УДК 616.12-008.331.1:616.1]-07

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EVALUATING THE ASSOCIATION BETWEEN ARTERIAL HYPERTENSION AND CARDIOVASCULAR MANIFESTATIONS

Introduction

Arterial Hypertension [AH] is when an individual has high blood pressure and it can be classified into 4 stages, i.e., elevated blood pressure 120–129/<80 mmHg, hypertension stage 1 130–139/80–89 mmHg, hypertension stage 2 140/90 mmHg and hypertensive crisis 180/120 mmHg [1]. Several reasons, or even a combination of them can lead to said diagnosis like old age, menopause, obesity, high salt consumption, low physical activity and genetics. It is certainly a preventable disease and yet poses as a risk factor worldwide regarding one fifth of the population, i.e., 10 million deaths and causing disabilities in about 218 million individuals [2]. Many studies have shown that AH is a significant factor that can lead to several cardiac outcomes such as heart failure, valve diseases, stroke, coronary heart disease, atrial fibrillation etc. The influence can even spread to other organs and systems like chronic kidney disease and dementia [3]. This research aims to investigate the overall effects of having arterial hypertension over a prolonged period of time, on the health of the cardiovascular system. Identifying the correlation between these factors can help to prevent serious, irreversible damage to the cardiovascular system and in turn prevent end organ damage. Healthcare providers can detect early symptoms, improve treatment and maintain the overall health of their patients.

Goal

To evaluate the association between arterial hypertension and other cardiovascular manifestations in a clinical setting.

Materials and methods of research

The research was conducted from February 23rd March 08th.Total of 40 patients were selected at random. The age ranged from 35 to 62 years old, with an equal distribution of male and female patients at the Cardiology department of Gomel City clinical hospital no. 3. Information was gathered through patient visits, general physical examination, questioning, and medical record reviews of each patient. The factors considered in this investigation are gender, standalone diagnosis of AH, presence of additional cardiac manifestations (atherosclerosis, unstable angina, coronary heart disease), cardiac changes with according to echocardiogram (presence or absence of left ventricular hypertrophy) or presence of end organ damage (glomerulonephritis, retinopathy and stroke). Patients were also inquired on the progress of their AH, from the date of onset to the date of the interviews. They were asked about the timeline at which new symptoms appeared. It was also compared with the timeline of the propagation of just only AH to several other cardiac symptoms and comorbidities. Biochemical analysis, urine analysis and ECG and echocardiogram results were used in this investigation.

The results of the research and their discussion

The results of this investigation are as follows: In the category of standalone diagnosis of AH, 8% are women and 15% are men. In the category of AH (stage 2 and greater) and other cardiac manifestations 52% are women and 35% are men. For AH, additional cardiac symp-

toms and accompanying diseases, the distribution was 40% women and 50% men. This data is presented in figure 1.

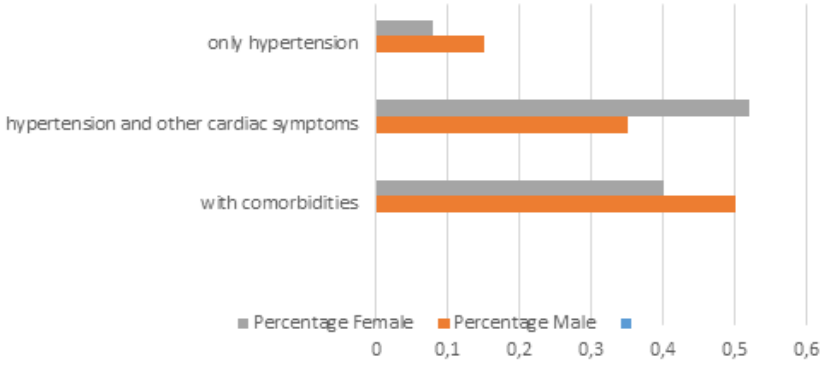

Figure 1 – Distribution of Patients according to gender

This figure 1 shows that more men suffer from hypertension alone and hypertension with additional cardiac symptoms and comorbidities. More women suffer from hypertension and additional cardiac symptoms when compared to men.

Women are more prone to cardiac symptoms and arterial hypertension than men due to various factors such as hormonal influences, differences in symptom presentation, and unique risk factors. Hormonal changes, particularly during menopause, can affect blood pressure regulation and increase the risk of hypertension in women. Additionally, women may experience atypical symptoms of heart disease, leading to under recognition and delayed treatment.

