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Research Article

Clinical Practice on the Management of Deep Venous Thrombosis and Evaluation of Performance Diagnostic in Moroccan Center

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Abstract

Background: Venous Thrombo Embolism (VTE) is a major public health problem in Morocco. The increase in life expectancy, changes of the epidemiological profile of VTE counteracts the constant efforts made in terms of prevention and disease remains ever.

Materials&Methods: Prospective study to host emergency department over a period of 10 months including all Deep Vein Thrombosis (DVT) admitted to the University Hospital of Casablanca. DVT was suspected clinically and retained on the presence of a thrombus in the lower-extremity on venous Doppler. We excluded patients with superficial thrombophlebitis and patients already diagnosed with VTE.

Findings: The mean age of our patients was 49 years, with female predominance. A thromboembolic risk factor was found in 88% of patients. The main etiology: immobilization, surgery, heart disease and cancer pathology. Pain and the increase in calf circumference were the signs giving rise to the emergency department visit. The Doppler ultrasound has objectified a proximal localization in 38 patients (47%), distal in 12 patients (15%) and extended to the whole limb in 30 patients (38%). An association to pulmonary embolism was found in 10 patients (12%) and the association with arterial impairment was found in 4 patients (5%). The Wells score was calculated on only 12 patients (15%) and the results of thrombophilia requested in 8 patients (10%). 54 patients (67%) were treated in ambulatory and 26 patients were hospitalized. All patients were started on heparin and 92% have Vitamin K Antagonists (VKA). The causes of non-prescription VKA were: pregnancy in two patients, breakthrough bleeding on cervical cancer, active duodenal ulcer, immune thrombocytopenic purpura and erosive gastritis scalable.

Conclusion: DVT remains a topical issue especially with the advent of new anticoagulants. In our current practice, a prospective study in more moroccan university hospital -including large population- is desirable for a better management.

Keywords: D-Dimers; Deep Vein Thrombosis; Doppler Ultrasound Venous Mapping ; Venous Thromboembolism; Wells Score

Introduction

Deep Venous Thrombosis (DVT) is considered one the two manifestations of Venous Thromboembolic disease (VTE) [1], which is a major public health problem. DVT is a common disease with two major complications:Post-Thrombotic Syndrome (PTS) and Pulmonary Embolism (PE). Its incidence is 7.1 cases per 10,000 people per year and increases with age. Its clinical presentation is polymorphic, leading to a difficult diagnosis based on non-invasive strategies and on clinical probability scores (such as the Wells score, the first to be developed). A diagnostic approach stems from these scores and focuses on the use of D-dimers or duplex ultrasonography appropriately [2].The diagnostic doppler ultrasound venous mapping of the lower limbs has improved and simplified the diagnosis of DVT. On the other hand, since the introduction of Low Molecular Weight Heparin (LMWH) and, more recently, Non-vitamin K antagonist oral anticoagulants (NOACs) [3,4], the introduction and management of anticoagulant

therapy can be achieved in a safe and certain manner[5,6].

The improvment of life expectancy, the evolution of cancer and the change in the epidemiological profile of the VTE disease counterbalances the constant efforts made in terms of prevention, so the disease remains forever contemporary.The aim of our work is to describe the epidemiological profile of DVT and to present the current diagnostic and therapeutic management strategies of this disease in order to improve our practices.

Patients and Methods

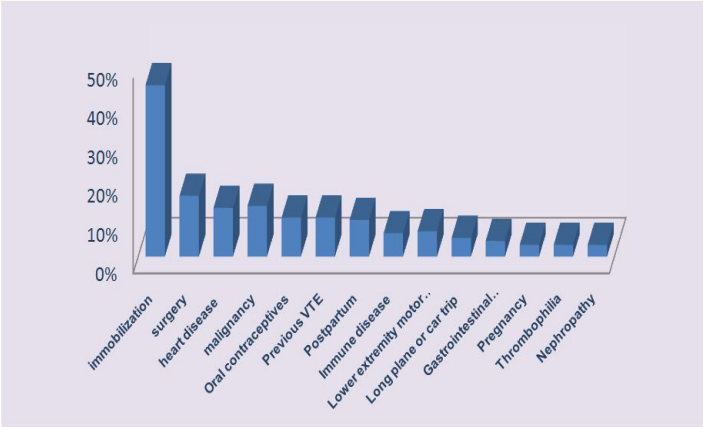
We studied prospectively 101 consecutive patients presenting with clinically suspected DVT at the emergency department of Ibn Rochd University Hospital of Casablanca, Casablanca, Morocco, between September 2015 and June 2016.

