

STUDY OF THE DEVELOPMENT LEVEL OF RISK FACTORS IN DANGEROUS TUMORS CAUSING LONELY ARTERIAL THROMBOEMBOLIA

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Abstract

Our study showed that VTE is one of the most serious complications in patients with oncopathology and determines the course of the disease, requires dynamic monitoring of hemodynamic parameters and timely administration of both pharmacological and mechanical means of preventing thrombosis. Preventing the development of VTE is one of the important steps to increase the survival of cancer patients

Keywords: *TELA, pathological changes of thromboembolism, pulmonary artery thromboembolism, venous thrombosis, pathomorphological changes of TELA in malignant tumors*

Introduction

The actuality of the problem. The practical significance of the problem of pulmonary artery thromboembolism is currently determined by the apparent increase in the frequency of pulmonary artery thromboembolism in various diseases, a significant increase in the frequency of postoperative and posttraumatic embolisms common during complex surgical interventions; moreover, deaths from pulmonary artery thromboembolism in highly developed countries are the third leading cause of death after ischemic heart disease and stroke (P.V. Ipatov et al., 2005).

To look for a possible source of the development of pulmonary artery thromboembolism, several risk factors for this disease have been evaluated and a number of additional studies have been conducted to identify dangerous areas where embolism may develop. Varicose veins of the legs in 27 (21.9%) patients, surgical procedures in 76 (59.4%) patients, history of pulmonary artery thromboembolism in 12 (9.3%) patients, injuries of various etiologies in 13 (10.1%) patients observed. Furthermore, when other cases are analyzed, most of them are independent risk factors, according to the literature. Among them, obesity was observed in 16 subjects (12.5%), UIC (post-infarction cardiosclerosis) - 22 (17.2%) and UIC-13 (10.1%) with arrhythmias. Particular attention is paid to chronic heart failure as a risk factor in the development of pulmonary artery thromboembolism. Chronic heart failure (CHF) was reported in 98 (76.6%) patients. In the analysis of etiological factors, taking into account gender and age, varicose veins of the legs are the most common risk factor in both groups.

Women underwent more surgeries than men. However, symptoms and injuries of ischemic heart disease (post-infarction cardiosclerosis) were more common in men ($n < 0.05$). In the group over 60 years of age, symptoms of systolic dysfunction and ischemic heart disease (ischemic heart disease (IHD) complicated by post-infarction cardiosclerosis and atrial fibrillation) were more common ($p < 0.05$). More than half of the patients (52.2%) were found to have multiple risk factors combined. Distribution by risk groups helps clinicians to make the correct diagnosis, make the right decisions in case of doubt obtained as a result of examinations (T.A. Batyraliev and co-authors, 2006; Vyortkin A.L. and co-authors, 2007).

Isolation of patients with venous diseases of the legs in the postoperative period, prolonged immobilization for various reasons in heart failure, obesity and some congenital coagulopathies allows not only to reduce the time of diagnosis, but also to take timely preventive measures.

According to the literature, the most typical symptoms of pulmonary artery thromboembolism are shortness of breath, tachypnoea, chest pain, tachycardia, cough, spitting up blood, and leg vein thrombosis. (Ipatov P.V. et al., 2006; Korovina N.P. et al., 2005). Shortness of breath is one of the most common symptoms. The results of research prove this fact. In patients with pulmonary artery

thromboembolism, this condition was reported in 89.5%. In rare cases, signs of myocardial infarction were detected: pleurisy pain - 49.9%, cough - 30.7%, fever - 11.9%, hemorrhage - 15%.

