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1. Transplant Renal Vein Thrombosis.

Authors: El Zorkany, Khaled; Bridson, Julie-Michelle; Sharma, Ajay; Halawa, Ahmed

Source: Experimental and clinical transplantation : official journal of the Middle East Society for Organ Transplantation; Apr 2017; vol. 15 (no. 2); p. 123-129

Abstract:
Transplant renal vein thrombosis usually occurs early after surgery with a reported prevalence of 0.1% to 4.2%. It is a devastating event that ultimately leads to graft loss in almost all cases. There are many predisposing factors related to donor, recipient, surgery, and immunosuppression, with mechanical factors being considered the most common causes of transplant renal vein thrombosis. The clinical manifestations of acute renal vein thrombosis are nonspecific and are not dissimilar to the features of urine leak, urinary obstruction, or severe acute rejection. The diagnosis of transplant renal vein thrombosis depends on a high index of clinical suspicion and duplex ultrasonographic scans. Although venography remains the criterion standard, this procedure is invasive and nephrotoxic, due to use of ionizing contrast agents and also due to exposure to ionizing radiation. There are 2 therapies that have been described in the literature for salvaging a renal allograft with transplant renal vein thrombosis: thrombolytic therapy and surgical thrombectomy. The usual end result is renal allograft.

2. Incidence of deep vein thrombosis in patients undergoing breast reconstruction with autologous tissue transfer.

Authors: Konoeda, Hisato; Yamaki, Takashi; Hamahata, Atsumori; Ochi, Masakazu; Osada, Atsuyoshi; Hasegawa, Yuki; Kiriti, Miho; Sakurai, Hiroyuki

Source: Phlebology; May 2017; vol. 32 (no. 4); p. 282-288

Abstract:
Background Breast reconstruction is associated with multiple risk factors for venous thromboembolism. However, the incidence of deep vein thrombosis in patients undergoing breast reconstruction is uncertain. Objective The aim of this study was to prospectively evaluate the incidence of deep vein thrombosis in patients undergoing breast reconstruction using autologous tissue transfer and to identify potential risk factors for deep vein thrombosis. Methods Thirty-five patients undergoing breast reconstruction were enrolled. We measured patients’ preoperative characteristics including age, body mass index (kg/m²), and risk factors for deep vein thrombosis. The preoperative diameter of each venous segment in the deep veins was measured using duplex ultrasonography. All patients received intermittent pneumatic pump and elastic compression stockings for postoperative thromboprophylaxis. Results Among the 35 patients evaluated, 11 (31.4%) were found to have deep vein thrombosis postoperatively, and one patient was found to have pulmonary embolism postoperatively. The diameter of the common femoral vein was significantly larger in patients who developed postoperative deep vein thrombosis than in those who did not (P < 0.05). Documented risk factors for deep vein thrombosis demonstrated no significant differences between patients with and without deep vein thrombosis. The diameter of the common femoral vein was significantly larger in patients who developed postoperative deep vein thrombosis than in those who did not (P < 0.05). Conclusions The morbidity of deep vein thrombosis in patients who underwent breast reconstruction using autologous tissue transfer was relatively high. Since only the diameter of the common femoral vein was predictive of developing postoperative deep vein thrombosis, postoperative pharmacological thromboprophylaxis should be considered for all patients undergoing breast reconstruction regardless of operative procedure.

3. Factors associating with the presence of residual thrombosis after 3-month treatment of acute pulmonary embolism.

Authors: Wang, Jingluan; Xu, Mingling; Sun, Nina; Cheng, Zhaozhong; Sui, Jingjing

Source: Journal of thrombosis and thrombolysis; Oct 2017

Abstract:

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The present study aimed to investigate the factors associating with the presence of residual thrombosis in patients with acute pulmonary embolism (APE) after at least 3-month anticoagulant therapy. Demographic and clinical data of 180 cases in the affiliated hospital of Qingdao University from January 2005 to June 2015 were retrospectively analyzed. APE in all patients were confirmed by computed tomography pulmonary angiography (CTPA). Patients were then detected for the presence of residual thrombosis according to a second CTPA. After appropriate comparison test, multivariate logistic regression analysis was performed to identify predictors for residual thrombosis. Among 180 patients, complete clearance of thrombosis occurred in 115 (63.9%) patients. Residual thrombosis remained in 65 (36.1%) patients. The independent factors associating with residual thrombosis include unprovoked APE (OR 0.231, 95% CI 0.062-0.861) and fibrinogen level in acute phase (OR 1.958, 95% CI 1.282-2.911). Furthermore, these two variables were both associated with the presence of residual thrombosis in patients receiving different parenteral anticoagulants (unfractionated heparin or low-molecular-weight heparin). Pulmonary thrombosis in some patients with APE are not completely dissolved after at least 3-month treatment. Additionally, unprovoked APE is positive predictor of decreased residual thrombosis and fibrinogen level in acute phase is a risk factor of the presence of residual thrombosis.

