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Deep vein thrombosis – online methods of patient education

Doinița Crișan[1], Sorin Crișan[2], Elena Buzdugan[2], Ștefan Vesa[2], Cătălin Pestrea[3]

[1] Department of Pathology, "Iuliu Haţieganu" University of Medicine and Pharmacy Cluj-Napoca, Romania
[2] 5th Medical Clinic, "Iuliu Haţieganu" University of Medicine and Pharmacy Cluj-Napoca, Romania
[3] Department of Cardiology, "Nicolae Stăncioiu" Heart Institute, Cluj-Napoca, Romania

Abstract

The authors present some of the most important online patient information methods on all aspects of deep vein thrombosis of the lower limbs and, in particular, the diagnosis using Doppler ultrasound (easy-to-understand articles, brochures, guides, patient page, frequently asked questions, illustrations, forums, blogs).

Keywords: patient education; websites; deep vein thrombosis.

Rezumat

Autorii prezintă câteva dintre cele mai importante metode online de educaţie pentru sănătate a pacienţilor, referitoare la toate aspectele trombozei venoase profunde a membrelor inferioare şi, în special, la stabilirea diagnosticului cu ajutorul ultrasonografiei Doppler (articole uşor de înţeles, broşuri, ghiduri, pagina pacientului, întrebări frecvente, ilustraţii, forumuri, bloguri)

Cuvinte cheie: educaţia pacientului, internet, tromboză venoasă profundă

The presence of a thrombus within a deep vein of the calf or proximal leg is called deep venous thrombosis of the lower extremity (DVT). Some conditions are associated with an increased thrombotic risk (major surgery, fractures, immobilization, previous venous thromboembolism, thrombophilia, malignancy, chemotherapy, congestive heart failure, stroke, obesity, and increasing age). Because the clinical features are not specific, plasma D-dimer assays and compression ultrasonography are commonly used for diagnostic evaluation. The prevention of DVT consists of mechanical and pharmacologic modalities depending on the thrombotic risk (low, moderate, high, and very high). The treatment of the proximal and distal DVT uses, in fact, the same mechanical and pharmacologic methods: deambulation, bandages then graduated compression stockings, low-molecular weight heparin or pentasaccharides, followed by vitamin K antagonists [1,2].

All DVT patients must understand and manage their disease. There are many online methods providing easy-to-understand information about deep vein thrombosis (risk factors, screening for increased thrombotic risk, symptoms, laboratory testing, imaging techniques – compression ultrasonography, complications, prophylactic strategies, and treatment). Some websites offer information about Doppler examination technique and diagnostic criteria of DVT [3-6].

A possible classification of the main methods of patient education regarding DVT is the following: easy-to-read articles, handbooks, pamphlets, brochures, handouts, information sheets, information leaflets, patient guides, patient page, frequently asked questions, questions and answers, chat transcripts, quizzes, joining a clinical trial, video podcasts, slide shows, images, forums, blogs, and patient story. Some examples of each category are listed below.

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Address for correspondence: Assoc. Prof. Doinița Crișan
6/10 Izlazului str, Cluj-Napoca
Zip Code 400655, Romania
Phone: 0722550872
Email: doinitacrisan@gmail.com

Easy-to-read articles:

