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Full Length Article

Practice variation in the management of distal deep vein thrombosis in primary vs. secondary cares: A clinical practice survey

Jennifer Almosni [a], Arthur Meusy [b], Pierre Frances [c], Daniel Pontal [a], Isabelle Quéré [a], Jean-Philippe Galanaud [a,*]

[a] Clinical Investigation Centre and Department of Internal Medicine, Montpellier University Hospital, Montpellier, France
[b] Department of Biostatistics, Montpellier University Hospital, Montpellier, France
[c] General Practitioner, Banyuls sur Mer, France

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ABSTRACT

Introduction: Distal deep-vein thromboses (iDDVT) are infra-popliteal DVTs. They are as frequent but less serious than proximal DVT. Their management is debated.
Methods: Clinical practice survey among a random selection of 111 general practitioners (GP) and 56 vascular medicine physicians (VMP) working in Languedoc-Roussillon (France) to assess and compare iDDVTs management by GP and VMP.
Results: In case of DVT, GP manage their patients alone in 35% of cases. In case of collaborative management, VMP initiate and stop anticoagulants (>74% of cases) whereas GP monitor anticoagulation (>76% of cases). With iDDVT, there was no difference between GP and VMP in terms of use (94% vs. 92%) and intensity of anticoagulation (full dose: 99%vs.100%). Duration of anticoagulation differed: GP modulated less frequently duration of anticoagulation in presence of a transient risk factor (58% vs. 90%, $p < 0.05$) or according to the deep-calf or muscular location of iDDVT (6% vs. 36%, $p < 0.05$) and treated more frequently iDDVT as long as proximal DVT (49% vs. 13%, $p < 0.05$). When comparing GP, there was no significant difference in terms of therapeutic management between those who used to manage DVT alone and those who used to manage in collaboration with a thrombosis expert.
Conclusion: Treatment of iDDVT differed between GP and VMP. Half of GP don't modulate treatment according to anatomical location or to the provoked/unprovoked character of DVT. Given the low frequency of exposure to DVT in general practice, systematic referral to a thrombosis expert rather than continuous medical formation program seems appropriate to improve management.

1. Introduction

Isolated distal deep-vein thrombosis (iDDVT) (e.g. infra-popliteal DVT without concomitant proximal DVT or pulmonary embolism (PE)) is a frequent event, which represents more than half of all lower limb DVT diagnosed on whole-leg compression ultrasonography (CUS) [1,2]. Data from observational studies, management studies and therapeutic trials indicate that though iDDVT and proximal DVT share the same risk factors and possibly the same risk of hidden cancer, their seriousness in terms of risk of pulmonary embolism (PE), venous thromboembolic (VTE) recurrence or post-thrombotic syndrome (PTS) is lower [2–8]. Therefore the benefit to risk ratio of anticoagulants in case of iDDVT obviously differs from that of proximal DVT. The need to systematically explore calf veins when suspicious of DVT and to systematically treat iDDVT with anticoagulants and at which dose constitute one of the most debated issues in the field of VTE disease. Furthermore iDDVT management appears to be country and even physician-dependent [3,4,9–14].

In the French, national, observational OPTIMEV study of in- and out-patients with suspicion of VTE, we found that in routine clinical practice more than 90% of iDDVT were treated with full dose of anticoagulants for a median duration of 3 months [5]. However this study was conducted almost 10 years ago and among secondary care physicians (vascular medicine physicians (VMP)). We therefore aimed to determine how French General Practitioners (GP) manage iDDVT (diagnosis and treatment), if the therapeutic management differs from that of VMP and of proximal DVT, if it is influenced by patient's ambulatory pathway

* Corresponding author at: Service de Médecine Interne et Maladies Vasculaires, Département de Médecine Interne, Hôpital Saint Eloi, CHU de Montpellier, 80 avenue Augustin Fliche, 34295 Montpellier Cedex 5, France.
E-mail address: jp-galanaud@chu-montpellier.fr (J.-P. Galanaud).

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(defined in terms of mode and location of medical practice of the patient's GP and of mode of therapeutic management - GP or thrombosis expert only, collaborative management - of DVT) and if it is in agreement with French national guidelines on VTE management [12].

2. Materials and Methods

A clinical practice survey was conducted from January to June 2013 in Languedoc-Roussillon, a region with a population of 2,7 millions inhabitants in southern France. The survey was undertaken among a random selection of GP and VMP.

2.1. Description of GP and VMP Practices in France

In France, the large majority of GPs and VMPs work in private practice offices, either alone (as it is usually the case in our region) or in association with other physicians (medical group practice). Patient is more or less free to consult the physician (primary and secondary care physician) of his/her choice. In case of suspicion of DVT, GP can refer for CUS exploration either to a VMP or a cardiologist or a radiologist who have a vascular US training. Management of objectively confirmed DVT, anticoagulation monitoring can be performed either by the GP or a thrombosis expert (i.e. VMP, cardiologist) or both. In the absence of point of care biological tests available, D-Dimer and INR monitoring are performed in medical laboratories.

