

Saharyuk A.P., Grigorenko A.A., Tarasyuk E.S., Shimko V.V., Verevetinov A.N.

Clinical and Pathologic Analysis of Venous Thromboembolic Complications in the Amur region

ABSTRACT

The study of mortality rate due to venous thromboembolic disorders (VTED) for 2009-2011 was conducted based on autopsy studies. The plan of the survey: age, gender, time of the year, disease, date of death, a source of primary thrombus formation, changes in lung tissue, a level of pulmonary venous obstruction by embologenic masses. The mean age of VTED deceased people was 58 years. The women were noted more frequently than the men. The VTED cases occurred mostly in winter months. The pathology structure treated: a postoperative period after multidisciplinary surgical interventions, of strokes, multidisciplinary therapeutic pathology. The venous sinuses of lower leg were one of the common causes of primary thrombi formation.

Keywords: venous thrombosis, venous thromboembolic disorders (VTED), pulmonary embolism (PE)

INTRODUCTION

Pulmonary embolism (PE) is one of three causes of sudden death along with stroke and heart attack. PE is the reason of death 0.1% of the Earth population, as a result of pulmonary embolism mortality rate is much higher than road traffic injuries, lung cancer and pneumonia, as well as causes 10-12% of all deaths in hospital [1,10]. In the hospital pulmonary embolism annually observed in 15 - 20 out of 1,000 treated patients. Often it complicated by injuries, post-operative, post-partum period [4, 5, 6]. The number of VTEC is constantly growing. The general cause of pulmonary embolism is thrombosis of the veins lower limbs. Deep vein thrombosis of the lower limbs - a common disease, the frequency of it is 100 - 160 cases per 100 000 population, with the frequency of fatal thromboembolism 60 cases per 100 000 population. In the United States fixed 8-20 million Cases of deep vein thrombosis. Venous thrombosis often have not symptoms, as are the nature of parietal character, does not violate the outflow of blood through the vein. So asymptomatic thrombosis, identify by radiometry with fibrinogen labeled with ^{125}I , and venography diagnosed with myocardial infarction in 5 - 20% of patients, brain stroke - 60 - 70%, diseases of internal organs - in 10 - 15% after orthopedic surgery - 50 - 75% of prostatectomy - 40% in the abdominal and thoracic surgery - a 29 - 30% of patients. Mortality

of thromboembolic complications varies between 2.1 and 6.2%. According to the American Medical Association, each year in the United States fixed 650 thousand Cases of pulmonary embolism, 356 of which end in death of the patient. 10% of patients with pulmonary embolism develops very fast and leads to death within hours after the first symptoms [2]. Most of these fatal cases was diagnose only at autopsy. [8] Early treatment of pulmonary embolism could have a very high effect. So, more than 90% of patients, who died of pulmonary embolism, are those who was not correct diagnosed, and not received right treatment [7,9]. Statistical analysis of patients with VTEC not so good, because the construction of VTEC diagnosis of the patient not pass on the statistical codes causes of death. This investigation dedicated to Actualization of VTEC problems.

The purpose of the investigation. Examine the role of venous thromboembolic events (VTEC) in the structure of sudden death. Create ways to prevent the development of VTEC and massive pulmonary embolism in hospitalized patients Amur region.

Objectives of the Investigation:

1. To determine the lethality of VTEC in Amur region per 1000 population per year.
2. To characterize the sex and age parameters of a patient who died of pulmonary embolism.
3. Analyze the seasonality and frequency of VTEC, depending on the time of year.
4. Identify the basic pathology trigger the development of venous thromboembolic complications.
5. Set the timing of death from VTEC since the beginning of hospitalization or venous thrombosis.
6. Examine the primary sources of thrombosis VTEC.
7. Determine the character of morphological changes in the lung tissue with VTEC.
8. SET level of thromboembolic venous obstruction with pulmonary embolism.

Materials and methods

Investigated the mortality of VTEC in three years on the results of postmortem explorations. Complied with ethical standards postmortem explorations, performed statistical processing of material. Patients, who died suddenly in Amur region and city hospitals in Blagoveshchensk was been investigated. Plan of exploration: age, gender, time of the year, disease, date of death, the primary source of thrombus formation, changes in lung tissue, the level of pulmonary venous obstruction embologenic masses.

