Assessment of the relationship between smoking and arterial hypertension in Iraq.

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ABSTRACT

Collecting 50 patients from different Hospitals, in Iraq. and 15 control groups, where the study aimed at assessing cases of hypertension in smokers, and the study period for data analysis was for a full year, and it was based on statistical analysis programs SPSS SOFT 22, and the average age of patients was 37.6 ± 5.9, while for the control group it was 39 ± 7.8, and statistically significant differences were found between the two groups with regard to systolic blood pressure.

Smoking is an important risk factor for high blood pressure (BP). Smoking increases hypertension temporarily, increasing the risk of blood vessel damage. Continuing to smoke can cause your arteries to narrow and stiffen, and this negative effect may persist even years after stop smoking.

Keywords: BP, hypertension, smokers, increases, complications.

Introduction

In Iraq, studies showed that there were more than 20% in the age group from 30 to 40 years for a period of up to 11 years, and the results showed that the rate of hypertension in smokers was 2.5 times higher than that of non-smokers [1,2].

Some scientists used 24-hour ambulatory blood pressure monitoring to conduct a comparative study on 250 normal blood pressure male and hypertensive patients, and their blood pressure and diastolic blood pressure were higher than that of non-smokers [3,4].

The difference is especially pronounced during the day, and at the same time, the heart rate of smokers is also faster than that of non-smokers. The results indicate that smoking can increase blood pressure and heart rate in people with normal blood pressure [5,6,7].

The researchers pointed out that blood pressure fluctuations are caused by the nicotine in tobacco, which is a highly toxic substance, and nicotine can activate the heart, make the heart beat faster, narrow blood vessels, and raise blood pressure. Smoking can increase systolic blood pressure by 10 to 25 mm Hg. Excessive smoking for long periods of

time can cause persistent constriction of the arteries [8,9,10]. Over time, the smooth muscle of the arterial wall deteriorates, the inner layer of blood vessels gradually thickens, and arteriosclerosis forms, which increases hypertension, and further deteriorates blood pressure [11,12,13].

Some data indicate that hypertensive patients with smoking habits are less sensitive to antihypertensive drugs, and it is not easy to obtain satisfactory efficacy from antihypertensive therapy, but rather have to increase the dose. Moreover, hypertension cannot be cured, even if blood pressure is temporarily controlled by medications, it is only a superficial phenomenon, and the disease persists [14,15].

Hypertension generally refers to essential hypertension, which is responsible for more than 90% of hypertension and is the most common chronic disease and one of the greatest hidden dangers of cardiovascular and brain diseases. hypertension is not a disease in itself, but a series of serious complications that lie behind it, including stroke, myocardial infarction, heart failure, chronic kidney disease, and other chronic diseases, morbidity and mortality rates are very high [16,17,18].

Smoking increases blood pressure, mainly due to the nicotine present in tobacco leaves. Nicotine can excite the central nervous system and sympathetic nerves, which increases the heart rate, increases the contraction and relaxation of the heart, and thus leads to high blood pressure [19,20].

In addition, the adrenal glands secrete large amounts of catecholamines. Catecholamines can narrow small arterioles and increase peripheral vascular resistance, resulting in a rapid increase in blood pressure.

Other experiments showed that smoking raises the human heart rate by 5 to 20 times per minute, and will raise systolic blood pressure by 10 to 25 mm Hg. When the human body smokes two cigarettes, after about 10 minutes, the body's secretion of epinephrine and norepinephrine increases, the human heart beats faster, and the systolic and diastolic blood pressure increases accordingly [21].

This increase in blood pressure is a one-time increase, and when factors that cause hypertension such as nicotine in the body lose their effect, blood pressure returns to normal [22].

Material and method

Patient sample

50 patients were collected from different Hospitals, in Iraq. where the research aimed to know the effects of smoking on arterial hypertension, and the study was only for men and 15 men who quit smoking were also collected to clarify the statistical differences between the two groups of patients and control

Study design

The demographic information and data for the patients were collected and analyzed by relying on the spss soft program with MS EXCEL

The following variables were taken into account: age, gender, tobacco use, package index

Smoking year (IPA), previous diagnosis of disease, body mass index (BMI) In addition, patients were classified as smokers or non-smokers according to the information provided by the patient

In this study, the intensity of tobacco consumption was calculated by relying on the number of packs of cigarettes smoked per day in each smoking year.

The average systolic and diastolic blood pressure was read using ABPM Ambulatory blood pressure monitoring (ABPM) is a relatively new technique for assessing a person's blood pressure. It is often used to determine if a person actually has high blood pressure when blood pressure readings are confusing or widely variable. In particular, ABPM has been used to assess patients with "high blood pressure."