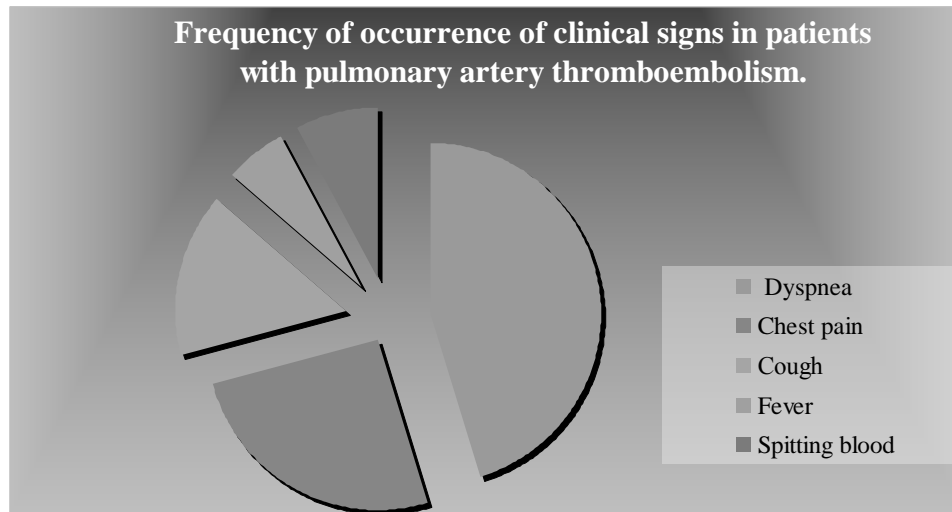


Figure 1 Frequency of occurrence of clinical signs in patients with pulmonary artery thromboembolism.

The aim of the study: To study the morphological changes and causes of death in malignant neoplasms complicated by pulmonary artery thromboembolism, to study the correlation between morphological changes and hemodynamic parameters.

Scientific novelty: The relationship between morphological changes and death resulting from pulmonary artery thromboembolism in malignant neoplasms has been studied based on the results of a study. For the first time, morphological and hemodynamic changes in the lungs, the interrelationships between the levels of ischemia are thoroughly analyzed, compared, studied on the basis of the relevant data obtained, and appropriate conclusions are drawn.

Methods and materials

Patients who died during treatment in the surgical and other treatment departments of the Republican Specialized Scientific-Practical Medical Center of Oncology and Radiology are widely used data obtained through retrospective study of autopsy statements and medical history data. A total of 128 selected patient data will be studied. The selected patients were mainly divided into 2 groups: 1. The main group included: autopsy and medical history data from 98 (76.6%) corpses who died of pulmonary artery thromboembolism; 2. In the control group: 30 (23.4%) corpses with other causes of death other than pulmonary artery thromboembolism were first analyzed in detail by autopsy and retrospective study of disease histories, and appropriate conclusions were drawn and studied.

Research studies are evaluated using autopsy data from corpses and data from medical histories. 76 (59.4%) women with an average age of 56.6 ± 3.5 years, 52 (40.6%) men. Of the 128 cases, 13 (10.1%) were under the age of 30-40, 33 (25.8%) were under the age of 41-50, 45 (35.1%) were under the age of 51-65, and 37 (29.0%) Over the age of 66", of which 58 (45.3%) were urban residents and 70 (54.7%) were rural residents. Statistically analyzed and studied.

Table 1. The results of the general analysis of the selected population in terms of age and living conditions in the population.

Age	30-40 age n-13	41-50 age n-33	51-65 age n-36	66 age and older n-46	Total number n-128
Average age living condition	35,7 ± 3,2	45,5 ± 3,6	57,8 ± 3,5	69,6 ± 3,5	56,6 ± 3,5
Urban	7(5,4%)	14(11,0%)	17(13,3%)	20(15,6%)	58(45,3%)
Rural	6(4,7%)	19(14,8%)	19(14,8%)	26(20,4%)	70(54,7%)
Total	13(10,1%)	33(25,8%)	36(28,1%)	46(36,0%)	128(100%)

Figure1. Frequency of total indicators as a percentage of the total studied population

