



Clinical Case Report Acute Management of Deep Vein Thrombosis with Pulmonary Thromboembolism in A 16-Year-Old Patient

Vallejo Chaves Saul^{1*}, Molano Milton² and Ramirez German³

¹Department of Pediatrician, Universidad Surcolombiana, Neiva-Huila

²Intensivista Pediatrician, Medilaser Clinic, Neiva

³Peripheral Vascular Surgeon, Medilaser Clinic, Neiva

*Corresponding Author: Vallejo Chaves Saul, Department of Pediatrician, Universidad Surcolombiana, Neiva-Huila.

Received: October 28, 2022

Published: November 08, 2022

© All rights are reserved by Vallejo Chaves Saul, et al.

Abstract

Deep vein thrombosis represents 0.05% of hospitalizations in pediatrics, with a similar predilection between male and female; and higher incidence in newborns and adolescents. We present the case of a 16-year-old female patient, treated at the Fourth Level Clinic, Colombia, with a history of pain in the left lower limb of five days of evolution, located in the thigh and radiated to the entire leg, with increased volume and paresthesias, making it impossible for her to ambulate. The performance of a venous Doppler ultrasound of the left lower limb revealed: common, superficial, deep femoral veins and popliteal vein with absence of compressibility, dilated, with presence of heterogeneous echogenic material inside and without flow to the Doppler study, image that corresponds to thrombus that extends from the proximal end to the middle end of the leg, the study confirmed deep vein thrombosis. Assessed by vascular surgery who considers has indication of thromboaspiration protocol both pulmonary and lower limbs by phlebography of lower limb, cavograph filter vena cava, thoracic phlebography (pulmonary) thrombo aspiration - thromboembolotomy of abdominal vessels, pulmonary vessels and vessels of the lower left limbs which is performed without complications. It progressed satisfactorily and treatment was continued on an outpatient basis. This case aims to generate scientific knowledge in health personnel who work with children and adolescents to guide them not to automatically rule out deep vein thrombosis in pediatric patients as a differential diagnosis and thus provide adequate and early treatment avoiding complications that could become fatal.

Keywords: T Venous Rhombosis; Deep Vein Thrombosis; Adolescent; Pediatrics; Treatment

Objectives

To report a clinical case of acute management of deep vein Thrombosis with pulmonary embolism in a 16-year-old patient.

Introduction

Deep vein thrombosis (DVT), along with lung embolism (PE) and post-thrombotic syndrome (PTS), are part of a pathological entity called venous thromboembolic disease (VTE). In reality, all three are different clinical manifestations of the same disease, caused by the occlusion of the venous lumen by a thrombus of fibrin and red blood cells that is accompanied by a variable local inflammatory reaction and in which the thrombus has the ability to extend proximally and embolize towards the pulmonary arterial

tree. The incidence of DVT in the general population has been estimated at 1.92 cases per 1,000 population/year. The rate is higher in men than in women and increases in both sexes as age increases (1.9 times per decade).

Case Description

A 16-year-old female patient with a history of polycystic ovary syndrome in management with oral contraceptives, with clinical picture of onset on 19.05.2019 five days of evolution consisting of edema, pain and increased perimeter of the left lower limb, consultation with a second-level hospital due to limitation for ambulation, Pain at the lumbosacral level, radiating to the left lower limb, extensive left proximal deep vein thrombosis with iliac involve-

ment and images of pulmonary thromboembolism is documented. Patient with previous picture of decay that suggests multisystem autoimmune disease, there is consumption in the last two months of oral contraceptives by the descriptions of the minor seems to correspond to low-dose oral contraceptives although it is true that it is a risk factor for deep vein thrombosis, by age of the minor and underlying pathology that makes it more prone to associated pathologies perform lower limb Doppler with evidence of thrombosis and chest computed tomography with image of pulmonary thromboembolism, admitted to pediatric intensive care unit for management. It denies fever, vomiting, joint pain or swelling, not another symptom. Se request complete autoimmune study (For the systemic erythematous up us and antiphospholipid syndrome being negative) assessed by vascular surgery who considers has indication of protocol thrombium aspiration both pulmonary and lower limbs by phlebography of lower limb, cava vena filter cava, thoracic phlebography (pulmonary) thrombo aspiration - abdominal vessel thrombolectomy, Pulmonary vessels and vessels of the lower left limbs which is performed without complications, patient with subsequent transfer to hospitalization is monitored to continue management and subsequent discharge at home.

Discussion

Deep vein thrombosis (DVT) is a common disorder in Western medical practice that affects one or two out of every 1,000 adult inhabitants per year, existing figures underestimate the true incidence of this disease, vary from study to study. In the United States, data suggest that about 80 to 180 cases per 100,000 population occur annually, in hospitalized patients the incidence is considerably higher and ranges from 20% to 70%. The 1991 European consensus meeting established as the most likely incidence 160 cases of deep vein thrombosis per 100,000 inhabitants per year [9]. It mainly affects patients between 60 and 70 years of age, being extremely rare in pediatric age in which the annual incidence of DVT in the Canadian and German Registries was 0.07 to 0.14/10,000 children, with an incidence in hospitalized children of 5.3/10,000. The incidence of DVT and arterial thrombosis in neonates was reported in 24/10,000 NICU admissions and 0.51/10,000 live births, with a female-to-male ratio of 1.1-1, very similar in adulthood. The average age of diagnosis in the pediatric population is divided into two large groups, which are children under 1 year and adolescents over 14 years [1,2].

