

Epidemiology of Cardiovascular Diseases in Morocco: About 16002 Cases Followed Between 2000 and 2016.

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Abstract: In Morocco, Cardiovascular disease is the leading cause of death. These diseases can be classified into different categories: Valvulopathy, Heart failure, Arterial hypertension, Ischemic heart disease, Cardiomyopathy, and Arterial diseases. The aim of our study is to describe the epidemiology of cardiovascular diseases in a Moroccan population. This is a retrospective descriptive study which concerned all subjects followed for cardiovascular diseases at the Military Hospital Mohammed V of Rabat (Morocco) from 2000 to 2016. For each subject a standardized questionnaire has been filled. The objectives of the study were clearly explained to patients while respecting confidentiality and anonymity. The parameters studied were age, sex, type of cardiovascular disease and duration of disease. It was included in our study 16002 persons, 55% were male, sex-ratio 1,21 (Chi-square test equal to 87,3, $p \geq 0,0001$). The mean age was 70 ± 16 years. The most affected age groups were ≥ 65 years (Chi-square test equal to 57,6 and $p \geq 0,0001$) which represented **78%** of all groups. The most common cardiovascular diseases in our population were Arterial hypertension (67.4%) followed by Cardiomyopathy (23.2%), Valvulopathy (3,6%), Ischemic heart disease (2,2%), Heart failure (2,2%) and Arterial disease (1%). Annual prevalence of these diseases was 1455 case and duration was $8 \pm 2,74$ years. Cardiovascular diseases affected more men than women with Chi-square Pearson test equal to 503,08, $p \geq 0,0001$ but Arterial hypertension was higher among women than men. Awareness, education, lifestyle and patient care remain the best way to prevent cardiovascular diseases.

Keywords: age, sex, prevalence, cardiovascular diseases

Date of Submission: 01-05-2018

Date of acceptance: 17-05-2018

I. INTRODUCTION

Today, more than 17 million people die annually from cardiovascular disease, according to the World Health Organization. In Morocco, cardiovascular disease is the leading cause of death. These diseases can be classified into different categories, namely, valvulopathy, heart failure, arterial hypertension, ischemic heart disease, cardiomyopathy, and arterial diseases. The aim of this work is to describe the prevalence of cardiovascular diseases according to the age and sex of patients and to study the association between sex, age and the appearance of different types of cardiovascular diseases.

II. PATIENTS AND METHODS

This is a cross-sectional study involving 16002 patients with cardiovascular disease aged at least 25 years old and followed at the Mohamed V military training hospital in Rabat during the period 2000-2016. The studied parameters are the age, the sex, the seniority of the disease. Cardiovascular diseases studied: arterial diseases, cardiomyopathy, ischemic heart diseases, heart failure, valvulopathy, and arterial hypertension.

III. RESULTS

The survey involved 16002 patients including 7232 women (45.2%) and 8770 men (54.8%) with a slight male predominance (sex ratio = 1.21, chi-square test = 87.3, $p \leq 0.0001$). The average age was 70.27 ± 16.5 years. For young adults, women are the most affected, and for adults and seniors there is a male predominance (Figure 1). The prevalence of cardiovascular diseases was: hypertension (67.4%), cardiomyopathies (23.2%), valvulopathies (3.6%), ischemic heart disease (2.2%), cardiac insufficiency (2%), and arterial diseases (1%) (Figure 2), with an estimated annual prevalence of 1455 cases and seniority estimated at 8 ± 2.74 years.

Data analysis showed a statistically significant association between sex and cardiovascular disease (pearson chi-square test = 503.08, $p \leq 0.0001$). Arterial diseases, cardiomyopathies, ischemic heart disease and valvulopathies affect men more than women, and for women with hypertension, predominance has been noted (Figure 3). Regarding the age of the patients, there is a statistically significant association between the age of the patients and the onset of cardiovascular disease (chi-square test of pearson = 57.61, $p \leq 0.0001$), these diseases affect mainly patients aged 40 and over.

IV. DISCUSSION

Cardiovascular diseases by their frequency have become a major public health problem. Indeed, of the 1600 patients with cardiovascular disease, we found a male predominance, these results agree with the results of the literature, indeed, in our study we found that there is a statistically highly significant association between the sex and the onset of the disease, and between age and onset of the disease with an average age of 70.27 ± 16.5 years, these results are similar to those of the literature, indeed the age is the most important factor, with an incidence curve that increases with age [1]. Historically, the Framingham study identified age and gender as non-modifiable risk factors for cardiovascular disease in addition to other modifiable risk factors (smoking, dyslipidemia, diabetes, high blood pressure, sedentary lifestyle) [2].