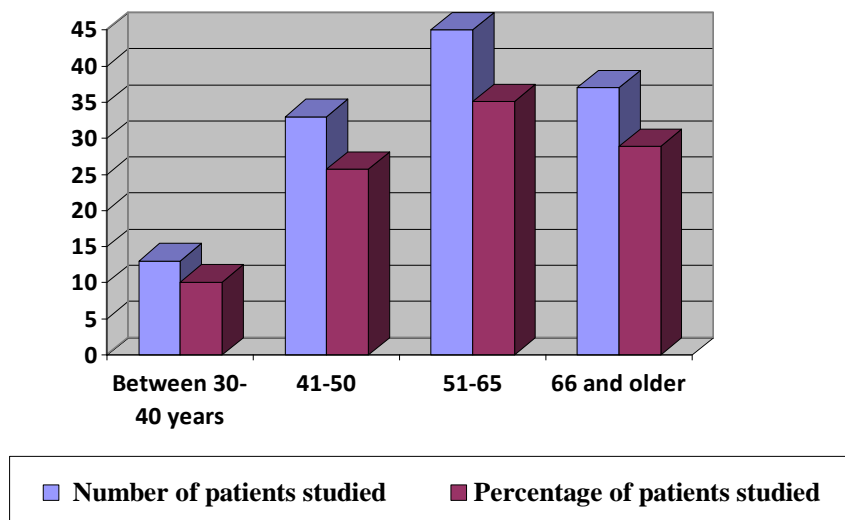
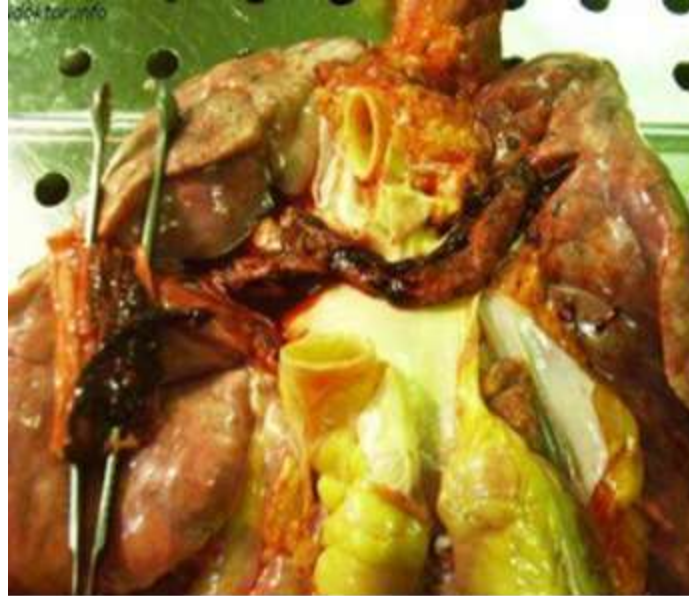


Figure 2. Frequency of total indicators as a percentage of the total studied population

To confirm the pathological diagnosis, thrombus samples were sent for microscopic examination in the histological laboratory. Injury of the pulmonary artery was assessed in accordance with the recommendations (Paltsev M.A., Kaktursky L.V., Zaratyants OV Pathological anatomy: Nats. Rukovodstvo. M.: GEOTAR - Media; 2011. 375-378).

Incisions are taken from the tissue obtained at autopsy on the same day. The materials were processed in accordance with the guidelines for the unification of methods of biopsy and histological and histochemical examination of surgical materials.

Ischemic infarctions are observed in the lungs. The main reason for this was found to be cases of vascular thromboembolism, and in rare cases, cases of thrombosis in vasculitis. The infarct is clearly demarcated from the periphery and is conical in shape, with the base facing the pleura. Fibrin deposits form in the pleura at the site of infarction (reactive pleurisy).



A thrombus or embolus is detected in the branches of the pulmonary arteries at the end of the cone facing the root of the lung. Dead lung tissue is dense, granular, dark red in color. Pulmonary ischemic infarction is a hemorrhagic coronary white infarction and usually develops against the background of venous stagnation, the occurrence of which is to some extent explained by the specificity of pulmonary vascular architecture, the presence of anastomoses between the pulmonary and bronchial arteries.