The collected data included: marital status, thrombo-embolic risk factors, medical history, symptoms, physical signs, diagnostic and etiologic testing and imaging (electrocardiogram, chest radiography, arterial blood gas, D-dimers, Doppler ultrasound venous mapping of the lower limbs, transthoracic echocardiography, helical CT pulmonary angiography), treatment and the occurrence of complications.

The data was entered and elaborated on the Excel software. We calculated averages, standard deviations, and percentage for qualitative variables in order to perform a descriptive analysis of patient's different characteristics: epidemiological, clinical, workup, therapeutic, etiological and evolutionary findings. We excluded all patients with superficial venous thrombosis at duplex ultrasonography without deep venous extension and patients already diagnosed with DVT.

Results

The series included 101 patients. The average age of our patients was 49 years with extremes ranging from 24 and 81 years of age. 57 patients were female with a median age 46 years versus 45 male with a median age of 54 years (sex ratio F/M 1.27). Risk factors for thromboembolic disease were found in 88% of patients and the main etiologies found in order of importance were immobilization, surgery, heart disease and malignancy Graphic 1.



Graphic 1: Thromboembolic risk factor in patients with VTE.

Pain and increased calf circumference were the most common signs in 89% of cases. The clinical probability according to the Wells score was estimated on the basis of clinical criteria in 15% of patients. A thrombophilia assessment was requested in 8 patients (10%). The electrocardiogram performed in all patients showed electrical abnormalities in 27 patients (27%). It was essentially a non-specific anomaly of the T wave and the ST segment (16%). The chest X-ray performed in all patients was pathological in 11% of patients. The most frequent sign was the ascent of a diaphragmatic cupola. D-dimers was performed in 40 patients and eleveated in 30 of them with an average value of 7966 µg / l and extremes ranging from 710 to 17860 µg / l. Doppler ultrasound venous mapping of the lower limbs showed proximal localization in 38 patients (47%), distal localization in 15% of patients, and extension to the entire limb in 30 patients (38%). Pulmonary embolism was found in 10 patients (12%) and the association with arterial impairment was observed in 4 patients (5%). Transthoracic echocardiography performed in 32 patients, showed abnormalities in 12 patients. The helical CT pulmonary angiography, performed in 14 patients, was positive in 10 of them (12%).

Treatment with Unfractionated Heparin (UFH) was administered in 12% of patients, while Low Molecular Weight Heparin (LMWH) was prescribed in 88%. The majority of patients (92%) received Vitamin K Antagonists (VKA) (acenocoumarol

was prescribed) as a relay in an average time of 2.65 ± 2.23 days whereas 8% of the patients had a VKA contraindication (parturients in the 3rd trimester of pregnancy, bleeding on cervical cancer, active duodenal ulcer, evolutionary erosive gastritis and autoimmune thrombocytopenic purpura). The VKA were started on the first day of heparin therapy in 63% of the cases. Surgical embolectomy and the placement of a vena cava filter were not set up. Oxygenation therapy and perfusion were instituted in 12% of the total population (100% of patients suspected of PE). Elastic compression stockings and early ambulation were indicated in all patients. VKAs represented long-term treatment in most patients (92%), with an average duration of treatment of 6 months. In patients with persistent VTE disease-promoting factor (malignancy), LMWH was continued.

Discussion

DVT is a diagnostic and therapeutic emergency. It can lead to PE in the acute phase, a life-threatening complication, and in the long term to postthrombotic syndrome and thromboembolic pulmonary hypertension, thus putting the functional prognosis into play.

The mean age of VTE disease is 60 years, with a significant incidence increase with age in both sexes [7]. In our series, the average age of patients was 49 years with a female predominance. This mean age value is significantly lower than other studies. Concerning the risk factors of the disease, immobility was first (44.23%) followed by surgery, previous VTE (15%) and cardiopathy (13.15%). Table 1 shows the prevalence of numerous risk factors in our patients compared to those found by other authors.

	In our series	Pottier [20] 2000	Pottier [21] 2002	Grenard et Mahé [11] 2003	Ouldzein et, al.[22] 2007
	N= 101	N= 947	N=150	N=104	N=43
Immobilization	35	37	22	19.2	-
Surgery	12	-	-	3.8	34.9
Cardiopathy	10	17	17	4.8	-
Current or evolving cancer	10	8	12	15.4	4.7
Oral contraceptives	9	0.3	0	7.7	2.3
Previous VTE	9	6	18	25	16.3
Postpartum	8	-	-	0	11.6
Immune disease	5	-	-	-	-
Lower extremity motor deficit (paralysis, stroke)	6	10	3	4.8	-
Long plane or car trip	4	-	-	5.7	-
Gastrointestinal pathology	3	-	-	0	-
Pregnancy	2	0.1	0	0	11.6
Thrombophilia	2	0	0	1.9	4.7
Nephropathy	2	-	-	0	-
No risk factors	12	11	13	31.7	2.3

Table 1: The incidence of numerous risk factors in our study compared to those found by other authors.