OBJECTIVE To identify the risk of venous thromboembolism recurrence, major bleeding, and mortality in patients with ovarian vein thrombosis so as to better define optimal treatment strategies.

METHODS Patients with ovarian vein thrombosis (1990-2015) and age- and gender-matched patients with contemporary leg deep vein thrombosis (DVT) were assessed for differences in etiology, venous thromboembolism recurrence, and survival in a case-control study.

RESULTS Over the timeframe of this study, only 219 ovarian vein thrombosis cases were identified compared with 13,417 leg DVTs. Median duration of follow-up was 1.23 years (interquartile range 0.25-4.14). Pulmonary embolism was identified at presentation in 6% of patients with ovarian vein thrombosis and 16% of those with DVT (P=.001). Frequent causes of ovarian vein thrombosis included cancer, hormonal stimulation, surgery, and hospitalization. Cancer was twofold more frequent in patients with ovarian vein thrombosis (44% compared with 21%; P<.01). Despite being less frequently treated with anticoagulation (ovarian vein thrombosis 54% compared with DVT 98%, P<.001), venous thromboembolism recurrence rates were similar between groups (ovarian vein thrombosis 54% compared with DVT 98%, P<.001). Venous thromboembolism recurrence rates were similar between groups (ovarian vein thrombosis 2.3 compared with DVT 1.8 per 100 patient-years, P=.49). A personal history of venous thromboembolism and preceding surgery was found to be an independent risk factor for venous thromboembolism recurrence among those treated with anticoagulation (hazard ratio 6.7, P=.04 and hazard ratio 13.6, P=.03, respectively). There was no significant difference in overall survival.

CONCLUSION Ovarian vein thrombosis is a rare thrombotic condition with an incidence 60-fold lower compared with leg DVT in our institution. The striking association with cancer adversely affects overall survival rates in patients with ovarian vein thrombosis. Venous thromboembolism recurrence rates argue for anticoagulation with a direct oral anticoagulant or vitamin K antagonist, particularly in those with a history of venous thromboembolism.

Authors
Lenz, Charles J; Wysokinski, Waldemar E; Henkin, Stanislav; Cohoon, Kevin P; Casanegra, Ana; Simmons, Benjamin S; Saadiq, Rayya A; Daniels, Paul R; Wysokinska, Ewa M; Bjarnason, Haraldur; McBane, Robert D

Source
Obstetrics and gynecology; Oct 2017

Publication Date
Oct 2017

Publication Type(s)
Journal Article

PubMedID
29016487

Database
Medline

Abstract
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5. Obstetric antiphospholipid syndrome and long term arterial thrombosis risk.

Authors
Drozdinsky, Genady; Hadar, Eran; Shmueli, Anat; Gabbay-Benziv, Rinat; Shiber, Shachaf

Source
Journal of thrombosis and thrombolysis; Jul 2017

Publication Date
Jul 2017

Publication Type(s)
Journal Article

PubMedID
28748519

Database
Medline
6. Upper extremity deep venous thrombosis after port insertion: What are the risk factors?

**Authors**
Tabatabaie, Omidreza; Kasumova, Gyulnara G; Kent, Tara S; Eskander, Mariam F; Fadayomi, Ayotunde B; Ng, Sing Chau; Critchlow, Jonathan F; Tawa, Nicholas E; Tseng, Jennifer F

**Source**
Surgery; Aug 2017; vol. 162 (no. 2); p. 437-444

**Abstract**
BACKGROUND Totally implantable venous access devices (ports) are widely used, especially for cancer chemotherapy. Although their use has been associated with upper extremity deep venous thrombosis, the risk factors of upper extremity deep venous thrombosis in patients with a port are not studied adequately.

