



Characterization of Patients Admitted to Adult Intensive Care for Venous Thromboembolic Disease and Pulmonary Thromboembolism

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Abstract

Introduction: Deep vein thrombosis is a common disease that can be subclinical or present with a sharper picture of edema and other phlogistic signs, while pulmonary thromboembolism is one of the most important problems in cardiopulmonary pathology and generally in medicine.

Objectives: To characterize pregnant and postpartum with venous thrombotic diseases and pulmonary thromboembolism, entered in the Adult Intensive Care Unit of the General Teaching Hospital "Octavio de la Concepción y la Pedraja" in Baracoa, Guantánamo, Cuba.

Methods: Descriptive, prospective and longitudinal study, which included 47 patients who were performed full physical examination, complementary studies useful for diagnosis and the APACHE II index was applied.

Results: Pregnant women with venous thromboembolic disease predominated and ages between 31 and 40 years. Despite all the uncoagulated patients, the doses used were those considered as the average dose. The stay oscillated between 4 and 5 days in both groups, despite the death of two postpartum from pulmonary thromboembolism and taking into account the predictive rate of severity obtained in each case, achieving that 95.7% would graduate alive.

Conclusions: With an early follow-up strategy in pregnant and at-risk postpartum, the diagnosis of serious and incipient forms of venous thrombotic disease and pulmonary thromboembolism can be diagnosed and thus improve survival in these severe cases with prevention measures that exist at the national and protocolized level at the same time.

Keywords: Pregnancy; Postpartum; Venous Thromboembolic Disease; Pulmonary Thromboembolism; Intensive Care

Introduction

Deep vein thrombosis is a common disease that can be subclinical or present with a sharper picture of edema and other phlogistic signs, a risk of pulmonary embolism. Thromboembolism (PTE) is one of the most important problems in cardiopulmonary pathology and in general in medicine. It has a high prevalence and its diagnosis often escapes the doctor being associated with multiple pathological states essentially in the severe patient [1-3].

TEP is a potentially lethal emergency, considered the third most common cardiovascular disease, has an annual incidence of (4.5) per 1,000 people [4-6]. TEP is defined as the total or partial occlusion of lung circulation, caused by a blood clot (but also by air, tissues, or fat) from systemic venous circulation, including the right chambers, and which, depending on its magnitude, may or may not cause symptoms (7.8) 4.5; including, but not least, precordial pain, hemoptysis, and dyspnoea. Because clinical presentation tends to be non-specific, it is estimated that more than half of them are not diagnosed in life and are often discovered in necropsy; therefore, studies for diagnosis play a crucial role in it (8.9).

More than 90% of pulmonary embolisms originate in thrombus in the deep veins of the lower extremities, thus having a venous origin even though other venous sectors are known to be the cause of this entity such as: uterine, prostate, renal, iliac veins, as well as upper limbs and right chambers of the heart. Other causes include air, amniotic fluid, tumors, fat and others.

Both entities are common as a complication of post-surgical states, hip and knee interventions, and also occur frequently around pregnancy, childbirth, postpartum or post-abortion as has been recognized by several researchers on the subject [7-10]. Therefore, taking into account the high risk to which pregnant patients are exposed, postpartum factors and even more so those in which a group of predisposing factors coincide was carried out research with the aim of characterizing pregnant and puerperas with venous thrombotic diseases and pulmonary thromboembolism, entered in the Intensive Adult Care Unit (UCIA) of the General Teaching Hospital "Octavio de la Concepción y la Pedraja", Baracoa, Guantanamo province, Cuba.

Material and Methods

A descriptive, prospective longitudinal cutting study was conducted from January 2015 to December 2020 at the General Teach-

ing Hospital "Octavio de la Concepción y la Pedraja" in Baracoa, Guantanamo, Cuba. The study universe consisted of 204 obstetric patients admitted to the Adult Intensive Care Unit, a sample of 47 patients of whom were pregnant and 31 puerperas were taken, with the diagnosis of: venous thromboembolic disease and pulmonary thromboembolism.

