, smoking, alcohol consumption, and body mass index.

Furthermore, the authors analysed subgroups stratified by demographic factors [14]. The results have concluded that there is a rise in the incidence of allergic disorders among people with a previous history of such disorders [15]. This paper was assessed clinical outcomes of disordered blood pressure patients associated with allergic rhinitis.

2. PATIENTS AND METHODS

This paper, as a cross-sectional study, showed great interest in evaluating the outcomes of patients with hypertension and its relationship to allergic rhinitis. Data was collected from different hospitals in Iraq to cover the diagnosis and evaluation of the health status of patients from August 6, 2022, to April 15, 2023, for patients between the ages of 30 and 60 years. One hundred patients were recruited, including 50 of the total patients suffering from blood

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pressure disorder and allergic rhinitis and a control group of 50 patients. The research data showed basic demographic results in terms of age, sex, symptoms, comorbidities, smoking factor, and obesity factor. The methodology related to the research results was analysed and constructed through SPSS (version 22.0).

In addition, laboratory tests were performed in this study, including total cholesterol, LDL, glucose, creatinine, and FEV1. In addition, our study identified medications used by patients to regulate blood pressure, which included ACE inhibitors, hydrochlorothiazide, calcium channel blockers, and beta-blockers. Blood pressure was measured for the patients, which included two types: systolic blood pressure and diastolic blood pressure, which resulted in the distribution of patients for both women and men according to the type of blood pressure. This study evaluated the outcomes related to the quality of life of patients with blood pressure disorders based on the SF-36 health status questionnaire in terms of physical functioning factor, fatigue factor, general health aspect, psychological aspect, and pain factor. this study evaluated and analysed the impact of allergic rhinitis on patients with hypertension by performing multivariable logistic regression to assess the risk factors and impact on patients and their quality of life, including age, gender, asthma factor, smoking, allergic rhinitis, and symptoms.

3. RESULTS

Table 1: General characteristics outcomes.

Variables	Patients (50)	Control (50)	P-value
Age, years N [%]			
30-39	9 [18%]	15 [30%]	<0.01
40-49	18 [36%]	17 [34%]	0.647
50-60	23 [46%]	18 [36%]	<0.01
Gender, N [%]			
Male	30 [60%]	32 [64%]	0.042
Female	20 [40%]	18 [36%]	0.0487
BMI, [mean ± SD]	[28.46 ± 4.662]	[27.59 ± 4.117]	0.2744
Symptoms, N [%]			
Sneezing	15 [30%]	17 [34%]	0.682
Stuffy Nose	12 [24%]	11 [22%]	0.418
Itchy Nose	5 [10%]	4 [8%]	0.8152
Watery Eyes	7 [14%]	3 [6%]	<0.01
Postnasal Drip	3 [6%]	6 [12%]	<0.01
Fatigue	8 [16%]	9 [18%]	0.463