In the echocardiogram analysis, left ventricular hypertrophy [LVH] was found in 40% of the patients. The rest did not have LVH. Patients without LVH were most common in my patient group. Arterial hypertension causes stress on the heart muscles when pumping blood. As the muscles work harder to keep up with the pressure, the cells of the walls thicken and lose elasticity. LVH is a compensatory mechanism. If LVH is further left untreated, it will result in dangerous cardiovascular outcomes such as coronary heart disease (damage to arteries), heart failure (stiff and weak heart muscles), cardiomegaly (enlarged left ventricle) even sudden cardiac death. Once damage to these structures take place, it could lead the disease of other organs [4].

When considering end organ damage, 50% of the investigated group were diagnosed with it. From these individuals, 55% had glomerulonephritis, 33% only stroke and 12% suffered from retinopathy. Therefore, glomerulonephritis is the most common end organ damage found in this group.

In the case of kidneys, high blood pressure combined with low elasticity of blood vessels can lead to problems with filtration. The result of this being a dangerous accumulation of toxins in the body and kidney failure. The eyes can also be affected by this causing damage to the delicate blood supply to the eyes. Increased intraocular pressure can lead to retinopathy (damaged blood vessels), and all these outcomes can lead to vision loss. Hypertension can also affect the brain. Stroke is a lack of oxygen in the brain leading to irreversible chemical changes and damage to blood vessels causing leakage and clotting. Stiff and weak arteries can cause block blood supply to a section of the brain resulting in stroke [3].

Conclusions

AH is a significant health concern, particularly among women. This is reflected in figure 1. To summarize, the standalone diagnosis of AH – 8% women, 15% men; the diagnosis of AH stage 2 and greater with additional cardiac manifestation 52% women, 35% men; the diagnosis

of AH with comorbidities – 40% women, 50% men. Although a higher percentage of men were found to have early-stage AH, the interviews revealed that more women have progressed to having additional cardiac symptoms overtime. This appeared to be a result of the existence of risk factors, late diagnosis and menopause. The questioning session also revealed that a greater number of men had AH, additional cardiac symptoms and comorbidities due to some carelessness in following their physician's instructions. Therefore, it is indicated that women are at greater risk of cardiovascular complications. Hypertension-induced stress on the heart muscles can result in stiffening and reduced elasticity, leading to LVH. The findings underscore the critical need for proactive management of hypertension to prevent adverse health outcomes. Prolonged pressure overload due to hypertension can lead to adverse cardiac outcomes such as coronary heart disease and heart failure. The study outlines the importance of early detection and control of hypertension to reduce cardiovascular risks. Understanding gender-specific risk factors and symptom presentation is crucial for tailored clinical management. Overall, early intervention, regular monitoring, and lifestyle modifications are key in mitigating the impact of hypertension on cardiovascular and end organ health.

LITERATURE

1. What are the stages of Hypertension [Electronic resource]. – Access mode: https://bmcpulmmed.biomedcentral.com/articles/10.1186/s12890-022-01875-6 – Access date: 05.12.2022.

2. Bmcpublichealth.biomedcentral [Electronic resource]. – Access mode: https://bmcpulmmed.biomedcentral.com/articles/10.1186/s12890-022-01875-6 – Access date: 05.12.2022.

3. Hypertension-high-blood-pressure/eye-disease-high-blood-pressure [Electronic resource]. – Access mode: https://bmcpulmmed.biomedcentral.com/articles/10.1186/s12890-022-01875-6 – Access date: 05.12.2022.

4. High-blood-pressure [Electronic resource]. – Access mode: https://bmcpulmmed.biomedcentral.com/articles/10.1186/s12890-022-01875-6 – Access date: 05.12.2022.

5. Ventricular-hypertrophy[Electronic resource]. – Access mode: https://bmcpulmmed.biomedcentral.com/articles/10.1186/s12890-022-01875-6 – Access date: 05.12.2022.

УДК 616.1-036.22-037-036.8

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EPIDEMIOLOGY OF 10 YEAR RISK OF DEVELOPING FATAL CARDIOVASCULAR DISEASE

Introduction

Cardiovascular diseases (CVDs) are the leading cause of death across the world. These are a group of disorders of the heart and blood vessels which mainly include coronary heart disease, cerebrovascular disease, rheumatic heart disease, and other conditions. More than four out of five CVD deaths are due to heart attacks and strokes, and one third of these deaths occur prematurely in people under 70 years of age [1].

Risk factors which provide to the development of CVDs are physical inactivity, unhealthy diet, tobacco use, and alcohol abuse. These behavioural risk factors cause the individual to have increased blood pressure, increased blood glucose, development of obesity [1–3].

Usually, symptoms are often not noticed by the patients. A myocardial infarction or stroke may be the first sign of an underlying disease. Patients may experience shortness of breath with little or no physical activity, cold sweats, and light-headedness [1, 4].