For the collection of the data of this research we create a model of surveys that collects the following variables: age groups: from 15 to 20 years, from 21 to 35 years and from 36 years onwards; type of venous thromboembolic disease, obstetric cause, type of diagnosis and dose of anticoagulation with heparin (high dose 20 and more units x Kg. of Weight x hour; average dose between 15 and 18 Units x Kg. x hour; and low dose less than 15 units x Kg. x Hour), state to egress: alive and deceased.

Personal pathological history was taken into account such as: high blood pressure, diabetes mellitus, a history of preeclampsia/eclampsia in previous pregnancies, as well as complications in previous pregnancies related to preeclampsia, deep vein thrombosis. Number of pregnancies, type of eutoxic and dysphoric delivery; abortions, cessations, ectopic pregnancy. The presence of any of them was considered a risk variable.

The assessment of the patient severity forecast was performed by applying the APACHE II (Acute Physiology and Chronic Health Evaluation) method, which evaluates the value obtained by awarding points to various parameters analyzed within 24 hours of ICU admission [11]. Its interpretation is as follows: With 24 points or fewer points the forecast is better than when it exceeds 24 points. The primary data was obtained from patients' clinical records. A database was created in Microsoft Access 2007. With the help of SPSS 21 and EPIDAT 3.1 statistical software, the arithmetic mean was used as a central trend measure, as a dispersion measure, the standard or standard deviation, and the ratio as a summary measure of qualitative data. The data were analyzed, interpreted, tabulated and presented according to the standards established for each type of operational variable used.

Prior to the investigation, informed consent was obtained from patients or their families to participate in the research, where they were provided with a detailed explanation of the purposes of the study. This research was approved by the scientific committee of the institution.

Results

In table 1, the largest number of patients studied was in the 31 to 40 age group as risky to obstetric patients, although even one of the patients was over 40 years old. In these patients the previous involvement of chronic venous insufficiency was common and was present in 8 pregnant and 19 posterperas for 50% and 61.3% respectively, this being a major cause of predisposition to venous thromboembolic disease, as well as age itself, which represents an element of obstetric and general risk for venous thromboembolic disease. Only 5 patients performed PTE, 12.4% belonged to the group of posterperas for 21 to 35 years being a serious and frequent pathology in clinical practice, as well as life-threatening of interest also resulted as a result of research that in 2 patients the type of venous thrombosis was of the type of ascending thrombosis of internal safena.

Age groups (year)	Pregnant				Puerpers			
	ETV		TEP		ETV		TEP	
	n	%	n	%	n	%	n	%
15 - 20	5	31,2	---	---	5	16,1	---	---
21 - 35	8	50	1	6,3	19	61,3	4	12,9
36 and more	2	12,5	---	---	3	9,7	---	---
Total	15	93,7	1	6,3	27	87,1	4	12,9

Table 1: Venous thromboembolic disease in severe maternal disease according to age. General teaching hospital. Baracoa-Guantanamo. Cuba. Year: 2015-2020.

Source: Clinical Stories.

Regarding obstetric causes, the highest percent were represented by patients with dystopian delivery or abnormal and possible implementation situations. Followed by the previous cesareans with 20 and 18.5% both situations in which a hairy manipulation occurs, thromboembolic processes become more frequent.

Obstetric Cause	Pregnant		Puerpers	
	n	%	n	%
Pregnancy	5	33,3	9	33,3
Postpartum eutoxic	2	13,3	5	18,5
Dystopian postpartum	3	20,0	7	26,0
Posaborto	1	6,7	1	3,7
Caesarean section	3	20,0	5	18,5
Ectopic pregnancy	1	6,7	--	---
Total	15	100	27	100

Table 2: Obstetric cause of venous thromboembolic disease.

Diagnosis in all cases was made through the clinic, in 25 patients representing 59.5% the diagnosis was confirmed by Eco- Doppler Color Venoso in all venous thrombosis and in 2 patients with pulmonary thromboembolism this diagnosis was made that showed that one of the patients had ultrasound signs of venous thrombosis in lower limbs, in the other 3 patients with PSD was diagnosed by 2D ultrasound. Computed Axial Angiotomography was not used at any time for diagnosis.

