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Analysis of the structure and severity of comorbid pathology in patients with arterial hypertension

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ABSTRACT

The purpose of the research is to study the structure and severity of comorbid pathology in hospitalized patients with arterial hypertension. ***Material and methods.*** The study included 140 adult patients (29% men and 71% women) with arterial hypertension and comorbidity receiving therapy in the cardiology department. The average age of the patients was 64.3 ± 12.0 years. The Charlson index was used to assess comorbidity. ***Results.*** The average Charlson index in our study was 3.97 ± 2.0 points. Moderate and severe comorbidity was observed in 77.6% of patients with arterial hypertension. When analyzing the frequency of concomitant pathology, one disease was detected in 7% of the examined, two in 28%, three in 14%, four in 23%, five or more in 28%. The structure of concomitant pathology is represented mainly by chronic cerebral ischemia (26.3%), rhythm and conduction disturbances (20%), diseases of the bronchopulmonary (14.8%) and digestive (12.7%) systems. Analysis of risk factors for comorbidity revealed heredity aggravated by cardiovascular diseases in 33.3% of patients with arterial hypertension, smoking in 7.3%, overweight in 27%, obesity in 62%, and abdominal obesity in 87%. Obesity was not diagnosed in all men and 85.4% of women, which indicates that this risk factor for comorbidity was not taken into account. ***Conclusion.*** The introduction into the practice of managing patients with arterial hypertension and comorbidity of scoring the presence of concomitant diseases by calculating the Charlson comorbidity index will increase the accuracy of assessing the prediction of their ten-year survival. Identifying and correcting the main risk factors for comorbidity and concomitant pathology in patients with arterial hypertension can reduce disability and mortality.

KEY WORDS: arterial hypertension; comorbidity; cardiovascular diseases; Charlson index; risk factors.

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Análisis de la estructura y gravedad de la patología comórbida en pacientes con hipertensión arterial

RESUMEN

El objetivo de la investigación es estudiar la estructura y gravedad de la patología comórbida en pacientes hospitalizados con hipertensión arterial. Material y métodos. El estudio incluyó a 140 pacientes adultos (29% hombres y 71% mujeres) con hipertensión arterial y comorbilidad que recibían terapia en el departamento de cardiología. La edad media de los pacientes fue de 64,3 ± 12,0 años. Se utilizó el índice de Charlson para evaluar la comorbilidad. Resultados. El índice de Charlson medio en nuestro estudio fue de 3,97 ± 2,0 puntos. Se observó comorbilidad moderada y grave en el 77,6% de los pacientes con hipertensión arterial. Al analizar la frecuencia de patología concomitante, se detectó una enfermedad en el 7% de los examinados, dos en el 28%, tres en el 14%, cuatro en el 23%, cinco o más en el 28%. La estructura de la patología concomitante está representada principalmente por isquemia cerebral crónica (26,3%), alteraciones del ritmo y la conducción (20%), enfermedades de los sistemas broncopulmonar (14,8%) y digestivo (12,7%). El análisis de los factores de riesgo de comorbilidad reveló herencia agravada por enfermedades cardiovasculares en el 33,3% de los pacientes con hipertensión arterial, tabaquismo en el 7,3%, sobrepeso en el 27%, obesidad en el 62% y obesidad abdominal en el 87%. La obesidad no se diagnosticó en todos los hombres y en el 85,4% de las mujeres, lo que indica que no se tuvo en cuenta este factor de riesgo de comorbilidad. Conclusión. La introducción en la práctica del manejo de pacientes con hipertensión arterial y comorbilidad de puntuar la presencia de enfermedades concomitantes mediante el cálculo del índice de comorbilidad de Charlson aumentará la precisión de la evaluación de la predicción de su supervivencia a diez años. Identificar y corregir los principales factores de riesgo de comorbilidad y patología concomitante en pacientes con hipertensión arterial puede reducir la discapacidad y la mortalidad.

PALABRAS CLAVE: hipertensión arterial; comorbilidad enfermedades cardiovasculares; Índice de Charlson; factores de riesgo.

Introduction

Comorbid pathology occupies one of the leading places in the clinic of internal diseases. According to the REKVAZA register, there was a combined cardiovascular pathology in outpatient practice in 79.5% of cases. On average, one patient had 2.6 diagnoses out of four included in the analysis. Moreover, the diagnosis of arterial hypertension was recorded in the outpatient card in 98.9% of patients (Boytsov et al., 2014). Arterial hypertension was understood as a syndrome of increased systolic blood pressure ≥140 mm Hg and/or diastolic blood pressure ≥90 mm Hg.