The results of the study. For three years in Pathological Anatomy Department of the Amur Region Clinical Hospital made 1764 explorations of patients who died in ARCH and Blagoveshchensk city hospital. 96 (5.4%) patients the cause of death were venous thromboembolism. The average age of patients who died of VTEC was 58 years old. 56 women (58.3%), 40 men (41.7%). Most often VTEC occurred in the winter 28 (29.2%), in the summer of 24 (25%), in the autumn of 23 (24%), in the spring of 21 (21.9%). Pathology about which patients received inpatient treatment: postoperative period after multidisciplinary surgical interventions 30 (31%), strokes - 31 (32%), 35 (37%) - multidisciplinary therapeutic pathology. Thromboembolism of 18 (20%) patients developed until 24 hours after admission, in 23 (25%) after 2-7 days, in 55 (57%) more than 7 days. The primary source of thrombus in 50 (52%) were the venous sinuses of tibia, femoral-popliteal-iliac segments and inferior vena cava - 21 (22%), pulmonary heart 10 (10%), and the source was not detected in 19 (16%). Nonspecific changes as result of obstruction of pulmonary channel were found in 48 (50%) patients. Thromboembolism pulmonary trunk and pulmonary arteries were registered in 69 (72%) patients. The cause of death in 27 (28%) was smaller thromboembolism of segmental arteries.

Discussion of the results. Right statistics on morbidity and mortality from PE is unknown, but about the prevalence of PE is 0.5 to 2 per thousand per year [1, 2]. According to our information, pulmonary embolism as the cause of death was 5.4% of the total number of postmortem explorations that is 0.8 per 1000 population per year in Amur region. The number of non-fatal asymptomatic thromboembolism of pulmonary channel is not yet possible to determine.

With age, the prevalence of VTEC is growing exponentially: from 0.05 per 1,000 children under the age of 15 years, up to 6 per 1,000 in the age group over 80 years. Increased frequency of pulmonary embolism with age can be explained by accumulation of comorbidities, which are the factors of risk. The average age of patients, who died of pulmonary embolism in the Amur region, was 58 years old.

Receiving oral contraceptives and hormonal therapy in women postmenopausal, increases the frequency of VTEC, which is consistent with our information. 56 (58.3%) of women and 40 (41.7%) of men.

Most often VTEC occurred in the winter months 28 (29.2%), in the summer of 24 (25%), in the autumn of 23 (24%), in the spring of 21 (21.9%), which is consistent with medical literature information, the number of VTEC in the winter 10-15% higher, due to a decrease in human motor activity during the winter months.

Structure pathology about which patients received inpatient treatment: postoperative period after multidisciplinary surgical interventions 30 (31%), Strokes - 31 (32%), 35 (37%) - multidisciplinary therapeutic pathology consistent with medical literature information and requires strict reference of Protocol prevention in these patients. Thromboembolism of 18 (20%) patients developed until 24hours after admission, 23 (25%) after 2-7 days, 55 (57%) more than 7 days. The time factor since the primary thrombotic events, of thromboembolism small, lobar and segmental arteries, allows provide preventive care to 80% of patients and prevent the development of a massive pulmonary embolism. The primary source of thrombus in 50 (52%) were the venous sinuses tibia, femoral-popliteal-iliac segments and inferior vena Vienna - 21 (22%), pulmonary heart 10 (10%), and the source was not detected in 19 (16%). Nonspecific changes as result of pulmonary infarction were found in 48 (50%) patients, which allows diagnosing embologenic venous thrombosis in these patients before develop of massive PE. According to various authors, embolization of the trunk and main branches of the pulmonary artery occurs in 50% of the lobar and segmental - 22%, small branches - in 30% of cases. In our investigation embolism of trunk and main branches was observed in 72% (69 patients), small, and segmental, lobar of 28% (27 patients). This allows prevents the development of massive PE of 2/3 suddenly death of patients [3].

Based on the Investigation results, Create methods of preventing the development of VTEC and massive pulmonary embolism of hospitalized patients in Amur Region. Innovations (№ 1880 from 06.08.2014 "Curation patients with thromboembolism lobar, segmental and small branches of the pulmonary artery»; № 1878 from 06.08.2014 "The organization of the prevention and treatment venous thromboembolic complications in the hospital»; № 1881 "The treatment of embologenic venous thrombosis »; № 1882 from 06.08.2014 "Screening ultrasound diagnosis asymptomatic venous thrombosis in patients with fractures of the femoral neck, the long bones of the lower extremities"; № 1879 from 06/08/2014 "Initiating the implementation of informed consent for the prevention of venous thromboembolic events (VTEC) in hospital»; № 1885 from 08.06.2014 "Mortality from venous thromboembolic complications in the Amur Region»; № 1888 from 07.08.2014 "The role of thrombosis and pulmonary embolism sources in patients with venous thromboembolic complications "; № 1887 from 07.08.2014 "Curation of postoperative surgical patients"; «№ 1889 from 08.07.2014" Surgical prophylaxis massive pulmonary thromboembolism in orthopedical patients"; № 1884 from 08.06.2014 "nonspecific changes of lung tissue as a result of lobar, segmental and thromboembolism of small branches of the pulmonary arteries"; № 1883 "Terms of mortality from venous thromboembolic complications in