The doses of anticoagulation with heparin were used as set out in table 3, despite all being uncouglated, the doses used were those that we consider to be average doses, in 78.7% of patients in the same way for each other entity, in none of the cases were high doses used even in those who had pulmonary thromboembolism.

Table 4 shows a higher percentage between days 4 and 5 with venous thromboembolic disease and pulmonary thromboembolism, with 37.5% and 51.6% respectively. In total, 13 patients were admitted less than 72 hours; 23 patients needed between 4 and 5 days of admission and in 10 patients the stay lasted between 6 and 9 days maximum. As for the state of egress, all pregnant women (100%) they graduated alive from the UCIA at the service of Peri-

Treatment	Pregnant			Puerpers			Total
	High dose	Average dose	Low dose	High dose	Average dose	Low dose	
	n	n	n	n	n	n	
Pulmonary thromboembolism	--	1	--	--	2	2	5
Venous thrombosis	--	15	--	--	19	8	42
Total	--	16 (34,0%)	--	--	21 (44,7%)	10 (21,3%)	47 (100%)

Table 3: Anticoagulant treatment dosage with heparin.

nathology, while of 31 postpercent patients graduated alive in the service of Perinatology 29, representing 93.6%, and two for 3.2% died, it is valid to clarify that one of these deceased had less than 12 hours of evolution in the intensive care service.

Number of days	Pregnant				Puerpers			
	Living		Deceased		Living		Deceased	
	n	%	n	%	n	%	n	%
≤ 3 days	6	37,5	--	--	7	22,6	1	3,2
4-5 days	6	37,5	--	--	16	51,6	1	3,2
6-9 days	4	25,0	--	--	6	19,4		
Total	16	100	--	--	29	93,6	2	6,4

Table 4: Stay in adult intensive care unit according to study groups and state of egress.

In the relationship between predictive severity and APACHE II classification - according to study groups, an average score of 15.22 was presented in the group of patients with TV less than or equal to 24 points; however, the group of PTE patients with more than 24 points achieved an average score of 29.45. Taking into account the predictive rate of severity obtained in each case, 95.7% were made alive (Table 4).

APACHE II	Venous thromboembolic disease		Pulmonary thromboembolism	
	Media	Of	Media	Of
≤24 points	15,22	7,21	11,25	5,92
>24 points	28,43	1,58	29,45	1,62

Table 5: Relationship between predictive severity with APACHE II classification according to study groups.

Discussion

In this research, postperas with thromboembolic diseases, between the ages of 21 and 35, had an important difference when compared to the subgroup of pregnant women with this type of pathology, which is not similar to the study of Rojas Sánchez [12], which suggests that obstetric patients over the age of 35 are at higher risk of developing a TEP. Like the same way Paz Balbina raises [13]. The disorder should be suspected whenever there are risk factors (obesity, age over 35 years, varicose veins, multiple emba-reasons, dehydration, previous history of venous thrombosis, family history of thrombosis and family thrombophilia disorders), the onset of unins apparent pulmonary embolism, the presence of

edema in lower limbs being more frequent on the left side, changes in skin coloration ranging from paleness (Flegmasia Alba Dolens), cyanosis (Flegmasia cerúlea) to in very severe cases reaching flytes and necrosis, temperature changes from hot to cold and the appearance of important signs that can be obtained to the scan, the most important are those described below.

The incidence of Venous Thromboembolism (VTE) in pregnancy increases by approximately 4 to 50 times more compared to non-pregnant women, due to changes that pregnancy itself produces on clotting factors and fibrinolytic systems. VTE is estimated to complicate between 1 and 1.5 per 1,000 pregnancies. During pregnancy maternal hemostase is characterized by being a prothrombotic state in which changes occur in the hemostatic system, with the aim of preventing possible bleeding during the early stages of pregnancy, childbirth and postpartum. However, adapting the maternal hemostatic system to pregnancy predisposes the mother to an increased risk of VTE [14].