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The addition of a comorbid pathology changes the classic clinical picture of the underlying disease, worsens the quality of life and prognosis, increases the number of complications and their severity, the cost of diagnosis and treatment. Comorbid pathology creates new difficulties for practicing physicians, which include the selection of pharmacotherapy, assessment of the prognosis of all existing diseases and determination of patient management tactics (Comorbid pathology in clinical practice. Diagnostic and treatment algorithms, 2019; Comorbid pathology in clinical practice. Clinical guidelines, 2017; Fesenko et al., 2012). Due to the lack of a generally accepted terminology for associated diseases, today we have chosen the term "comorbidity" and its definition, which is given by experts in the clinical guidelines "Comorbid pathology in clinical practice. Clinical guidelines" and "Comorbid pathology in clinical practice. Algorithms for diagnosis and treatment". Comorbidity is understood as "a combination in one patient of two or more chronic diseases, etiopathogenetically interrelated with each other or coinciding in time of occurrence, regardless of the activity of each of them" (Comorbid pathology in clinical practice. Diagnostic and treatment algorithms, 2019; Comorbid pathology in clinical practice. Clinical guidelines, 2017). Cardiovascular comorbidity is understood as the presence of two or more cardiovascular diseases and pathological conditions in a patient (Centers for Medicare & Medicaid Services. Chronic conditions overview, 2014). To assess comorbidity, the Charlson index use, which is a scoring system for assessing age and the presence of certain comorbidities to predict ten-year mortality of patients (Charlson et al., 1994).

However, to date, methods for assessing the severity of comorbidity have not found widely application in practical medicine in our country. The growing medical and social significance of comorbid pathology requires the study and development of new approaches to the diagnosis and treatment of patients with multiple diseases. Thus, a deep and versatile study of the structure and severity of comorbidity is of scientific and practical interest.

The purpose of the research is to study the structure and severity of comorbid pathology in hospitalized patients with arterial hypertension.

1. Material and methods

The descriptive study was carried out in the cardiology department of the State Budgetary Healthcare Institution "City Clinical Hospital No. 1". The study was conducted over 6 months from February to July 2018. The study included 140 patients (29% men and 71% women). The average age of the surveyed was 64.3 ± 12.0 years (61.5 ± 14.0 years for men and 65.4 ± 11.0 years for women). Inclusion criteria: age over 18 years of age, diagnoses of arterial hypertension established in the framework of standard clinical practice, hospitalization in the cardiology department, the presence of comorbidity and lack of exclusion criteria - patient disagreement to participate in the study, patient under 18 years of age, patient with mentally alienating diseases.

The research methods included a retrospective analysis of case histories and the formation of a database, including: complaints, life history, results of physical examination, laboratory and instrumental studies in accordance with current clinical guidelines and standards of management of patients with arterial hypertension (Chazova and Zhernakova, 2019), clinical diagnosis. The comorbidity index was calculated for all patients. When calculating it, the points corresponding to certain concomitant diseases were summed up, and 1 point was added for every 10 years of life when the patient was over 40 years of age. The ten-year prognosis of mortality according to the Charlson index is usually estimated as 12% in the absence of comorbidity, 26% - with 1-2 points, 52% - with 3-4 points, 85% - with a sum of more than 5 points (Comorbid pathology in clinical practice. Diagnostic and treatment algorithms, 2019; Comorbid pathology in clinical practice. Clinical guidelines, 2017). Along with this, the structure of concomitant diseases included in the clinical diagnosis was determined, and some risk factors for comorbidity were studied (burdened heredity, abdominal obesity, overweight, obesity, smoking).

Statistical analysis of the research results was carried out using Microsoft Excel 2019. The analysis results are presented as the mean and its standard deviation for continuous variables and as a percentage (in percent) for categorical variables. The critical level of significance when testing statistical hypotheses was taken as $p < 0.05$.

2. Research results

The average Charlson index was 3.97 ± 2.0 points overall (3.75 ± 2.3 points for men and 4.0 ± 1.9 points for women). The distribution of patients with arterial hypertension according

to the severity of comorbidity is presented in Table 1. In patients with arterial hypertension, moderate (55.6%) and severe (22%) degrees of comorbidity were more often observed. According to the methodology we used, the ten-year mortality forecast with 3-4 points on the Charlson index is 52%, and with a sum of more than 5 points - 85% (Comorbid pathology in clinical practice. Diagnostic and treatment algorithms, 2019; Comorbid pathology in clinical practice. Clinical guidelines, 2017; Chazova and Zhernakova, 2019).