- http://betterhealthchannel.com.au Better Health Channel Australia > Conditions & Treatments > A – Z of conditions > D > Deep vein thrombosis > Diagnosis methods (or http://www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Deep_vein_thrombosis?open – website accessed on June 27, 2010)
- http://en.wikipedia.org The Free Encyclopedia > Search > Deep vein thrombosis > Diagnosis > Imaging the leg veins (or http://en.wikipedia.org/wiki/Deep_vein_thrombosis – website accessed on June 27, 2010)
- http://vaheart.org Virginia Heart & Vascular Institute, Fairfax, VA > Patient Education > Conditions > Vascular Articles > Deep Vein Thrombosis > Diagnosis (or http://www.vaheart.org/handler.cfm?event=practice,template&cpid=22272 - website accessed on June 28, 2010)
- http://venous-info.com American Venous Forum > Patients > Educational Articles > A New Perspective on DVT > Diagnosing DVT (or http://veinforum.org/index.php?page=new-perspective-4 - website accessed on June 28, 2010)
- http://www.aurorahealthcare.org Aurora Health Care, WI > Health Info > Condition finder > Conditions > Select a health condition > Deep vein thrombosis (DVT) > Diagnosis > Duplex venous ultrasound or [3] (website accessed on June 27, 2010)
- http://www.clevelandclinic.org The Cleveland Clinic, Ohio > Health Information > Find Health Information by all Topics A-Z > D > Deep Vein Thrombosis (DVT) > How is diagnosed? (or http://my.clevelandclinic.org/disorders/Blood_Clots/hic_Deep_Vein_Thrombosis_DVT.aspx – website accessed on June 28, 2010)
- http://www.clotcare.com Clot Care Online Resource > Find information on a > Lab Test Procedure > Ultra Sound of Leg or [4] – (website accessed on July 2, 2010)
- http://www.familydoctor.org American Academy of Family Physicians > Conditions A-Z > D > Deep Vein Thrombosis > What are the symptoms of DVT? (or http://familydoctor.org/online/famdocen/home/seniors/common-older/800.html – website accessed on June 27, 2010)
- http://www.healthline.com Healthline Networks, Inc > Health A to Z > Diseases A to Z > View all Diseasyes and Conditions A to Z > D > Deep Vein Thrombosis – General Health (Gale Encyclopedia of Medicine) > Diagnosis (or http://www.healthline.com/galecontent/deep-vein-thrombosis – website accessed on June 28, 2010)
- http://www.largomedical.com Largo Medical Center West Florida, FL > Health Information > Health Library > D > Deep vein thrombosis > Diagnosis (or http://largomedical.com/your-health/condition_detail.dot?id=11894&crumbTitle=Deep%20Vein%20Thrombosis – website accessed on June 28, 2010)
- http://www.mayoclinic.com Mayo Foundation for Medical Education and Research > Diseases and Conditions > D> Deep vein thrombosis > Tests and diagnosis > Ultrasound or [5] (website accessed on June 27, 2010)
- http://www.med.nyu.edu New York University Langone Medical Center > Diseases and Conditions Information > A-Z Health Article Search > D > Deep vein thrombosis > Diagnosis (or http://www.med.nyu.edu/conditions-we-treat/conditions/deep-vein-thrombosis – website accessed on June 30, 2010)
- http://www.medicine.net > Diseases & Conditions > D > Deep Vein Thrombosis > How is deep vein thrombosis diagnosed? (or http://www.medicinenet.com/script/main/art.asp?articlekey=12597 – website accessed on June 28, 2010)
- http://www.nlm.nih.gov/medlineplus or http://www.medlineplus.gov Medline Plus > Medical Encyclopedia > D > Deep venous thrombosis > Exams and Tests > Doppler ultrasound exam of a limb (or http://www.nlm.nih.gov/medlineplus/ency/article/003775.htm – website accessed on June 27, 2010)
- http://www.phoenixheart.com Phoenix Heart PLLC, AZ > Library > Symptoms & Conditions > Deep Vein Thrombosis (article by Healthwise) > How is deep vein thrombosis diagnosed? (or http://edu.phoenixheart.com/Item.aspx?ID=1866 – website accessed on June 27, 2010)
- http://www.preventdvt.org PreventDVT.org (The Coalition to Prevent Deep-Vein Thrombosis) sponsored by Sanofi – Aventis Pharmaceuticals > What is DVT? > Signs and Symptoms > Diagnosing DVT > Doppler (Duplex Venous) Ultrasound (or http://www.preventdvt.org/about/dvt-signs-symptoms.aspx – website accessed on June 27, 2010)
- http://www.sutterhealth.org Sutter Health Northern California, CA > Health Information > Health Information Library > Search by Keyword > Deep Vein Thrombosis > How is deep vein thrombosis diagnosed? http://www.sutterhealth.org/health/health-info/index.cfm?A=C&hwid=aa68134#hwTop – website accessed on June 28, 2010)