**METHODS** The Healthcare Cost and Utilization Project’s Florida State Ambulatory Surgery and Services Database was queried between 2007 and 2011 for patients who underwent outpatient port insertion, identified by Current Procedural Terminology code. Patients were followed in the State Ambulatory Surgery and Services Database, State Inpatient Database, and State Emergency Department Database for upper extremity deep venous thrombosis occurrence. The cohort was divided into a test cohort and a validation cohort based on the year of port placement. A multivariable logistic regression model was developed to identify risk factors for upper extremity deep venous thrombosis in patients with a port. The model then was tested on the validation cohort.

**RESULTS** Of the 51,049 patients in the derivation cohort, 926 (1.81%) developed an upper extremity deep venous thrombosis. On multivariate analysis, independently significant predictors of upper extremity deep venous thrombosis included age <65 years (odds ratio = 1.22), Elixhauser score of 1 to 2 compared with zero (odds ratio = 1.17), end-stage renal disease (versus no kidney disease; odds ratio = 2.63), history of any deep venous thrombosis (odds ratio = 1.77), all-cause 30-day revisit (odds ratio = 2.36), African American race (versus white; odds ratio = 1.86), and other nonwhite races (odds ratio = 1.35). Additionally, compared with genitourinary malignancies, patients with gastrointestinal (odds ratio = 1.55), metastatic (odds ratio = 1.76), and lung cancers (odds ratio = 1.68) had greater risks of developing an upper extremity deep venous thrombosis.

**CONCLUSION** This study identified major risk factors of upper extremity deep venous thrombosis. Further studies are needed to evaluate the appropriateness of thromboprophylaxis in patients at greater risk of upper extremity deep venous thrombosis.


**Authors**
Kumar, Prabhat; Sasmal, Gargi; Mahto, Subodh Kumar; Gupta, Shreya; Gupta, Harish

**Source**
Journal of clinical and diagnostic research : JCDR; Apr 2017; vol. 11 (no. 4); p. OD16

**Abstract**
Deep Cerebral Vein Thrombosis (DCVT) is an uncommon cause of stroke. Thrombosis can occur in superficial veins, deep venous system or cortical veins of brain. The term Deep Cerebral Vein Thrombosis (DCVT) is used for thrombosis of internal cerebral vein, vein of Galen and basal vein of Rosenthal. Only 10% cases of CVT are because of thrombosis of deep cerebral vein. The diagnosis of DCVT is often missed because of its heterogenous presentation. Herein, we present a case of DCVT which was initially treated as meningoencephalitis. A timely advised brain imaging helped in making the diagnosis and patient recovered completely after institution of anticoagulation.

8. Venous thrombosis and stenosis after peripherally inserted central catheter placement in children.

**Authors**
Shin, H Stella; Towbin, Alexander J; Zhang, Bin; Johnson, Neil D; Goldstein, Stuart L
BACKGROUND Peripherally inserted central catheters (PICCs) can lead to development of venous thrombosis and/or stenosis. The presence of venous thrombosis and/or stenosis may preclude children with chronic medical conditions from receiving lifesaving therapies, from hemodialysis in end-stage renal disease to total parenteral nutrition in short bowel syndrome. Several adult studies have found an association between PICCs and venous thrombosis and/or stenosis, but none has evaluated for this association in children.

OBJECTIVE To determine the incidence of venous thrombosis and/or stenosis after PICC placement and identify factors that increase the risk of venous thrombosis and/or stenosis after PICC placement in children.

MATERIALS AND METHODS We conducted a retrospective review of children ages 1-18 years with a PICC placed between January 2010 and July 2013 at our center, and included those who had at least one vascular imaging study of the ipsilateral extremity (Doppler ultrasound, venogram or MR angiogram) after PICC placement. Logistic regression was applied to determine risk factors for development of venous thrombosis and/or stenosis.

RESULTS One thousand, one hundred and ten upper extremity PICCs were placed, with 703 PICCs in the right and 407 PICCs in the left. Eight hundred fifty-one imaging studies (609 Doppler ultrasounds, 193 contrast venograms and 49 MR angiograms) were performed in 376 patients. The incidence of venous thrombosis and/or stenosis in the imaged cohort was 26.3%. PICC laterality, insertion site, duration, patient height to PICC diameter ratio, and number of PICCs per patient were not associated with development of venous thrombosis and/or stenosis. Additionally, primary diagnosis and symptoms at the time of imaging did not predict findings of venous thrombosis and/or stenosis. However, patients exposed to non-PICC central venous catheters (CVC) were more likely to develop venous thrombosis and/or stenosis (odds ratio 1.95, 1.10-3.45).