Tobacco leaves contain nicotine (nicotine), which excites the central nerves and increases the heart rate, and also urges the adrenal glands to secrete a large amount of catecholamines, which narrows the arteries, leading to high blood pressure as nicotine also stimulates chemical receptors in the blood vessels, This leads to a reflexive increase in blood pressure. Long-term, excessive smoking will also promote atherosclerosis of the large

arteries, causing the inner lining of small arteries to gradually thicken and the entire blood vessels to gradually harden. At the same time, due to the increased content of hemoglobin in the blood of smokers from carbon monoxide, the oxygen content in the blood decreases, arterial endothelial hypoxia, lipid deposition in the arterial wall increases and accelerated atherosclerosis forms.

Therefore, quitting smoking in people without hypertension can prevent the occurrence of hypertension, and people with current hypertension should quit smoking.

Study period

study period, consisting of data collection and demographic data collection of patients and control group, was one year from 24-5-2020 to 4-6-2021

Aim of research

The study aimed to investigate the effect of smoking on arterial hypertension

statistical analysis

The data was collected and analyzed statistically through the use of the statistical expert, and by writing down all the observations of the study, the following statistical techniques were used

1- Mean SD
2- P-Value
3- Correlation
4- Cross tabulation
5- Frequency

Results

Table 1- Statistics age of patients

Statistics

AGE

N	Valid	50
	Missing	10
Mean		37.6200
Std. Error of Mean		.84558
Median		38.0000
Mode		31.00
Std. Deviation		5.97918
Skewness		.130
Std. Error of Skewness		.337
Minimum		29.00
Maximum		47.00

The demographic information and data of the patients were collected and analyzed statistically.
Table 1 shows the average age in addition to the mean value and the arithmetic SD of patients.
The highest value in relation to the age of the patients was 47 years, and the lowest value was 29 years, as for mean Value and SD was 37.6±5.97918

Table 2- Cross-tabulation age according to BMI

AGE * BMI Cross tabulation

Count

		BMI							Total
		22.00	26.00	27.00	28.00	30.00	31.00	33.00	
AGE	29.00	0	0	1	0	1	0	0	2

30.00	1	0	1	0	0	1	0	3
31.00	1	0	1	3	0	1	1	7
32.00	0	0	0	0	1	1	0	2
33.00	0	2	0	0	0	1	2	5
34.00	0	0	0	1	0	1	0	2
35.00	1	1	0	0	0	0	0	2
38.00	0	0	1	1	0	2	0	4
39.00	0	0	0	0	1	1	0	2
40.00	1	0	0	1	0	0	1	3
41.00	1	1	0	0	0	0	0	2
42.00	0	0	0	1	0	0	1	2
43.00	0	0	0	0	1	1	0	2
44.00	0	0	0	1	0	1	0	2
45.00	0	0	1	1	1	0	0	3
46.00	0	2	0	2	0	1	0	5
47.00	0	0	0	1	1	0	0	2
Total	5	6	5	12	6	11	5	50

Patients were classified on the basis of body mass index and by knowing AGE * BMI cross-tabulation, we find that the most frequent rate is 28 kg / m 2 for 12 patients, and came in second place 31.00 kg / m 2 for 11 patients

Table 3- demographic results of patient

Statistics

		Rate of smoking	Heart rate	Shortness of breath	smoking years	Total cholesterol mmol l−1	Glucose mmol l−1	AGE	BMI
N	Valid	50	50	50	50	50	50	50	50
	Missing	10	10	10	10	10	10	10	10
Mean		30.6	60.3	5.3	10.2	4.8	4.9	37.6	28.4
Std. Error of Mean		1.4	0.7	0.2	0.5	0.03	0.04	0.8	0.42
Median		28	59	5	9	4.9	4.9	38	28
Mode		27.00	57.00[a]	5.00[a]	7.00	5.10	4.70[a]	31.00	28.00
Std. Deviation		9.9	5.1	1.7	4	0.2	0.3	5.9	3.01
Skewness		0.491	0.482	-0.048	0.651	-0.052	0.198	0.130	-.606
Std. Error of Skewness		0.337	0.337	0.337	0.337	0.337	0.337	0.337	0.337
Range		34.00	17.00	6.00	14.00	.90	1.00	18.00	11.00
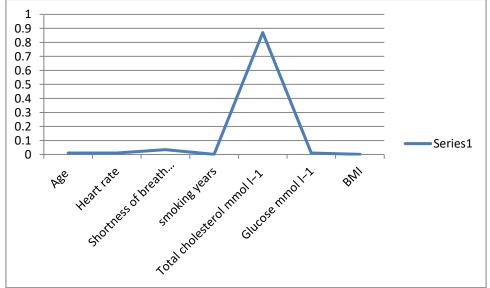
| Minimum | 16.00 | 53.00 | 2.00 | 4.00 | 4.40 | 4.50 | 29.00 | 22.00 |
| Maximum | 50 | 70 | 8 | 18 | 5.3 | 5.50 | 47 | 33 |

The above table shows the values obtained from patients, which include (Heart rate, smoking years, Total cholesterol mmol l−1, and Glucose mmol l−1, and where we notice an increase in heart rate when comparing the two groups.