- http://www.vascularweb.org Society for Vascular Surgery > Vascular Health > Vascular Conditions, Tests, Treatments > Conditions > Deep Vein Thrombosis > What tests will I need? > Duplex ultrasound (or http://www.vascularweb.org/vascularhealth/Pages/DeepVeinthrombosis(DVT).aspx – website accessed on June 28, 2010)
- http://www.vdf.org Vascular Disease Foundation > Disease Information > Deep Vein Thrombosis > Diagnosis (or http://www.vdf.org/diseaseinfo/dvt/diagnosis.php – website accessed on June 27, 2010)
- http://www.webmd.com Web MD > Health A-Z > Medical Tests & Tools A-Z > Medical Tests > U > Ultrasound, Doppler (Web MD Medical reference from Healthwise) (or http://www.webmd.com/a-to-z-guides/Doppler-Ultrasound – website accessed on July 3, 2010)
- http://www.webmd.com > Search > Deep Vein Thrombosis > Deep Vein Thrombosis Health Center > Symptoms and Diagnosis of Deep Vein Thrombosis (DVT) > Diagnosing DVT > Duplex ultrasound or [6] (website accessed on July 3, 2010)

Handbooks:
- http://venous-info.com > Patients > Online Resource > The VEIN Handbook (The Layman's Handbook of Venous Disorders) (or http://veinforum.org/index.php?page=online-resources – website accessed on June 28, 2010)

Pamphlets:
- http://www.svunet.org Society for Vascular Ultrasound > Bookstore > Patient Education Guides > SVU's Patient Guide > Venous Disease – website accessed on June 27, 2010)

Brochures:
- http://www.azheart.com Arizona Heart Institute Phoenix, AZ > Select a Brochure > Vein Disorders > Diagnosis (or http://www.azheart.com/brochure.asp?ID=31 - website accessed on June 30, 2010)
- http://www.massgeneral.org Massachusetts General Hospital, Boston, MA > Conditions & Treatments > View All Conditions & Treatments > D > Deep Vein Thrombosis (DVT) / Thrombophlebitis > How is deep vein thrombosis diagnosed? (or http://www.massgeneral.org/conditions/condition.aspx?ID=128&type=conditions – website accessed on June 30, 2010)

Handouts:
- http://www.med.umich.edu/1libr/guides/thrombus.htm University of Michigan Health System. Venous Thromboembolism: Deep Venous Thrombosis / Pulmonary Embolism, Patient Education Handout associated with UMHS Clinical Care Guideline (2004) (website accessed on June 27, 2010)
- http://www.nlm.nih.gov/medlineplus or http://www.medlineplus.gov > Health Topics > D > Deep Vein Thrombosis > For You > Patient Handouts or http://www.nlm.nih.gov/medlineplus/ency/patientinstructions/000027.htm (website accessed on July 2, 2010)

Information Sheets/ Information Leaflets:
- http://www.chrisbarnes.com.au/pdfs/below-knee-dvt.pdf Dr. Chris Barnes > Patient Information Sheet: Below Knee DVT > How is a blood clot detected? (website accessed on June 30, 2010)
- http://www.sign.ac.uk Scottish Intercollegiate Guidelines Network (SIGN), Edinburgh, Scotland > Patient Involvement > Patient publications > Deep vein thrombosis (DVT). Information leaflet for patients (or http://www.sign.ac.uk/pdf/pat62.pdf (website accessed on July 1, 2010)