Regarding age, we found that in young adults, the [25-45], women are the most affected by cardiovascular diseases especially high blood pressure, cardiomyopathys and valvulopathys, these results suggest whereas CVD in young women may be partly due to a lack of risk assessment and prevention measures, these findings are consistent with those in the literature [3]. The constant increase in life expectancy among women, lengthens the post-menopausal period, with the consequent considerable increase in the risk of developing cardiovascular disease. Cardiovascular pathologies are the leading cause of death in women, far from cancer. Menopause is a true "hub" from a cardiovascular point of view in a woman's life [4]. The incidence of cardiovascular disease increases with age, for [45-65 [and ≥ 65 years] we found a slight male predominance, and these two age groups are affected by high blood pressure and cardiomyopathys and especially patients aged 65 and over who are most affected by these diseases. These results are similar to those in the literature. Age is known to be the number one risk factor of cardiovascular diseases are not only the first cause of death worldwide, per age group, they are the leading cause of death in people over the age of 65 [5].

In our study, we found that 67.4% of cases have Hypertension, affecting both young adults and the elderly. HT is a major public health problem in both developed and developing countries.

In Morocco, the results of the prospective survey carried out in 2000 by the Ministry of Health gave an overall prevalence of hypertension of 33.6% in the population of over 20 years. The prevalence of hypertension increases significantly with age. It is 53.8% among people over 40 and 72.2% among those 65 and over.

The same rate is found in the Arab countries and around the Mediterranean [6].

Cardiomyopathys are the most common subtype with a prevalence of 1 in 500 to 1 in 200 [7, 8] in adults of all races. However, more recent estimates suggest a significantly higher prevalence of about 1 or more out of 250 people [9].

Valvulopathys remain common in western countries, with an estimated prevalence of 2.5% in the United States.

The significant decrease in the frequency of rheumatic heart disease has been replaced by the increase in degenerative valvulopathys, which in particular results in a net increase in their prevalence after 65 years.

The predominance of valvulopathys in elderly subjects has important implications for their management because of the increased frequency of comorbidities and the increased risk of interventions [10].

V. CONCLUSION

The prevention of cardiovascular diseases can only be envisaged if the countries concerned put in place a policy of sensitization of the populations and all the actors of health. It should focus on hygiene and an active fight against cardiovascular risk factors.

With regard to efforts to combat cardiovascular diseases in Morocco today, there is an undeniable political will to manage chronic diseases effectively, citing in this sense the development of a National Disease Plan. and improved basic medical coverage, in addition to validated and inexpensive screening and other effective treatment options.

Conflict of interest:

No conflict of interest

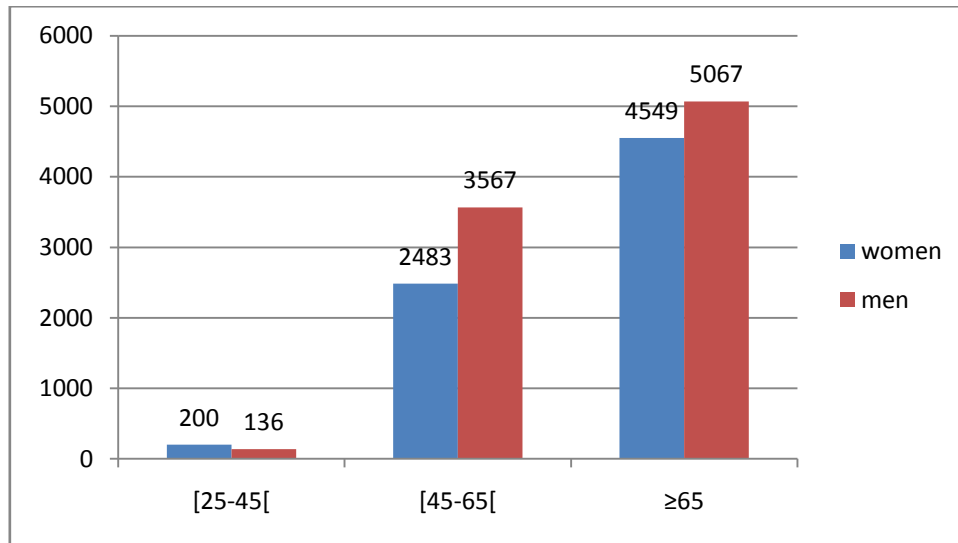


Figure 1: Distribution of patients by age and sex.

