
ORIGINAL PAPER

COMORBIDITIES OF HYPERTENSIVE PATIENTS: ARE THERE DIFFERENCES BETWEEN MEN AND WOMEN?

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SUMMARY

Background: Hypertension is a global health concern. A better understanding of sex differences in the comorbidities of patients with arterial hypertension could yield treatments that are better tailored to the individual. The objective of the study was to investigate sex differences in the comorbidities of hospitalized hypertensive patients.

Methods: The study included 200 patients with arterial hypertension consecutively hospitalized in the Internal Medicine Clinic of the Clinical Emergency Hospital of Bucharest, Romania, in 2015. We analyzed data from the hospital record database, using Analyse-IT software.

Results: The distribution by sex: 122 men (61.60%) and 78 women (38.40%). Women were younger than men (mean age 62.2 ± 11.2 years versus 68.4 ± 12.3 years). The comparative distribution of comorbidities in women and men: dyslipidemia (62.5% vs 55%), left ventricle hypertrophy (54.4% vs 50.5%), diabetes (37.5% vs 21%), heart failure (34.4% vs 42.6%), obesity (34.4% vs 25%), coronary heart disease (32.8% vs 27.4%), chronic kidney disease (31.8% vs 26.1%), sleep apnea syndrome (14% vs 1%), hyperuricemia (2.3% vs 1%). We did not find a significant difference in the severity of hypertension between men and women ($p=0.49$), nor in the grade of obesity, left ventricular hypertrophy, frequency of heart failure, chronic kidney disease or coronary heart disease. Instead, we have found a statistically significant higher frequency of diabetes in women ($p=0.03$). Also, the frequency of sleep apnea was higher in women ($p=0.003$). The mean left ventricular ejection fraction was similar in women and in men (57.5% vs 56%).

Conclusions: Hypertensive women in our study were younger than men. The severity of hypertension was similar in both genders. Women had a higher frequency of diabetes and sleep apnea.

Key words: arterial hypertension, comorbidities, gender

RÉSUMÉ

Comorbidités des patients hypertensifs: est-ce qu'il y a des différences entre les hommes et les femmes?

Introduction: L'hypertension artérielle est un problème de santé mondial. Une meilleure compréhension des différences entre les sexes dans les comorbidités des patients atteints d'hypertension artérielle pourrait donner des traitements qui sont mieux adaptés au patient. L'objectif de l'étude était d'étudier les différences de sexe dans les comorbidités des patients hypertendus hospitalisés.

Méthodes: L'étude a inclus 200 patients atteints d'hypertension artérielle consécutivement hospitalisés dans la clinique de médecine interne de l'Hôpital Clinique d'Urgence de Bucarest, en 2015. Nous avons analysé les données de la base de données d'enregistrement de l'hôpital, en utilisant le logiciel Analyse-IT.

Résultats: La répartition par sexe: 122 hommes (61,60%) et 78 femmes (38,40%). Les femmes étaient plus jeunes que les hommes (âge moyen $62,2 \pm 11,2$ années contre $68,4 \pm 12,3$ années). La distribution comparative des comorbidités chez les femmes et les hommes: dyslipidémie (62,5% vs 55%), hypertrophie ventriculaire gauche (54,4% vs 50,5%), le diabète (37,5% vs 21%), l'insuffisance cardiaque (34,4% vs 42,6%), l'obésité (34,4% vs 25%), les maladies coronariennes (32,8% vs 27,4%), la maladie rénale chronique (31,8% vs 26,1%), le syndrome d'apnée du sommeil (14% vs 1%), hyperuricémie (2,3% vs 1%). On n'a pas trouvé de différence significative de la sévérité de l'hypertension entre les hommes et les femmes ($p = 0,49$), ni dans le grade de l'obésité, l'hypertrophie ventriculaire gauche, la fréquence de l'insuffisance cardiaque, la maladie rénale chronique ou la maladie coronarienne. Au lieu de cela, nous avons constaté une fréquence significativement plus élevée du diabète chez les femmes ($p = 0,03$). En outre, la fréquence de l'apnée du sommeil a été plus élevée chez les femmes ($p=0,003$). La fraction moyenne d'éjection ventriculaire gauche était similaire chez les femmes et les hommes (57,5% vs 56%).