Of the 98 (main group) corpses who died of pulmonary artery thromboembolism as a complication of malignant neoplasms, 3 (3.9%) were 30-40 years old, 23 (17.1%) were 41-50 years old, and 30 (31.6%) were) were 51-65 years old, 42 (47.3%) were 66 years old and older, of which 42 (42.8%) were urban residents and 56 (57.2%) were rural residents. (Table 2)

Table 2. The prevalence of mortality from pulmonary artery thromboembolism among urban and rural populations.

Age Address	30-40age n-3	41-50 age n-23	51-65 age n-30	66 age and older n-42	Total number n-98
Urban	2(2,0%)	10(10,2%)	12(12,2%)	18(18,4%)	42(42,8%)
Rural	1(1,0%)	13(13,3%)	18(18,4%)	24(24,5%)	56(57,2%)
Total	3(3,0%)	23(23,5%)	30(30,6%)	42(42,9%)	98(100%)

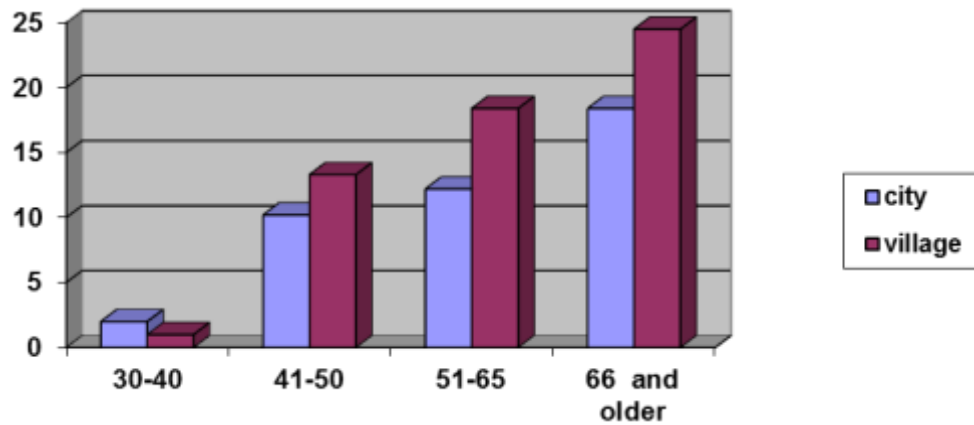


Figure 2. The frequency of deaths from pulmonary artery thromboembolism among urban and rural populations

Of the 30 (control group) corpses that died from other complications of malignant neoplasms, not from PATE, which developed as a complication in malignant neoplasms, 10 (7.8%) were 30-40 years old, 10 (7.8%) were 41-50 years old, 6 (4.7%) are 51-65 years old, 4 (3.1%) are 66 years old and older, of which 16 (53.3%) are urban and 14 (46.7%) are rural. detected. (Table 3)

Table 3. The prevalence of mortality rates among urban and rural populations from other complications of malignant neoplasms.

Age Address	30-40age n-10	41-50 age n-10	51-65 age n-6	66 age and older n-4	Total number n-30
Urban	5(16,7%)	4(13,3%)	5(16,7%)	2(6,7%)	16(53,3%)
Rural	5(16,7%)	6(20,0%)	1(3,3%)	2(6,7%)	14(46,7%)
Total	10(33,3%)	10(33,3%)	6(20,0%)	4(13,4%)	30(100%)