2.2. Physician's Selection

GP and VMP were randomly selected from the directory of the medical council of Languedoc Roussillon. This directory inventories all physicians in activity and provides their address and telephone number. A weighted sample, based on the medical population within each district, was used to ensure representative study population. Thus, as 40% of GP work in the district of Hérault, our sample of GP needed to comprise 40% of GP from the district of Hérault.

All GP working in Languedoc Roussillon were eligible. We only excluded those who did not have a permanent medical activity in the region, did not practice general medicine (i.e. emergency room doctors, homeopaths, nutritionists) and those who declined to participate.

All VMP from Languedoc-Roussillon with a permanent medical activity in the region and who agreed to participate were eligible.

2.3. Phone Survey

Firstly, VMP and GP were telephoned by an investigator (Jennifer Almosni, MD) to ask them whether or not they agreed to participate in the study. Then, in case of agreement, eligibility criteria were assessed and a meeting was scheduled to make sure that the physician would have enough time to properly complete the study. During the telephone survey (mean time 10 minutes of length), the investigator filled in a questionnaire. This questionnaire had been previously tested by 10 GP and 5 VMP to make sure that all questions were clear and unambiguous. For the GP questionnaire, the following information were collected: i) physician's characteristics: age, sex, mode (alone vs. medical group practice) and location (city, semi-rural, rural areas) of medical practice, ii) frequency of exposure to confirmed DVT, iii) usual management of suspicion of DVT (without suspicion of concomitant PE): referral to a cardiologist, radiologist, VMP for CUS exploration iv) management of established DVT in general (*i.e.* not only iDDVT): management alone vs. in association with a thrombosis expert (cardiologist or VMP) vs. exclusive management by the thrombosis expert, v) management of iDDVT: use of anticoagulants (yes vs. no, prophylactic vs. full dose, duration, modulation according to the presence of a transient risk factor, modulation according to the deep calf vs. muscular vein location of DVT, type of anticoagulant (low molecular weight heparins (LMWH), vitamin K antagonist (VKA), new oral anticoagulants), use of elastic compression stockings (ECS); vi) perception of iDDVT seriousness as compared with proximal DVT. Ultimately GP were asked whether their management of iDDVT differed from that of proximal DVT and in case of a positive answer the mean duration of proximal DVT treatment was asked. The VMP questionnaire was similar with the exception of questions regarding diagnostic management, which were not asked, and with additional questions regarding VMP role in the daily management of DVT.

Then, data were anonymously reported in an electronic case report form via Google drive®. This study was declared to and approved by relevant local ethic committee (Comité de Protection des Personnes Sud-Méditerranée IV, N° IRD Q2013-06-02).

2.4. Statistical Analyses

Based on data form the OPTIMEV study, which shown that more than 90% of iDDVT were treated with anticoagulants by VMP we hypothesized that at least 80% of GP would systematically declared treating with anticoagulants iDDVT. This was a conservative hypothesis: we expected a lower rate of systematic anticoagulation amongst GP, as French thrombosis experts have the reputation of treating more frequently patients with anticoagulants as compared with GP [5]. Thus, 87 GP were needed to be interviewed in order to have a precision of plus or minus 8% in our estimate of 80% of systematic treatment of iDDVT with anticoagulants. Anticipating a rate of refusal to participate or of non-eligibility of GP of 50%, we randomly selected 174 GP [15]. Number of VMP was decided a posteriori, based on the number of GP who agreed to participate in order to have a ratio of 1 VMP for 2 GP.

Categorical variables were expressed as frequencies and percentages and continuous variables as means. For continuous variables, comparison between groups was performed with student and Wilcoxon test according to their distribution. Chi-square or student t tests were used for categorical variables. Two-sided p-values of 0.05 or less were considered to be statistically significant. Data were analysed in the department of biostatistics (Arthur Meusy, MD) using SAS® software (SAS entreprise guide Version 6.1. SAS Institute Cary, N.C.).

3. Results

Amongst the 174 GP contacted, 43 (24.7%) declined to participate. 20 were subsequently excluded as they did not practice general medicine. 56 out of 58 (96.6%) VMP contacted agreed to participate. Thus, 111 GP and 56 VMP completed our survey. Their distribution by district in the survey was similar to what was observed in the region (data not shown). Their main characteristics are presented in Table 1.

Table 1
Characteristics of the medical population of the survey.

		General Practitioner N = 111	Vascular Medicine Physician N = 56
Age (years), % (n)	<30	9.0 (10)	12.5 (7)
	30 – 54	45.0 (50)	50.0 (28)
	>54	46.0 (51)	37.5 (21)
Gender, % (n)	Male	66.7 (74)	41.0 (23)
Mode of practice, % (n)	Alone vs. Medical Group Practice	54.9 (61)	63.0 (34)
Location of practice, % (n)	City	37.0 (41)	96.4 (54)
	Semi-rural area	38.7 (43)	3.6 (2)
	Rural area	24.3 (27)	0.0 (0)
Frequency of exposure to established DVT, % (n)	>1/month	26.1 (29)	71.4 (40)
	1 / 1–3 months	51.3 (57)	25.0 (14)
	1 / 3 months or less	22.5 (25)	3.6 (2)