The etiology of deep vein thrombosis in the pediatric population is multifactorial and two or more risk factors concur to trigger the

event in the vast majority of cases. The most common etiological factor (more than 50%) is the presence of central catheterization, other associated conditions are cancer (22.6%), congenital heart disease (14.6%), trauma (14.6%), total parenteral nutrition (8%), infection (7.3%), nephrotic syndrome (5.8%), surgery (5.8%), contraceptive pills (5.1%) which was one of the treatments that had patient sample, obesity (2.9%), sle (2.2%), sickle cell anemia (1.5%) and liver failure (1.5%) [2].

Genetic factors should be considered in the production of spontaneous thrombosis, verifying if there is a family history of DVT and Pulmonary Embolism (PE), in which case it is necessary to perform a thrombolytic study in the child. To date, there is clinical evidence to support routine investigation of asymptomatic children with a positive family history of thrombolytic defect [3,4].

The symptoms of DVT will depend on the vessels involved, usually located in the upper and lower limb, other less frequent locations are portal and mesenteric thrombosis. In neonates, the most frequent thromboses not associated with CVC are renal thrombosis, vena cava occlusion and CNS thrombosis. Clinical signs are variable from pain, tumor (edema), heat (increased local temperature) However, since these are similar to the signs and symptoms presented in musculoskeletal infections of the lower limbs, many physicians do not use the appropriate imaging protocol to exclude the diagnosis of a coexisting DVT [5].

The diagnosis of DVT based exclusively on its symptomatology and clinical examination is of little use due to its low sensitivity and specificity. However, it can be used to classify patients according to the Wells DVT clinical prediction model into two categories: high or low probability of developing it. Its use in emergencies together with the determination of the D-dimer (DD), will indicate the need or not to perform the pertinent complementary examinations that confirm the diagnostic presumption. There is a lack of diagnostic algorithms for deep vein thrombosis in children, which is why the adult as a guide.

Color Doppler ultrasound (DCS), currently the complementary test of choice, is the most widely used method because it is non-invasive, inexpensive, does not require sedation and allows serial explorations. Its positive predictive value can reach 97%. It presents good sensitivity for veins of lower extremities and visceral veins of abdomen but poor sensitivity for upper body veins [2,4]. The elevation of the plasma concentration of D-dimer is a sensitive,

but not specific marker of DVT, however, its normality has been shown to be useful. When its values are higher than 500 ng/mL, it is considered positive; However, false positives may exist when suffering from inflammatory processes or after a surgical process [5]. In a study on the outcome of DVT in children, elevated D-dimer was found in only 67% of patients, so it is considered an ideal test to rule out DVT, but in no case to confirm the diagnosis [5,6].

Conclusions

DVT is a prevalent pathology that appears by combination of blood stasis, endothelial damage and hypercoagulability. It is more common in patients with risk factors, especially immobilization, hospital admission, recent surgery, neoplasm or infectious process. These, added to the clinical findings, allow the development of prediction models that estimate the pretest clinical probability of presenting DVT. The ideal diagnostic strategy consists of the combination of clinical probability, D-dimer and Doppler ultrasonography. The treatment of choice is therapeutic dose LMWH, fondaparinux Penta saccharide and UFH, followed by oral anticoagulation with acecumamol or warfarin for at least 3 months. The advantages of LMWHs have consolidated their use in the prophylaxis and treatment of DVT, displacing UFH. Prophylaxis, both in medical and surgical patients, is based on individual risk estimation, the use of general measures (early mobilization, hydration, comprehension measures) and LMWH.

Conflicts of Interest

The authors declare that they have no conflicts of interest with the publication of this article.

Bibliography

1. Altuna D. "Thrombosis in Pediatrics". *Hematology* 17 (2013): 38-43.
2. Monagle P, et al. "Outcome of Pediatric Thromboembolic Disease: A Report from the Canadian Childhood Thrombophilia Registry". *Pediatric Research* 47 (2000): 763-766.
3. Smitherman AB, et al. "The Incidence of Catheter-Associated Venous Thrombosis in Noncritically Ill Children". *Hospital Pediatrics* 5 (2015): 59-66.
4. Iriarte EJA, et al. "Arterial and venous thromboses in childhood (I): incidence, etiopathogenesis and diagnosis". *Acta Pediátrica Española* 66 (2008): 381-384.
5. Mantadakis E, et al. "Deep venous thrombosis in children with musculoskeletal infections: the clinical evidence". *International Journal of Infectious Diseases* 16 (2012): 236-243.
6. Páramo JA, et al. "Diagnosis and treatment of deep vein thrombosis". *Revista de Medicina de la Universidad de Navarra* 51 (2007): 13-17.