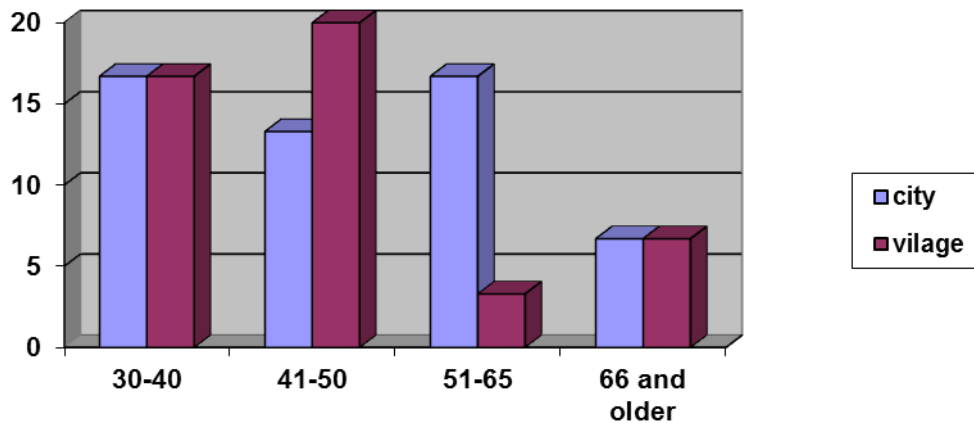


Figure 3. The frequency of encounters between urban and rural populations in mortality rates from other complications of malignant neoplasms

According to the results of autopsy reports from the Department of Pathomorphology of the Republican Specialized Scientific-Practical Medical Center of Oncology and Radiology, the results of the study of corpses in patients with pulmonary artery thromboembolism, the main cause of death, were as follows:

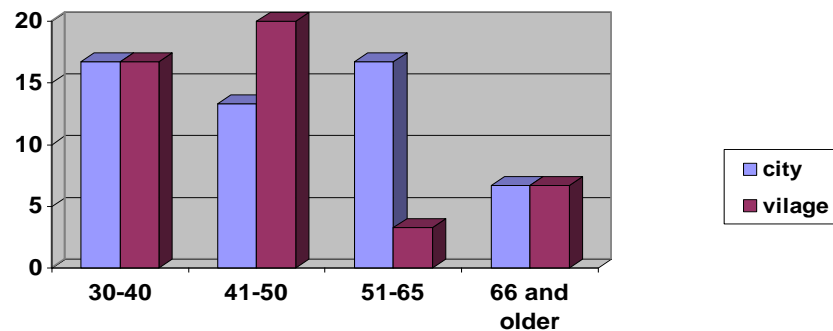


Figure 4. The frequency of encounters between urban and rural populations in mortality rates from other complications of malignant neoplasms

According to the results of autopsy reports from the Department of Pathomorphology of the Republican Specialized Scientific-Practical Medical Center of Oncology and Radiology, the results of the study of corpses in patients with pulmonary artery thromboembolism, the main cause of death, were as follows:

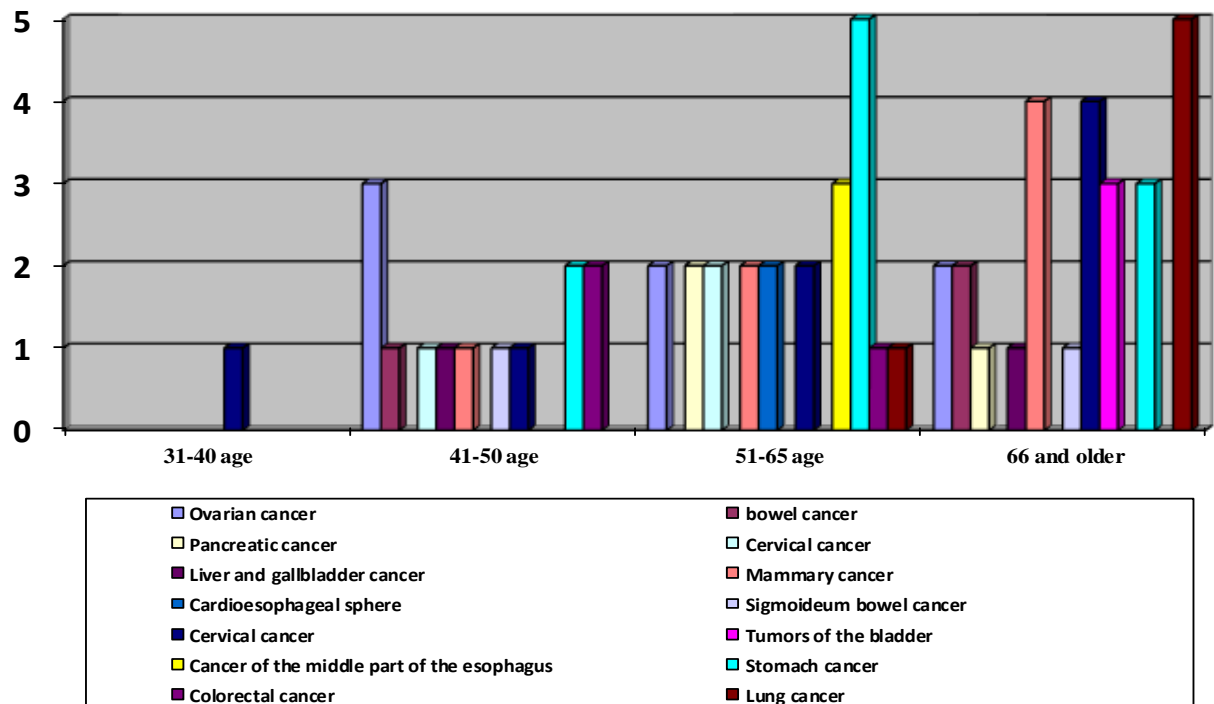


Figure 5. Frequency of deaths from pulmonary artery thromboembolism in the population depending on age and type of malignant tumor

Analyzing the data obtained, after surgery, in most cases, deaths from colorectal, gastric, lung, liver, uterine, ovarian, and bladder cancers were observed in people over 51 years of age.

Among the cancers that pose a risk of developing direct pulmonary artery thromboembolism, the most common are adenocarcinomas, squamous cell carcinomas, and variable cell tumors. These tumors are most often observed in the lungs, stomach, rectum, uterus, anal canals. The most common causes of pulmonary artery thromboembolism after cancer in these organs are their anatomical and histological features, arterial and venous angioarchitectonics, postoperative immobilization conditions, inactivity, as well as changes in blood rheological properties in the above-mentioned cancers. Disorders of the anticoagulant system, including changes in the formation of vitamin K, Ca ions from the factors involved in blood clotting, especially the liver. The disease leads to chronic hepatitis, obesity of II-III degree.

Autopsy examination revealed the presence of a thrombus in one of the pulmonary arteries, often on the right side, in 27.2% (35) corpses, regardless of gender and age. In 78.5% (77) corpses, thrombi were detected in the small and segmental branches of the pulmonary artery. In 73.5% (72) corpses, simultaneous thrombus occlusion of the arteries of both lungs was noted; In 16.3% (16 corpses) - only cases of occlusion of the small branches of the right pulmonary artery were detected, in 10.2 (10 corpses) cases - only cases of occlusion of the small branches of the left pulmonary artery were detected.

In each follow-up of pulmonary artery thromboembolism, the task is to determine its source. However, the source of pulmonary embolism was not identified at autopsy in 7.9% of patients (10 corpses).

According to the data obtained at the autopsy, from 2001 to 2018, 98 deaths from pulmonary artery thromboembolism were observed, regardless of gender, and it was found that thromboembolism was located in different parts of the pulmonary arteries.

Pulmonary artery thromboembolism has been observed more frequently in the postoperative period for malignant neoplasms of the stomach and rectum, as well as liver and lung cancers. Pulmonary artery thromboembolism resulting from blood clot embolism formed in the right ventricular cavity at varying degrees of heart failure was detected in 16.3% (16 corpses).

Among the causes of pulmonary artery thromboembolism in 6.1% of cases are hematologic paraneoplastic processes in malignant tumors of various localizations.

Table 5. Distribution of hematologic paraneoplastic processes in various localized risk factors.