During pregnancy and childbirth various factors could contribute to increased risk of thrombosis formation, there are factors that predispose to TV such as: increased maternal age, obesity, cesarean delivery, immobilization by threat of abortion, threat of pre-term birth, dehydration from hyperemesis, heart disease, history of thrombosis and thrombophilia [15].

Naples [16] argues that in the last 2 decades there have been considerable advances in the knowledge of the physiopathology of venous thromboembolism in pregnancy; however, its “management” is controversial by the absence of prospective clinical studies. And it proposes lines of treatment that make it possible to agree on criteria on how to proceed with it in the territory.

Venous thromboembolism is a major cause of maternal morbidity with incidence of 0.5 to 2.2 out of 1,000 pregnancies. Pregnant women have an increased risk by 5 times compared to non-pregnant women, being the second leading cause of death in the pregnant population. We present the case of a 27-year-old female patient, 11-week-old pregnant woman with no significant history, who entered the Emergency for 24 hours of pain and increased lower limb volume, as well as functional impotence on the go. A venous doppler ultrasound of the lower extremities was performed, with deep lower limb vein thrombosis found. The diagnosis and management of deep vein thrombosis during pregnancy is discussed, the need for timely recognition that may not be clear [17].

In this article two venous thrombosis of the internal safena were presented, so ligation of the fall of the internal safena must have been performed to prevent the progression of thrombosis to the deep venous sector and its possible pulmonary embolism, this being a simple surgical procedure which can report a positive benefit to patients so it must be taken into account in the management of this disease to present this situation in both patients pulmonary embolism is actually avoided.

In this regard, we consider that high doses should be used in patients diagnosed with TEP and depending on their magnitude and hemodynamic instability doses should be revalued taking into account laboratory control with the orientation of further increasing doses as proposed by Beers. Another result to be highlighted is that in 2 patients who had TEP the doses used were considered as low which is insufficient and is below the proposed doses in most antiagulation schemes reviewed in various sources of scientific information. This validates our hypothesis of evaluating anticoagulant therapy in the severe patient in order to make it more effective by establishing a standardization for severe patient anticoagulation [18].

Despite the clinic of the patients in the study, the doppler ultrasound method was used for the diagnosis of CVD and in about 6 cases with suspected TEP ultrasound was used and only 5 patients were diagnosed with Pulmonary Thromboembolism, this being a current technique that is an important diagnostic alternative to angiography because it is an examination that directly evaluates the pulmonary vascular tree with excellent diagnostic performance with a high sensitivity providing quick information for therapeutic decision making [19].

Diagnosis of deep vein thrombosis is usually done using Doppler ultrasound. In the postpartum period, if Doppler ultrasound and pletismography are normal but iliac, ovarian, or other pelican vein thrombosis is suspected, contrast CT is used. Diagnosis of pulmonary embolism is increasingly done with helical CT than with a ventilation-infusion scintillation, because CT involves less radiation and is equally sensitive. If the diagnosis of pulmonary embolism is uncertain, pulmonary angiography is required [20].

Of the total number of patients under study, 67.1% had an extended stay at the UCIA, which required a high use of human and material resources, similar to what was found by Durán and collaborators [21].

On the other hand, by using the APACHE II predictive scale, it was possible to determine that 24 is the threshold value, predicting mortality greater than 50% [11] in the group of patients studied. Despite the predictive rate of severity obtained in each case, 95.7% of live egresses were achieved. These data match those found by Acosta Aguirre [22] in his studio and that of Durán Rodríguez and collaborators [21].

Conclusion

With an early follow-up strategy in at-risk pregnant and postperas, you can diagnose severe and emerging forms of venous thrombotic disease and pulmonary thromboembolism to improve survival in these severe cases with nationally and protocolized prevention measures.

Conflict of Interest

The authors declare that they have no conflict of interest.

No	Roles	Authors
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