Table 1. The severity of comorbid pathology in patients with arterial hypertension (according to Charlson M.E.)

The severity of the comorbidity	Charlson Index (points)	n (%)		
		Men	Women	Total
Mild	1-2	8 (22,2)	20 (20)	28 (20,6)
Average	3-5	20 (55,6)	58 (58)	78 (57,4)
Severe	6 and more	8 (22,2)	22 (22)	30 (22)

The patients with arterial hypertension included in our study had from one to seven comorbidities (Table 2). Only 7% of those surveyed had one concomitant disease, 28% had two, 14% had three, 23% had four, and 28% had five or more.

Table 2. The number of comorbidities in patients with arterial hypertension

The number of comorbidities	Total		Women		Men	
	n	%	n	%	n	%
1	10	7	6	6	4	10
2	38	28	24	24	14	35
3	20	14	16	16	4	10
4	32	23	26	26	6	15
5	16	11	12	12	4	10
6	10	7	6	6	4	10
7	14	10	10	10	4	10

The structure of concomitant pathology in patients with arterial hypertension according to the diseases included in the clinical diagnosis is shown in Figure 1. Among concomitant diseases, chronic cerebral ischemia (26.3%), rhythm and conduction disturbances (20%), bronchopulmonary diseases (14.8 %) and digestive (12.7%) systems. Concomitant bronchopulmonary pathology was represented by chronic obstructive

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pulmonary disease (COPD, 78.6%) and bronchial asthma (21.4%). More than half of the arrhythmias were attributed to atrial fibrillation (57.9%). Diseases of the digestive system were represented by chronic pancreatitis (33.3%), gastroesophageal reflux disease (25%), gastric ulcer (25%) and chronic cholecystitis (16.7%).