Conclusions: Les femmes hypertensives dans notre étude étaient plus jeunes que les hommes. La sévérité de l'hypertension était similaire dans les deux sexes. Les femmes avaient une fréquence plus élevée du diabète et de l'apnée du sommeil.

Mots-clé: hypertension artérielle, comorbidités, sexe

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BACKGROUND

Hypertension is a global health concern, due to high prevalence and incidence worldwide and high risk of long and short term complications. There are differences between hypertensive men and women regarding the complications, comorbidities, blood pressure control. The impact of gender on the comorbidities of hypertensive patients is not well clarified. Most of hypertensive patients have a great number of comorbidities, that affect their quality of life and influence the prognosis and therapeutic strategies (1,2). Comorbidities of hypertensive patients may be etiologically related to arterial hypertension (obesity, diabetes etc), may be complications of hypertension (coronary heart disease, stroke, myocardial infarction, chronic heart failure, chronic kidney disease etc) and may be unrelated to hypertension (asthma, chronic obstructive pulmonary disease, degenerative osteoarticular diseases etc). Hypertensive men have a greater risk of cardiovascular and renal diseases as compared to premenopausal women of the same age. This was demonstrated by studies of 24-hour ambulatory blood pressure monitoring in men and women of the same age (3-6). In menopausal women, the blood pressure increases and these women have a blood pressure similar to that of men; furthermore, older women seem to have higher blood pressure than men (6). A number of studies have demonstrated that there are some gender differences also between comorbidities of hypertensive patients. A better understanding of sex differences in the comorbidities of patients with arterial hypertension could yield treatments that are better tailored to the individual. The objective of the study was to investigate the sex differences in the comorbidities of hospitalized hypertensive patients.

METHODS

The study included 200 patients with arterial hypertension consecutively hospitalized in the Internal Medicine Clinic of the Clinical Emergency Hospital of Bucharest, Romania, in 2015. We have retrospectively analyzed electronic data from the hospital record database, using Analyse-IT software. We have created a database with the 200 patients included in the study and we analyzed this database, using demographical, clinical and paraclinical variables and the discharge diagnosis. There were no exclusion criteria from the study.

RESULTS

In all the patients clinical exam, anthropometric indices, blood and urinary tests, electrocardiogram, 2-D transthoracic echocardiography, abdominal ultrasonography and thoracic X-ray were performed. The diagnosis of left ventricular hypertrophy was done by transthoracic echocardiography. The diagnosis of sleep apnea syndrome was done by ventilatory poligraphy and not by polisomnography, which was not available. The distribution by sex in the group of study was: 122 men (61.60%) and 78 women (38.40%) (fig. 1). Women