Patient Guides:
- http://www.chestnet.org/accp The American College of Chest Physicians (ACCP) > Education > Patient Education > Patient Education Guides > AT 8 Patient Education Guides > A Patients' Guide to Antithrombotic and Thrombolytic Therapy – Abbreviated Guide (January 15, 2010) > How can clots be diagnosed?, What tests are commonly used to diagnose lung embolism? http://accpstorage.org/newOrganization/patients/AT8/AT8AbbreviatedGuide.pdf (website accessed on July 1, 2010)
- http://www.sign.ac.uk > Guidelines > Full text of guidelines > by subject > other vascular diseases > Prophylaxis of venous thromboembolism. A national clinical guideline. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network (SIGN); 2002. (SIGN publication; no. 62) or www.sign.ac.uk/pdf/sign62.pdf (website accessed on July 1, 2010)

Patient Page:
- http://circ.ahajournals.org Circulation > Search > Patient Page (or http://circ.ahajournals.org/cgi/search?journalcode=circulationaha&fulltext=patient+page) > Cardiology Patient Pages: Pulmonary Embolism and Deep Vein Thrombosis (Circula-

tion 2002; 106: 1436-1438), Diseases of the Veins (Circulation 2002; 106: 2170-2172), Testing in the Noninvasive Vascular Laboratory (Circulation 2007;115:e624-e626), Postthrombotic Syndrome (Circulation 2010;121:e217-e219) (website accessed on July 2, 2010)
- http://jama.ama-assn.org JAMA (The Journal of the American Medical Association) > Patient Page > Thrombophlebitis > Symptoms (JAMA 2008; 300: 1718) or http://jama.ama-assn.org/cgi/reprint/300/14/1718 (website accessed on July 1, 2010)

Frequently Asked Questions/Questions and Answers:
- http://www.mayoclinic.com > Tests and Procedures > Ultrasound, Doppler > Doppler ultrasound: What is it used for? (or http://www.mayoclinic.com/health/doppler-ultrasound/AN00511 – website accessed on July 2, 2010)
- http://www.preventdvt.org The Coalition to Prevent Deep Vein Thrombosis (DVT) > Common DVT Questions > Deep-Vein Thrombosis Frequently Asked Questions (FAQ) > How is DVT diagnosed? (or http://www.preventdvt.org/questions/dvt-questions.aspx – website accessed on June 27, 2010)
- http://www.sutterhealth.org > Health Information > Health Information Library > Search by Keyword > Deep Vein Thrombosis > Frequently Asked Questions > Being diagnosed > > How is deep vein thrombosis diagnosed? (or http://www.sutterhealth.org/health/healthinfo/?A=C&type=info&hwid=aa68134&section=aa68254 – website accessed on June 28, 2010)
- http://www.vdf.org > Disease Information > Deep Vein Thrombosis > FAQs (or http://www.vdf.org/diseaseinfo/dvt/faqs.php – website accessed on July 2, 2010)

Chat Transcripts:
- http://www.clotcare.com > Condition or Medical Procedure > Blood Clot in Leg (DVT) > Posting on Blood Clot in Leg (DVT). For Patients and Caregivers > Deep Vein Thrombosis (DVT) & Pulmonary Embolism (PE) Chat Transcript – March 6, 2007 (or http://www.clotcare.com/clotcare/deepveinthrombosisdvtchat.aspx – website accessed on July 2, 2010)

Quizzes:
- http://www.realage.com/Health_Guides/DVT/Intro.aspx RealAge, Inc Hearts Women's Network. At Risk for Blood Clots? Real Age Deep Vein Thrombosis Health Assessment (website accessed on July 3, 2010)
- http://www.webmd.com > Search > Deep Vein Thrombosis > Deep Vein Thrombosis Health Center > Quiz: Are you at risk for DVT? Or www.webmd.com/dvt/deep-vein-thrombosis-risks-quiz (Deep Vein Thrombosis Health Center. Blood Clot & DVT Quiz. Are You at Risk for a Deep Blood Clot? – website accessed on July 3, 2010)