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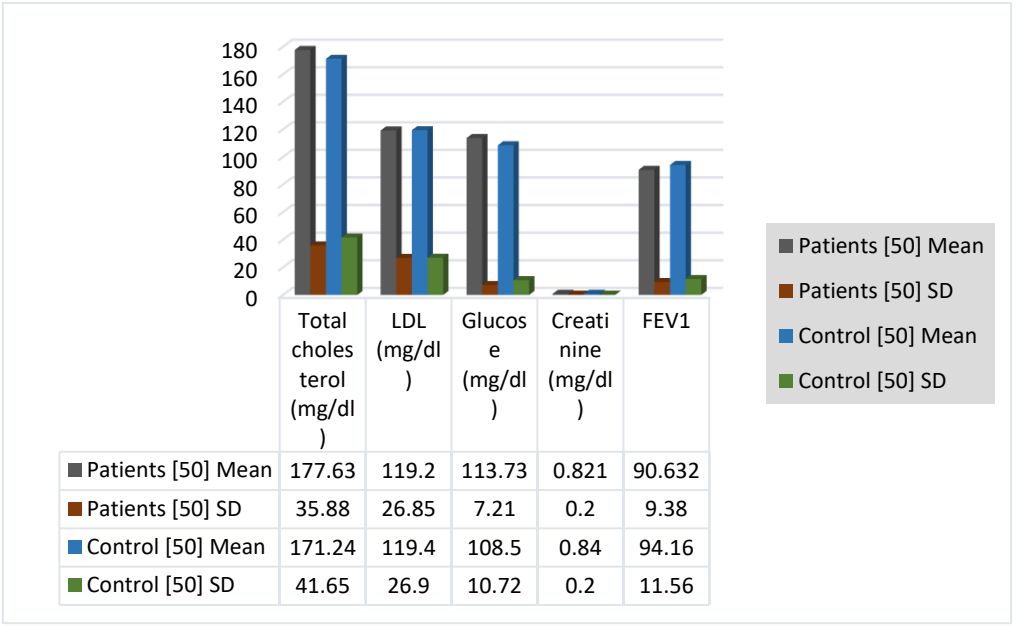
Total symptoms scores, [mean ± SD]	2.76 ± 0.415	2.70 ± 0.377	0.926
Comorbidities, N [%]			
Asthma	24 [48%]	14 [28%]	< 0.01
Eczema	6 [12%]	8 [16%]	0.25
Food allergies	10 [20%]	12 [24%]	0.82
Eustachian tube dysfunction	7 [14%]	8 [16%]	0.651
Anxiety and depression	3 [6%]	8 [16%]	<0.01
Smoking status			
Yes	30 [60%]	33 [66%]	0.236
No	20 [40%]	17 [34%]	0.288

Table 2: Medications used.

Variables	Patients (50)	Control (50)
ACE inhibitor	12 [24%]	15 [30%]
Hydrochlorothiazide	24 [48%]	20 [40%]
Calcium antagonist	5 [10%]	6 [12%]
Beta-blockers	9 [18%]	9 [18%]



	Total cholesterol (mg/dl)	LDL (mg/dl)	Glucose (mg/dl)	Creatinine (mg/dl)	FEV1
Patients [50] Mean	177.63	119.2	113.73	0.821	90.632
Patients [50] SD	35.88	26.85	7.21	0.2	9.38
Control [50] Mean	171.24	119.4	108.5	0.84	94.16
Control [50] SD	41.65	26.9	10.72	0.2	11.56

Figure 1: Examine laboratory analyses of patients related to disordered blood pressure.

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Table 3: Clinical outcomes of patients with blood pressure in terms of comparison between patients' group with control group, males with females.

Variables	**Systolic blood pressure, Mean ± SD**		**Diastolic blood pressure, Mean ± SD**	
M/F				
Males	114.02	17.4	77.41	18.23
Females	110.2	16.32	78.10	9.91
Patients/control groups				
Patients group	123.68	5.48	83.55	3.81
Control group	110.47	3.78	72.1	6.4

Table 4: Evaluation of quality-life of patients with disordered blood pressure based on SF-36 Health Status Questionnaire.

	Patients group		**Control group**		
Parameters	Mean	SD	Mean	SD	P-value
Physical functioning	65.23	4.21	81.22	8.34	<0.001
Fatigue	57.88	9.13	73.23	2.12	<0.001
General Health	62.40	6.65	76.34	1.22	0.012
Mental health	51.23	8.93	75.82	7.83	0.0015
Pain	50.72	4.32	80.23	5.52	<0.001

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Table 5: Multivariable analysis of risk factors associated with disordered blood pressure.

Variables	OR (95% CI)	P-value
Age	1.175 [1.061-1.388]	0.00136
Gender [male]	1.802 [1.123-3.71]	0.01378
Allergic rhinitis	1.753 [1.042-3.234]	0.0255
Smoking	2.251[1.632-4.35]	0.0042
Asthma	2.50 [2.20-4.10]	0.00137
Symptoms	1.237 [1.068-1.49]	0.00280