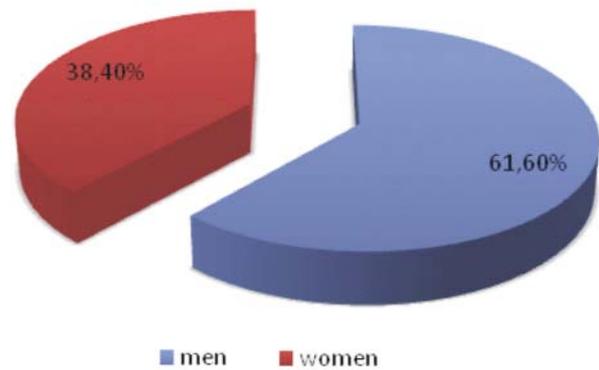


Figure 1 - The distribution by sex in the group of study

were younger than men (mean age 62.2 ± 11.2 years versus 68.4 ± 12.3 years). The comparative distribution of comorbidities in women and men was: dyslipidemia (62.5% vs 55%), left ventricle hypertrophy (54.4% vs 50.5%), type 2 diabetes (37.5% vs 21%), chronic heart failure (34.4% vs 42.6%), obesity (34.4% vs 25%), coronary heart disease (32.8% vs 27.4%), chronic kidney disease (31.8% vs 26.1%), sleep apnea syndrome (14% vs 1%), hyperuricemia (2.3% vs 1%) (fig. 2, 3). We did not find a significant difference in the severity of hypertension between men and women ($p=0.49$), nor in the grade of obesity, left ventricular hypertrophy, frequency of heart failure, chronic kidney disease or coronary heart disease. Instead, we have found a statistically significant higher frequency of type 2 diabetes in women ($p=0.03$). Also, the frequency of sleep apnea was higher in women ($p=0.003$). The mean left ventricular ejection fraction was similar in women and men (57.5% vs 56%).

Limitations of the study

The retrospective nature of the study is an important limitation of the study. Also, ventilatory poligraphy, as a screening method for sleep apnea syndrome, was not performed in all patients, which may underestimate the true frequency of sleep apnea in the group of study. The transthoracic echocardiography was performed by different physicians, as well as abdominal ultrasonography. The study has taken into consideration the diagnosis of chronic heart failure, without making the difference between heart failure with reduced ejection fraction and heart failure with preserved ejection fraction, that was beyond the scope of the study.

DISCUSSIONS AND CONCLUSIONS

Hypertensive women in our study were younger than men. Other studies have demonstrated that men are more likely to have hypertension below the age of 45 years, between 45 and 64 years old the prevalence is similar and after 65 years old hypertension is more common in women (7).

Also, dyslipidemia was more frequent in women as compared to men. Overall, women in this study had a

Figure 2 - The distribution of comorbidities in hypertensive men

Abbreviations: LVH – left ventricular hypertrophy; HF – heart failure; CHD – coronary heart disease; CKD – chronic kidney disease; SAS – sleep apnea syndrome

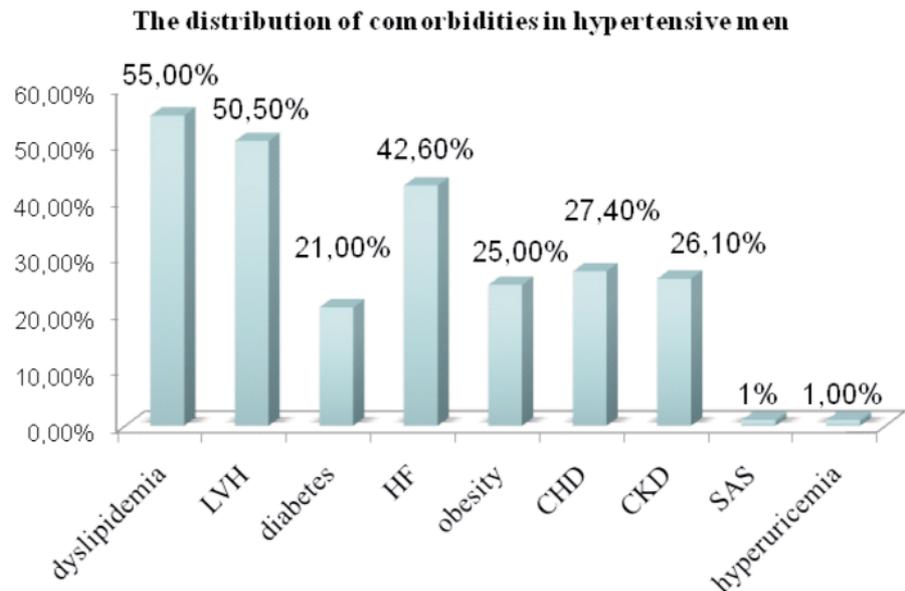
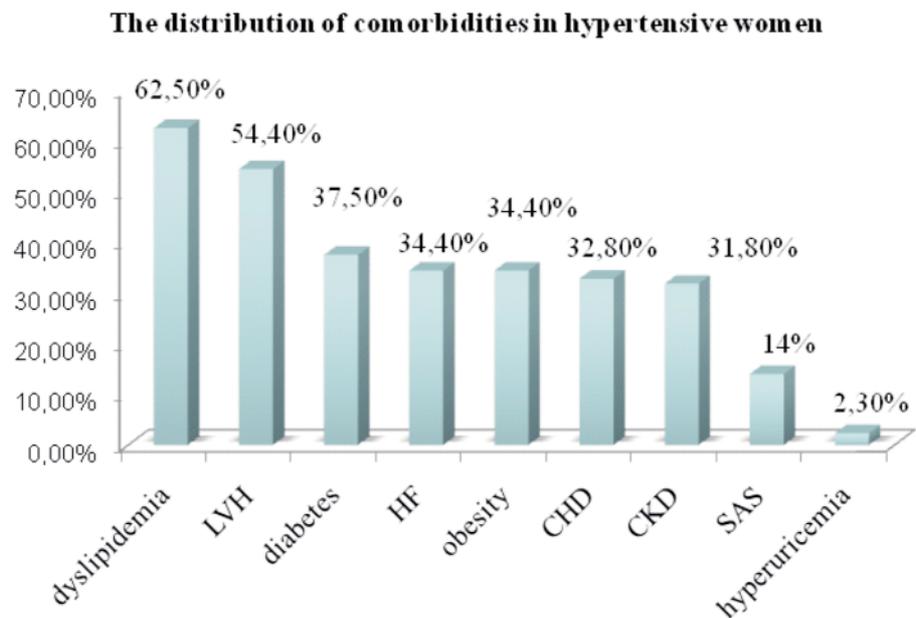