Table 4-result of control

T	mean	sd
Age	39	7.8
Heart rate	59.2	5.4
Shortness of breath response (10 d)	2.2	1.1
smoking years	4.1	2.2
Total cholesterol mmol l−1	4.2	0.5
Glucose mmol l−1	4.4	0.1
BMI	22.2	3.9

Figure 1- p-value between groups (patient and control)

The table above shows the statistical differences between the two groups of patients and controls, as it was noted that there were statistically significant differences of 0.001
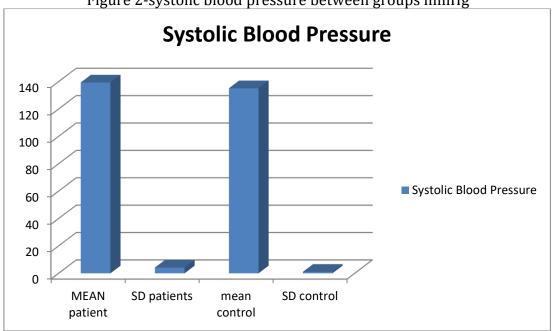
Figure 2-systolic blood pressure between groups mmHg

Figure 3-Diastolic blood pressure

Discussion

Information and demographic data for patients were collected and analyzed statistically, and the mean ± SD was found to be 37.6 ±5.9 patients' ages, as for the control group's ages, it was 39 ± 7.8, and it was noted that there were statistical differences between the two groups with respect to age ≤0.05

The results of blood pressure were expressed by adopting the ABPM device with the real values and the arithmetic mean, where the systolic blood pressure for the group of patients (smokers) was 138 3. 3 ± 2. 3. As for

the control group 122 ± 1.2, as for the diastolic blood pressure for the group Patients' MEAN value was 3.88 ± 2. 2 statistically significant differences were observed when compared with the control group, where the mean value and the SD (78 ± 1.1) less than 10 mmHg

These higher BP results may be explained by activation of the sympathetic nervous system and an increase in catecholamines when nicotine levels increase. This may lead to a lower BMI in patients who smoke and may explain the fluctuations in blood pressure observed in smoking patients in some studies that support this study.

and when compare our study with JR Randor study which 500 patients collected and a positive association was found between nocturnal hypertension and smoking, with a higher risk of cardiovascular disease and Increased mortality in patients with nocturnal hypertension

Tobacco smoke contains substances that are toxic to the cardiovascular system and reduce the blood's ability to supply oxygen to body tissues. Nicotine has the ability to increase the spasm of blood vessels that already have high blood pressure. At the same time, the blood coagulation system is disturbed, the tendency to form blood clots in the most vulnerable places increases, which is primarily in hypertension

The main factors causing the deterioration of the disease are also circulatory diseases, high blood pressure, and high blood cholesterol caused by smoking.

The relationship between smoking and high blood pressure is controversial, with some studies finding an association

Positive, with a higher incidence of HTA only significant differences were observed between the two patient and control groups

These high BP numbers can be explained by activation of the sympathetic nervous system and an increase in catecholamines when nicotine levels increase, and on the other hand, chronic exposure to nicotine causes its effect to be directly tolerated, generating a reduction in mediators of vasodilatation and relaxation of vascular smooth muscle as well as a lower body mass index. In patients who smoke, the

researchers noted that there was an increase (from 0.8 to 1.7 mm Hg) in blood pressure for each additional unit of BMI in those who did not take antihypertensive drugs. Systolic blood pressure to 136.5, is the first step towards high blood pressure

Conclusion

There were statistically significant differences between the patient and control groups, and that smoking was directly related to high blood pressure, and we conclude that the presence of smoking with high blood pressure in one patient increases the incidence of strokes significantly or leads to a cardiovascular catastrophe.

It was also concluded that there is evidence of a relationship between high blood pressure with DM and an increase in body mass index, and that smoking cessation is one of necessary strategies in the treatment of hypertension.

Recommendation

1. must work to quit smoking and avoid smoking as much as possible in addition to adopting a healthy lifestyle to control blood pressure readings.
2. Regular exercise is an excellent way to reduce weight, and moreover, it has been shown that physical activity contributes significantly and directly to lowering blood pressure values.

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