№	Gemotokrit indicators Risk factors	ПТИ	Recovery time (minut)	Fibrinogen A (g/l)	Fibrinogen B	Thrombotest	Hematocrit
1	Chronic hepatitis	86-95%	70-78	3,15-4,5	(-)	V	36%
2	Obesity	84-95%	72-75	3,20-4,5	(-)	V	34-36%
3	Chronic bronchitis	86-108%	68-72	3,6-6,3	(+)	VI	35%
4	Diabetes mellitus	95-98%	70-72	4,5-4,8	(-)	IV	31%
5	Varicose expansion of the leg v	86-90%	71-76	3,15-3,26	(-)	IV	43%
6	Coronary heart disease	95-98%	75-78	3,6-4,5	(-)	VI	42%
7	UKI	95-90%	75-78	3,5-4,5	(-)	VI	42%
8	Arterial hypertension	95-108%	70-78	3,2-4,5	(-)	V	36%
9	Atherosclerosis	86-98%	75-78	3,6-4,5	(-)	VI	43%

Autopsy and retrospective analysis of the majority of patients helped identify risk factors for thromboembolic complications in 106 (82.6%) corpses. More than half of the patients were found to have multiple risk factors in 72 (73.5%) corpses.

Including chronic hepatitis 18 (18.3%); arterial hypertension 8 (8.2%); diabetes mellitus 5 (5.1%); obesity 9 (9.2%); chronic bronchitis 6 (6.1%); varicose veins of the legs 7 (7.1%); coronary cardiosclerosis 9 (9.2%); ischemic heart disease 4 (4.1%); atherosclerosis was 6 (6.1%). These data are reflected in the table below

Table 6. Distribution of advanced deaths by age and frequency of occurrence according to the cause of death, depending on the identified risk factors

		The main cause of death PATE (n - 98)	Deaths from other causes (n-30)
Age	Average (SD)	57,8 ± 3,5	56,6 ± 3,5
30-40 age	n (%)	3(3,0%)	10(33,3%)
41-50 age	n (%)	23(23,5%)	10(33,3%)
51-65 age	n (%)	30 (30,6%)	6(20,0%)
66 age and older	n (%)	42 (42,9%)	4(13,4%)
Chronic hepatitis	n (%)	18 (18,3%)	7(23,3%)

Arterial hypertension	n (%)	8 (8,2%)	5(16,7%)
Diabetes mellitus	n (%)	5 (5,1%)	3(10,0%)
Obesity	n (%)	9 (9,2%)	5(16,7%)
Chronic bronchitis	n (%)	6 (6,1%)	2(6,7%)
Varicose expansion of the leg veins	n (%)	7 (7,1%)	2(6,7%)
Coronary heart disease	n (%)	9 (9,2%)	5(16,7) %)
Ischemic heart disease	(%)	4 (4,1%)	5(16,7%)
Atherosclerosis	(%)	6 (6,1%)	4(13,3%)

The study found that as the risk of developing pulmonary artery thromboembolism increased with age, the analysis of autopsy materials from 98 corpses who died of PATE showed that risk factors were found to be different in 72 (73.5%) corpses.

CONCLUSION

Thus, autopsy and retrospective analysis of the corpses revealed that more than half of the patients had multiple risk factors in 72 (73.5%) corpses. Including chronic hepatitis 18 (18.3%); arterial hypertension 8 (8.2%); diabetes mellitus 5 (5.1%); obesity 9 (9.2%); chronic bronchitis 6 (6.1%); varicose veins of the legs 7 (7.1%); coronary cardiosclerosis 9 (9.2%); ischemic heart disease 4 (4.1%); atherosclerosis was 6 (6.1%) and a combination of two or more risk factors was found.

Other concomitant diseases that occur in tumors with high risk factors; it is necessary to pay more attention to hepatitis, obesity, arterial hypertension, coronary heart disease, varicose veins, chronic bronchitis, diabetes, atherosclerosis, ischemic heart disease.

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