4. DISCUSSION

Allergic rhinitis is not considered a life-threatening disease for patients, but it can impair their quality of life [16], which helped our research to be interested in discovering the impact of allergic rhinitis on patients suffering from blood pressure disorder. Age is one of the risk factors that contribute to long-term public health [17]. This study recorded that the majority of patients at the age of 50-60 years are more likely to develop hypertension and allergic rhinitis, which is due to the demographic results that men have an infection rate in compared to women by 60%. In addition to the symptoms associated with patients, the clinical demographic results showed that sneezing was the most prevalent indicator in patients, estimated at 30% in the patient group and 34 % in the control group. Numerous studies have clarified the role of asthma and its impact on patients, especially the elderly, as patients with allergic rhinitis with asthma, which affected the rate of blood pressure permanently and repeatedly [18-20], which may indicate an increase in the incidence rate recently and may allow the formation of restrictions that are variable in all factors, whether physical, emotional and Social, which impair the quality of life of patients, making all the characteristics related to diseases and options for treatment disorders be similar. This study found that the rate of patients with asthma increased significantly by 48% for the patient group and 28% for the control group. The smoking factor appears as a risk factor and affects patients [21], as most patients with asthma and allergic rhinitis makes them more sensitive to irritants such as smoke, which causes an exacerbation and increase in the symptoms and severity of asthma, as well as rhinitis [22,23]. In addition, this study carried out laboratory tests that caused an increase in the rates of both cholesterol, glucose and LDL parameters, which showed that the

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cholesterol parameters in the control group were higher B (171.24± 41.65) compared to the patient group (177.63 ± 35.88), that the LDL rates did not have high differences between both groups as the LDL rate was (119.2 ± 26.85) in the patient group and relatively higher B (119.4±26.9) as well as glucose, where a slight increase was found in the patient group by an average of (113.73±7.21) while the control group was (108.5 ± 10.72). All patients have used specific medications that regulate blood pressure, including hydrochlorothiazide, which was the most prominent and most used by 48% in the patient group and 40% in the control group, followed by ACE inhibitor, which participants in the patient group have taken by 24% and the control group 30%. For further results, this study analyzed the clinical outcomes of patients with blood pressure in terms of comparison of the group of patients with the control group, male with female, that the participants from the control group were more regular in blood pressure for both systolic blood pressure or diastolic blood pressure than the rates of systolic blood pressure were observed in the control group (110.47 ± 3.78) while showing a significant increase in the rate of systolic blood pressure in the patient group which reached (123.68 ± 5.48). As for the sex factor, the results showed that men and women had high differences, which shows that males were higher by (109.02± 17.4) compared to women (110.2± 18.32), which leads to a risk to their health, which impairs the quality of life, but this study also witnessed a variable increase in diastolic blood pressure for both males and females, where the average diastolic blood pressure for males was (77.41 ± 10.23), and females were (78.10 ± 9.91). Moreover, this study conducted the quality of life of patients based on the health status questionnaire SF-36, which found that the control group were more improved in the rate of quality of life compared to the group of patients in terms of physical aspect on average (81.22 ± 8.34) for the control group and (65.23 ±4.21) for the patient group, the mental health aspect of which the control group was (75.82 ± 7.83) and the patient group (51.23 ± 8.93), and the pain factor which showed high differences between the two groups and where the control group was better on average (80.23 ± 5.52) than the patient group (50.72 ± 4.32). This study carried out a multivariate analysis of the risk factors associated with blood pressure disorder. Which the common risk factors in this study were the most dangerous for the quality of life of patients, both long-term and short-term, which were age, especially the elderly, gender, which males were more affected and impaired in the quality of life, Allergic rhinitis, symptoms, asthma.

5. CONCLUSION

The study demonstrated that allergic rhinitis worsens the symptoms of irregular blood pressure. Our findings corroborate a positive link between allergic rhinitis and irregular blood pressure, significantly impacting patients' quality of life. Co-existing asthma and allergic rhinitis may further elevate blood pressure disruptions continuously. The study shows that irregular blood pressure has a weaker impact on men's quality of life compared to women's, considering various risk factors such as symptoms associated with drug interactions, physical inactivity, and psychological factors with the patient's age, all of which decreased the quality of life of patients in the patient group compared to the control group. Furthermore, certain medications can result in side effects, potentially leading to long-term complications and exacerbated symptoms, thereby compromising the quality of life for patients with allergic

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rhinitis. It is recommended that appropriate medications, which are less likely to impact blood pressure or can adjust dosing, be utilized to reduce the possibility of blood pressure medication interactions.

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