Clinical signs of DVT are unreliable, no single finding or combination of symptoms and signs is sufficiently accurate to establish the diagnosis. In our study, pain and increased calf circumference were the main clinical signs for emergency room visits. These clinical data are comparable to those found in the literature. The performance of clinical signs can be improved by simultaneously taking into account all the clinical signs, risk factors/patient circumstances and the presence of a differential diagnosis. These results are included in the calculation of clinical probability scores. Our study found a very limited use of clinical probability scores in the diagnosis of DVT: Wells score was only calculated in 12 patients (15%). However, a study conducted in several French emergency centers showed that the non-use of a score was associated with a greater number of inappropriate diagnoses and recurrent VTE in follow-up at 3 months [8,9]. Clinical probability assessment is very important in deciding whether to initiate anticoagulant therapy immediately (high probability) or to await the results of further testing. It is known that D-dimers have a poor specificity for VTE and that their increase may be seen in other conditions. Therefore, the D-dimers were not often used in our approach for probable DVT and when performed, a Doppler ultrasound was also carried out almost systematically. This result is consistent with the literature.

Doppler ultrasound venous mapping of the lower limb, by a trained examiner, is the current first line imaging examination for the diagnosis of DVT. It was performed in all our patients with proximal localization in 38 cases (47%), distal in 12 cases (15%), and extended to the entire limb in 30 cases (38%). This almost systematic call for echo-doppler had already been demonstrated in a prospective Swiss study -OTIS-DVT- also finding a high rate of echo-doppler use at 95% [10]. It seems therefore that access to this examination is not problematic, often during the same day and the delays in obtaining its results being rather fast.

In our series, the etiological investigation was based on simple elements (interrogation, complete clinical examination, usual biological examinations: D-dimer assay, blood count, sedimentation rate, C-reactive protein, chest x-ray and abdomino-pelvic ultrasound) . This approach is comparable to that of Grenard and Mahé [11] in their etiological investigation of 104 cases of VTE. In the search for a systemic disease, 3% of our patients had major signs of systemic disease. In 10% of the study population, the finding of an abnormality of hemostasis or thrombophilia (deficiency of antithrombin III/ protein C/ protein S, altered factor V and factor VIII) was negative. This screening was performed in patients who had a minor risk of VTE or who presented an idiopathic thromboembolic episode. This screening was carried out in 70% of young patients (<30 years of age), which is in line with currently published literature recommending this type of screening in young patients [11-14]. Apart from the 13.4% of known cancer patients, the incidence of discovery of occult neoplasia in our patients was zero after etiologic assessment. This is probably due to the simple diagnostic methods used in our study. Nevertheless, our approach is consistent with current literature where most authors agree that in the absence of any evidence of an overall survival advantage, only "Routine Examinations" are recommended for VTE disease. Additional examinations (CT scan, digestive endoscopy, tumor markers, etc.) are only required if there is a strong clinical suspicion of occult cancer (alteration of the general state, clinical signs of orientation, thrombosis in unusual sites, bilateral thrombosis of lower limbs ...) [15]. Therapeutically, home-based treatment of DVT should be indicated after elimination of an associated PE, absence of signs suggestive of neoplasia, evaluation of the haemorrhage risk and assurance of a favorable family and personal context. In our study, treatment was essentially done with LMWH, usually for a period of 5 to 10 days. The relay by VKA was mainly carried out from the first day, in accordance with the recommendations of the AFSSAPS of 2009, or the ACCP of 2012 which advocate first-line treatment with LMWH or Fondaparinux relayed by VKA (Grade A and grade 2C) [16,17]. It should be noted that the new CACP recommendations at the beginning of 2016 also advocate the use of NOACs as first-line treatment when DVT does not occur in a cancer setting (Grade 2B)[18]. Our therapeutic approach has not neglected the non-medicinal therapeutic means: early rising and elastic compression stockings have always been advocated. This goes with the current therapeutic data that requires these simple procedures to improve the prognosis of the disease and reduce the rate of complications [19].

Conclusion

Our series confirms that a simple and integrated diagnostic algorithm for suspicion of DVT - combining clinical probability, D-dimer, duplex ultrasound of the lower limbs - makes it possible to achieve a definitive noninvasive diagnosis in all patients. The management is mainly ambulatory, LMWH and VKA still have a prominent place in the treatment whereas the use of NOACs remains limited especially with its high cost. A study with a larger sample in our context and in our country according to our means is needed to determine the profile of patients with DVT requiring treatment with NOACs.

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