CONCLUSION More than a quarter of the vascular imaging studies performed in this study cohort showed previously unknown venous thrombosis and/or stenosis, irrespective of PICC laterality, insertion site, duration and size and the number of PICCs. A history of CVC was associated with a nearly two-fold increase in risk of venous thrombosis and/or stenosis after PICC placement. We suggest that PICCs and CVCs should be placed judiciously in all children, but especially in those with lifelong medical conditions who are more likely to incur direct consequences from limited vascular access.

9. Recurrent venous thrombosis related to overweight and obesity: results from the MEGA follow-up study.

Authors Vučković, B A; Cannegieter, S C; van Hylckama Vlieg, A; Rosendaal, F R; Lijfering, W M


Abstract Essentials Whether excess body weight influences recurrent venous thrombosis (VT) risk is uncertain. We included 3889 VT patients, classified into body mass index (BMI) strata to estimate recurrent VT risk. No evidence of an increased risk for excess body weight was found. Measuring BMI is not a good tool to identify patients at high risk of VT recurrence.

SUMMARY Background Studies on the risk of recurrent venous thrombosis in patients with excess body weight have yielded conflicting results. Objective To estimate whether excess body weight increases the risk of recurrent venous thrombosis. Patients/Methods We included 3889 patients, followed after a first venous thrombosis for a median of 5.6 years. Body mass index (BMI) was calculated as weight in kilograms/height in meters squared, and classified according to three a priori-defined categories (normal weight, overweight, and obesity), as well as by percentiles. Crude incidence rates with 95% confidence intervals (CIs) of recurrent venous thrombosis were estimated as the number of events over the accumulated follow-up time in each BMI category. Cox regression models were used to compare groups, adjusted for age and sex. Results The incidence rate of recurrent venous thrombosis was 3.3 per 100 patient-years. Adjusted hazard ratios of recurrent venous thrombosis in overweight or obese patients in comparison with patients with normal weight were 1.05 (95% CI 0.88-1.27) and 0.94 (95% CI 0.74-1.19), respectively. Stratification by BMI percentile categories yielded similar results. The association between BMI and recurrent venous thrombosis was also absent after stratification by sex, (although a small effect for overweight, but not for obese women, was found), or into those with a first provoked or unprovoked event, or deep vein thrombosis and pulmonary embolism. Conclusions We found no evidence of an association between excess body weight and recurrent venous thrombosis. Measuring BMI is not a useful tool to identify patients at high risk of recurrence.

10. Subclinical leaflet thrombosis in surgical and transcatheter bioprosthetic aortic valves: an observational study.
BACKGROUND Subclinical leaflet thrombosis of bioprosthetic aortic valves after transcatheter valve replacement (TAVR) and surgical aortic valve replacement (SAVR) has been found with CT imaging. The objective of this study was to report the prevalence of subclinical leaflet thrombosis in surgical and transcatheter aortic valves and the effect of novel oral anticoagulants (NOACs) on the subclinical leaflet thrombosis and subsequent valve haemodynamics and clinical outcomes on the basis of two registries of patients who had CT imaging done after TAVR or SAVR.

METHODS Patients enrolled between Dec 22, 2014, and Jan 18, 2017, in the RESOLVE registry, and between June 2, 2014, and Sept 28, 2016, in the SAVORY registry, had CT imaging done with a dedicated four-dimensional volume-rendered imaging protocol at varying intervals after TAVR and SAVR. We defined subclinical leaflet thrombosis as the presence of reduced leaflet motion, along with corresponding hypoattenuating lesions shown with CT. We collected data for baseline demographics, antithrombotic therapy, and clinical outcomes. We analysed all CT scans, echocardiograms, and neurological events in a masked fashion.