Joining a Clinical Trial:
- www.clinicaltrials.gov > Venous Thrombosis > Efficacy and Safety Study of Apixaban for the Treatment of Deep Vein Thrombosis or Pulmonary Embolism (Official Title: A Safety and Efficacy Trial Evaluating the Use of Apixaban in the Treatment of Symptomatic Deep Vein Thrombosis and Pulmonary Embolism; Identifier NCT 00643201) Bristol-Myers Squibb; Catheter-Directed Venous Thrombolysis in Acute Iliofemoral Vein Thrombosis CaVenT (Official Title: Catheter-Directed Venous Thrombolysis in Acute Iliofemoral Vein Thrombosis, an Open Randomized, Controlled, Clinical Trial; Identifier NCT 00251771) Ullevaal University Hospital, Norway or http://clinicaltrials.gov/ct2/show/NCT00251771 (website accessed on July 3, 2010)
- www.clinicaltrials.gov > Venous Thrombosis > Residual Vein Thrombosis and the Optimal Duration of Low Molecular Weight Heparin in Cancer Patients With Deep Vein Thrombosis. CancerDACUS (Official Title: Residual Vein Thrombosis Establishes the Optimal Duration of Low Molecular Weight Heparin in Cancer Patients With Deep Vein Thrombosis of the Lower Limbs; Identifier NCT 00450645) University of Palermo, Italy or http://clinicaltrials.gov/ct2/show/NCT00450645 (website accessed on July 3, 2010)
- www.clinicaltrials.gov > Venous Thrombosis > Usefulness of Anticoagulant Treatment in First Isolated Symptomatic Calf Vein Thrombosis (CACTUS) (Official Title: Contention Alone Versus Anticoagulant for Symptomatic Calf Vein Thrombosis Diagnosed by Ultrasonography; Identifier NCT00539058) University Hospital, Montpellier, France or http://clinicaltrials.gov/ct2/show/NCT00539058 (website accessed on July 3, 2010)

Video podcasts:
- http://www.clevelandclinic.org > Health Information > Find Health Information by all Topics A - Z

> D > Deep Vein Thrombosis (DVT) > Deep Vein Thrombosis Video > How is DVT diagnosed? (or http://my.clevelandclinic.org/heart/disorders/video_dvt.aspx - website accessed on June 27, 2010)
- http://www.clotcare.com > View all Postings for > Patients & Caregivers > All Postings. For Patients and Caregivers > Deep Vein Thrombosis (DVT) & Pulmonary Embolism (PE) Video (or http://www.clotcare.com/clotcare/dvtpevideo.aspx – website accessed on July 2, 2010)
- http://www.healthline.com > Health A to Z > 3D Videos > B > Blood clot or http://www.healthline.com/vpvideo/blood-clot (website accessed on July 3, 2010)
- http://www.nlm.nih.gov/medlineplus or http://www.medlineplus.gov > Health Topics > D > Deep Vein Thrombosis > Multimedia & Cool Tools > Videos > If I Had – Deep Vein Thrombosis (Insidermedicine) or http://www.insidermedicine.com/Archives/If_I_Had_-_Deep_Vein_Thrombosis_-_Dr_David_Lee_MD_1847.aspx?p=mdlnp (website accessed on July 3, 2010)
- http://www.preventdvt.org > Media and Resource Center > Video Library: Deep Vein Thrombosis; Clotting Mechanism; DVT & Pulmonary Embolism (or http://www.preventdvt.org/media/dvt-videos.aspx - website accessed on June 27, 2010)
- http://www.vascularweb.org > Vascular Health > Vascular Health Podcasts > Patients and Families > Veins > IVC filters (or http://www.vnr1.tv/videos/SVS_Meier_IVCFilter.wmv - website accessed on July 3, 2010)