Figure 3. The distribution of comorbidities in hypertensive women

Abbreviations: LVH – left ventricular hypertrophy; HF – heart failure; CHD – coronary heart disease; CKD – chronic kidney disease; SAS – sleep apnea syndrome



higher burden of cardiovascular risk factors than men. This finding can be partially explained by the relatively old age of the patients included in the study. Since the prevalence of hypertension begins to increase in premenopausal women, it is important to have regular medical check-ups in this period in order to diagnose the arterial hypertension and to initiate adequate lifestyle measures and medical treatment. The proper diagnosis of other modifiable cardiovascular risk factors in women in midlife period is very important in order to improve the cardiovascular risk profiles (8). A number of studies have demonstrated that in hypertensive women the blood pressure values are less well controlled as compared to men (9-13). Other studies, instead, have found that hyper-

tensive women have equal or better control of blood pressure values than men (14-16). One possible explanation is that few studies have taken into consideration gender differences as a function of age.

The severity of hypertension in this study was similar in both genders. Women had a higher frequency of type 2 diabetes and sleep apnea syndrome. This may be correlated with the higher frequency of obesity, as a common risk factor for both diseases, in women as compared to men in this study. Multiple studies have demonstrated the association of sleep apnea syndrome and resistant hypertension (17-19). One study has found a prevalence of obstructive sleep apnea syndrome of 65% in women and 95% in men with resistant hypertension (20). Epidemiologic studies have

found that the prevalence of sleep apnea syndrome is higher in men than women (24% versus 9%) (21). Also, men have more severe forms of sleep apnea, with higher apnea-hypopnea index. However, the results of other clinical studies raised the suspicion that sleep apnea syndrome may actually be underdiagnosed in women, and the true prevalence may be higher. Women may have different clinical expressions of sleep apnea which, together with socio-cultural factors, may lead to underdiagnosis of sleep apnea syndrome. The prevalence of obstructive sleep apnea syndrome in postmenopausal women is higher than in premenopausal women, suggesting that the female hormones may have a protective role for developing sleep apnea (22). This study has found higher frequency of sleep apnea in women, one possible explanation being again the relatively old age of the women included in the study and association of obesity as a main risk factor for sleep apnea.

The burden of comorbidities in hypertensive patients may have an important impact on therapeutical strategies and on short and long term prognosis. Gender differences in the comorbidities' profile of hypertensive patients do exist and should be taken into consideration when deciding the monitoring of hypertensive patients and choosing the right treatment for each patient.

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