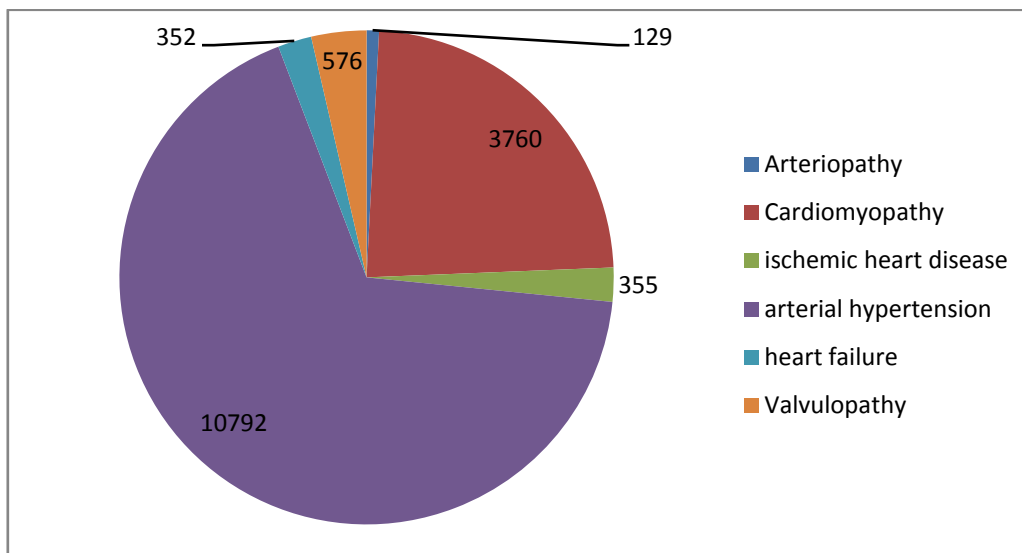


Figure 2: Prevalence of cardiovascular diseases during the study period.

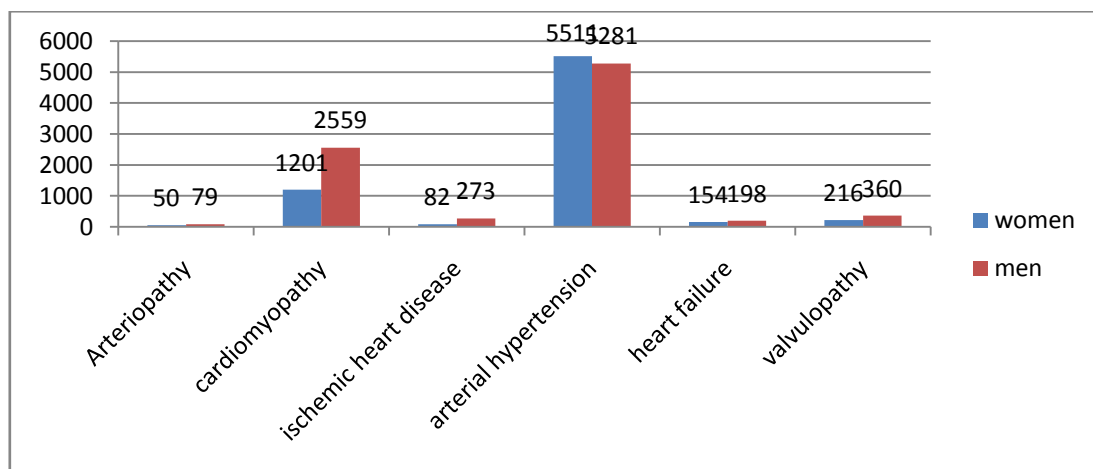


Figure 3: Distribution of cardiovascular diseases by sex of patients.

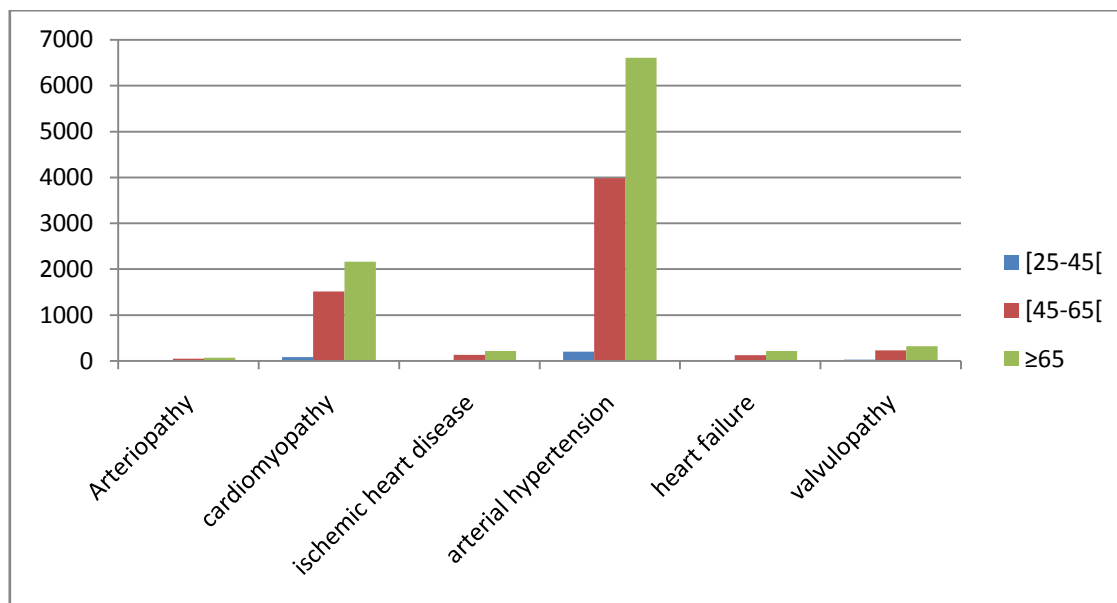


Figure 4: Distribution of cardiovascular diseases by age group.

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S. Elkafssaoui "Epidemiology of Cardiovascular Diseases in Morocco: About 16002 Cases Followed Between 2000 and 2016. "IOSR Journal Of Humanities And Social Science (IOSR- JHSS). vol. 23 no. 05, 2018, pp. 61-64