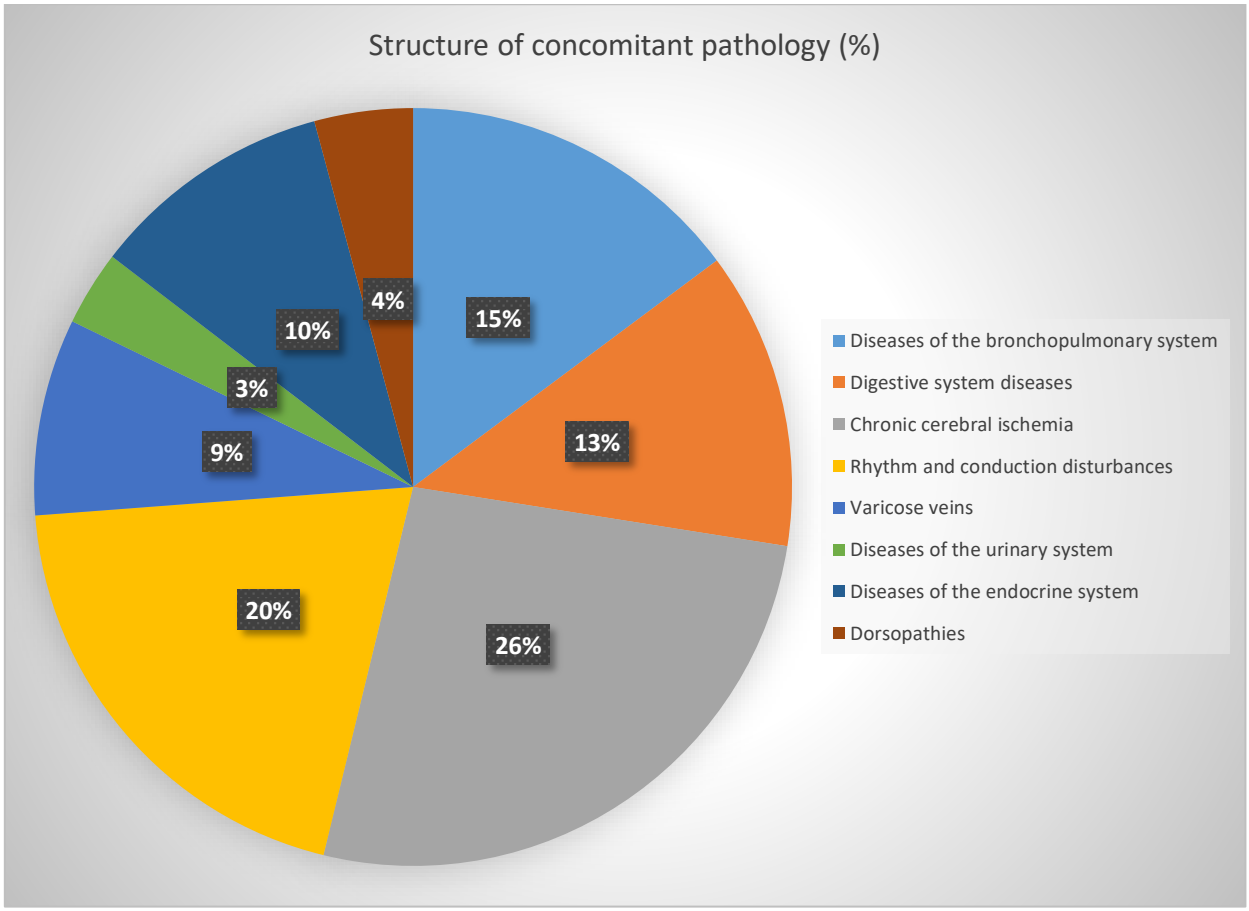

Figure 1. Structure of concomitant pathology

Analysis of risk factors for comorbidity showed that 33.3% of patients with arterial hypertension have a history of cardiovascular diseases, 7.3% continue to smoke after the development of the disease, 15.1% have smoked in the past, 77.6% have never did not smoke. Of practical interest is the high prevalence of overweight in 27% of patients (45% of men and 20% of women) and obesity in 62% of patients (55% of men and 65% of women) revealed by us in the analysis of the body mass index of patients with arterial hypertension. Abdominal obesity was detected in 87% of patients (80% of men and 89% of women). In 100% of men

and 85.4% of women, obesity was not diagnosed, which indicates that this risk factor for comorbidity was not taken into account.

Comparison of our results with the data of other works devoted to the study of cardiovascular comorbidity revealed a high prevalence of moderate and severe degrees of severity of comorbidity both in our study and in most others (Boytsov et al., 2014; Fesenko et al., 2012; Khasanova, 2020; Fortin et al., 2005; Ostroumova and Kochetkov, 2018). When comparing the structure of comorbid pathology, contradictory data were obtained, which is due to the different characteristics of the patients included in the study. At the same time, the features of the structure of the comorbid pathology of the patients examined by us, namely the prevalence of cerebrovascular diseases, COPD and diseases of the gastrointestinal tract, correspond to the results of most studies (Khasanova, 2020; Fortin et al., 2005; Ostroumova and Kochetkov, 2018; Chazova et al., 2013). In studies on the comorbidity of arterial hypertension and COPD, it has been demonstrated that every fourth patient with arterial hypertension at the age of 25 to 64 years has COPD (Ostroumova and Kochetkov, 2018; Chazova et al., 2013). In a recent study by Kim et al. (2017), 22.9% of people with arterial hypertension were diagnosed with COPD, and an independent relationship was established between these diseases (OR 1.71, 95% CI 1.37-2.13, p <0.0001) (Kim et al., 2017).

Conclusion

The severity of comorbidity, assessed using the Charlson index, was 3.97 ± 2.0 points. In 77.6% of patients with arterial hypertension, moderate and severe comorbidity was noted. Analysis of the frequency of concomitant pathology in patients with arterial hypertension revealed one concomitant disease in 7% of the examined, two in 28%, three in 14%, four in 23%, five or more in 28%. The structure of concomitant pathology was mainly represented by chronic cerebral ischemia (26.3%), rhythm and conduction disturbances (20%), diseases of the bronchopulmonary (14.8%) and digestive (12.7%) systems. Analysis of risk factors for comorbidity revealed heredity in 33.3% of patients with arterial hypertension burdened by cardiovascular diseases, smoking in 7.3%, overweight in 27%, obesity in 62%, abdominal obesity in 87%. Obesity was not diagnosed in all men and 85.4% of women, which indicates that this risk factor for comorbidity was not taken into account. The introduction into the practice of managing patients with arterial hypertension and comorbidity of scoring the

presence of concomitant diseases by calculating the Charlson comorbidity index will increase the accuracy of assessing the prediction of their ten-year survival. Identifying and correcting the main risk factors for comorbidity and concomitant pathology in patients with arterial hypertension can reduce disability and mortality.

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