the hospital"; №1886 from 07.08.2014 "Search asymptomatic venous thrombosis in the postoperative period"; № 1890 from 07.08.2014 "The structure of mortality from venous thromboembolic complications in the hospital"), which are entered in the work of center for cardiac surgery State Educational Institution of Higher Professional Education Amur State Medical Academy of the Ministry of Health and Social Development of the Russian Federation; Autonomous public health agencies of the Amur region Amur Regional Children's Hospital; State Organization of the Amur Region City Hospital; State Organization of the Amur region Amur Regional Oncology Center

CONCLUSION

1. Mortality from pulmonary embolism in the Amur region is 0.8 per 1000 population per year.
2. The average age of patients who died of pulmonary embolism - 58 years.
3. Gender were women 58% and 42%, respectively.
4. Every third patient died in the wintertime, every fourth summer and fall.
5. One-third of patients died in the postoperative period, the second third with strokes, and 30% were been hospitalized for severe multidisciplinary therapeutic pathology.
6. About 20% died of massive pulmonary embolism in the first days after receipt of 25% died in 2-7 days, 57% more than 7 days to several months.
7. The primary source of thrombosis in 52% of the venous sinuses were the tibia, femoral-popliteal-iliac segment and inferior vena Vienna - 22%, right heart 10%, was not detected in 16%.
8. Non-specific changes as result of obstruction of pulmonary channel found in every second patient.
9. 2/3 patients had an acute occlusion of the pulmonary trunk and main branches of the pulmonary artery.

REFERENCES

1. Mishalov V.G. Pavlovskiy P.M. Nikonenko A.S. [i dr.]. Lechebnaya taktika bolnyih s tromboemboliey legochnoy arterii [Treatment tactics of patients with pulmonary embolism]: Shpitalna hirurgiya [Hospital surgery], 2000, № 1, PP. 83-85.
2. Yakovlev V.B. Tromboemboliya legochnoy arterii v mnogoprofilnom klinicheskom statsionare (rasprostranennost, diagnostika, lechenie, organizatsiya spetsializirovannoy meditsinskoy pomoschi [Pulmonary embolism in a multidisciplinary clinical hospital



(prevalence, diagnosis, treatment, organization of specialized medical care]: avtoref. dis.... dokt. med. nauk [Author. diss.... DM]. Moscow, 1995, 47 p.

3. Yakovlev V.B. Tromboemboliya legochnoy arterii. Diagnostika, lechenie, profilaktika [Pulmonary embolism. Diagnosis, treatment, prevention]: Rus. med. zhurn. [Russian medical journal], 1998, № 1, PP. 1036-1047.

4. Bergqvist D. Comerota A. Nicolaides A. Lindblad B. Incidence of venous thromboembolism: Scurr. Ved-Orion Publishing Company-London, Los Angeles, Nicosia, 1994, PP. 163-167.

5. Bounameaux H. Perrier A. Wells P.S. Clinical and laboratory diagnosis of deep vein thrombosis: new cost-effective strategies: Seminars in vascular Medicine, 2001, №. 1, PP. 39-43.

6. Goldhaber S.Z. Echocardiography in the Management of pulmonary embolism: Ann intern Med., 2002, Vol. 136, PP. 691-700.

7. Kierkegaard A. Incidence and diagnosis of deep vein thrombosis associated with pregnancy: Acta obstetr. gynecol. Scand., 1983, Vol. 62, PP. 239-243.

8. Stein P.H. Athanasoulis C. Alavi A. [et al.] Complication and validity of pulmonary angiography in acute pulmonary embolism: Circulation, 1992, Vol. 85, PP. 462-468.

9. Rich S. Pulmonary embolism: Cardiology in tables and diagrams / under. edited by M. Fried, C. Grines. - M.: Practice, 1996, PP. 538-548.

10. Geerts W.H. Code K.I. Singer S. [et al.]. Thromboprophylaxis after radical prostatectomy: a survey of Canadian urologists: Thromb. Haemost., 1997, Vol. 77, P. 124.