Slide Shows:
- http://www.clotcare.com > Condition or Medical Procedure > Blood Clot in Leg (DVT) > Postings on Blood Clot in Leg (DVT). For Patients and Caregivers > Posting > Blood Clots-DVT & PE Facts Slide Show (July, 2009) or http://www.clotcare.com/clotcare/dvtpefacts.aspx (website accessed on July 3, 2010)

Images:
- http://www.mayoclinic.com > Diseases and Conditions > Thrombophlebitis > Multimedia > Images: Blood clot in leg vein or http://www.mayoclinic.com/health/medical/IM00928 (website accessed on July 3, 2010)
- http://www.thrombosisadviser.com Thrombosis Adviser, website of Bayer Schering Pharma AG > Understanding Thrombosis > Diagnosing Thrombosis > Diagnosing Deep Vein Thrombosis > Diagnosing DVT – tests and imaging studies > Venous ultrasonography (or http://www.thrombosisadviser.com/scripts/pages/en/understanding-thrombosis/diagnosing-thrombosis/diagnosing-deep-vein-thrombosis/index.php – website accessed on June 27, 2010)
- http://www.vascularweb.org > Vascular Health > Vascular Conditions, Tests, Treatments > Tests > Duplex ultrasound (or http://www.vascularweb.org/vascularhealth/Pages/DuplexUltrasound.aspx – website accessed on June 28, 2010)

Forums:
- http://www.dvtforum.com DVT deep vein thrombosis open discussion forum (website accessed on July 3, 2010)

Blogs:
- http://en.wordpress.com/tag/deep-vein-thrombosis > Blogs about: Deep Vein Thrombosis (website accessed on July 3, 2010)
- http://www.blogtoplist.com/rss/thrombosis.html (website accessed on July 3, 2010)

Patient Story:
- http://www.clotcare.com > View all Postings for > Patients & Caregivers > All Postings. For Patients and Caregivers > A Patient Story: Deep Vein Thrombosis – a Silent Killer (March, 2010). A patient' story written by Stacey Anderson (or http://www.clotcare.com/clotcare/dvt_story_stacey_anderson.aspx); DVT Patient Story: Jackie Davis suffers chronic leg swelling due to surgery-related DVT (July, 2009) (or http://www.clotcare.com/clotcare/dvtstoryjackiedavis.aspx - website accessed on June 27, 2010)
- http://www.stoptheclot.org National Blood Clot Alliance Stop the Clot® > Blood Clot Resources > Patient Stories or http://www.stoptheclot.org/patient_stories/living_with_thrombosis.htm (website accessed on July 3, 2010)
- http://www.thrombosis-charity.org.uk Lifeblood. The Thrombosis Charity > Personal Experiences (website accessed on July 2, 2010)

As mentioned above, all these online resources provided by national institutes, scientific societies and associations, universities of medicine, health foundations, medical journals, magazines are very useful for all English speaking DVT patients.

Conflict of interest: none

References

1. Ansell JE. Venous Thrombosis. In: Creager MA, Dzau VJ, Loscalzo J (eds). *Vascular Medicine. A companion to Braunwald's Heart Disease*. Philadelphia, Saunders Elsevier 2006: 743-762.
2. Kearon C, Kahn SR, Agnelli G, et al. Antithrombotic therapy for venous thromboembolic disease: American College of Chest Physicians evidence-based clinical practice guidelines (8th Edition). Chest 2008;133 (6 Suppl):454S-545S.
3. http://www.aurorahealthcare.org/yourhealth/healthgate/getcontent.asp?URLhealthgate=11894.htm (website accessed on June 27, 2010)
4. http://www.clotcare.com/clotcare/postings.aspx?by=labtest&labtestid=5&word=Ultra%20Sound%20of%20Leg (website accessed on July 2, 2010)
5. http://www.mayoclinic.com/health/deep-vein-thrombosis/DS01005 (website accessed on June 27, 2010)
6. http://www.webmd.com/dvt/deep-vein-thrombosis-dvt-symptoms-diagnosis (website accessed on July 3, 2010)