FINDINGS Of the 931 patients who had CT imaging done (657 [71%] in the RESOLVE registry and 274 [29%] in the SAVORY registry), 890 [96%] had interpretable CT scans (626 [70%] in the RESOLVE registry and 264 [30%] in the SAVORY registry). 106 (12%) of 890 patients had subclinical leaflet thrombosis, including five (4%) of 138 with thrombosis of surgical valves versus 101 (13%) of 752 with thrombosis of transcatheter valves (p=0·001). The median time from aortic valve replacement to CT for the entire cohort was 83 days (IQR 33-281). Subclinical leaflet thrombosis was less frequent among patients receiving anticoagulants (eight [4%] of 224) than among those receiving dual antiplatelet therapy (31 [15%] of 208; p<0·0001); NOACs were equally as effective as warfarin (three [3%] of 107 vs five [4%] of 117; p=0·72). Subclinical leaflet thrombosis resolved in 36 (100%) of 36 patients (warfarin 24 [67%]; NOACs 12 [33%]) receiving anticoagulants, whereas it persisted in 20 (91%) of 22 patients not receiving anticoagulants (p<0·0001). A greater proportion of patients with subclinical leaflet thrombosis had aortic valve gradients of more than 20 mm Hg and increases in aortic valve gradients of more than 10 mm Hg (12 [14%] of 88) than did those with normal leaflet motion (seven [1%] of 632; p<0·0001). Although stroke rates were not different between those with (4-12 strokes per 100 person-years) or without (1·92 strokes per 100 person-years) reduced leaflet motion (p=0·10), subclinical leaflet thrombosis was associated with increased rates of transient ischaemic attacks (TIAs; 4·18 TIAs per 100 person-years vs 0·60 TIAs per 100 person-years; p=0·0005) and all strokes or TIAs (7·65 vs 3·36 per 100 person-years; p<0·001).

INTERPRETATION Subclinical leaflet thrombosis occurred frequently in bioprosthetic aortic valves, more commonly in transcatheter than in surgical valves. Anticoagulation (both NOACs and warfarin), but not dual antiplatelet therapy, was effective in prevention or treatment of subclinical leaflet thrombosis. Subclinical leaflet thrombosis was associated with increased rates of TIAs and strokes or TIAs. Despite excellent outcomes after TAVR with the new-generation valves, prevention and treatment of subclinical leaflet thrombosis might offer a potential opportunity for further improvement in valve haemodynamics and clinical outcomes.

FUNDING RESOLVE (Cedars-Sinai Heart Institute) and SAVORY (Rigshospitalet).

11. Thrombosis in Inherited Fibrinogen Disorders.

Authors Korte, Wolfgang; Poon, Man-Chiu; Iorio, Alfonso; Makris, Michael
Source Transfusion medicine and hemotherapy : officielles Organ der Deutschen Gesellschaft fur Transfusionsmedizin und Immunhamatologie; Apr 2017; vol. 44 (no. 2); p. 70-76
Although inherited fibrinogen disorders (IFD) are primarily considered to be bleeding disorders, they are associated with a higher thrombotic complication risk than defects in other clotting factors. Managing IFD patients with thrombosis is challenging as anticoagulant treatment may exacerbate the underlying bleeding risk which can be life-threatening. Due to the low prevalence of IFD, there is little information on pathophysiology or optimal treatment of thrombosis in these patients. We searched the literature for cases of thrombosis among IFD patients and identified a total of 128 patient reports. In approximately half of the cases, thromboses were spontaneous, while in the others trauma, surgery, and parturition contributed to the risk. The true mechanism(s) of thrombosis in IFD patients remain to be elucidated. A variety of anticoagulant treatments have been used in the treatment or prevention of thrombosis, sometimes with concurrent fibrinogen replacement therapy. There is no definite evidence that fibrinogen supplementation increases the risk of thrombosis, and it may potentially be effective in the treatment and prevention of both thrombosis and hemorrhage in IFD patients.

12. Characteristics and surgical management of flap compromise caused by thrombosis of the internal jugular vein.

Authors: Yang, Bin; Qu, Yi; Su, Ming; Li, Jinzhong; Li, Hua; Xing, Rudong; Han, Zhengxue
Source: Journal of cranio-maxillo-facial surgery : official publication of the European Association for Cranio-Maxillo-Facial Surgery; Feb 2017; vol. 45 (no. 2); p. 347-351
Publication Date: Feb 2017
Publication Type(s): Journal Article
PubMedID: 28062176
Database: Medline
Abstract: BACKGROUND: A principal reason for flap compromise in oral and maxillofacial head and neck surgery, and failure of a free flap transfer, is thrombosis of a drainage vein such as the internal jugular vein. This study characterized flap compromise caused by internal jugular vein thrombosis after a free flap transfer, and its management. PATIENTS AND METHODS: A retrospective clinical study was conducted of 306 consecutive microsurgical free flaps performed for 305 patients with head and neck cancer from March 2003 to March 2013 at the Department of Oral and Maxillofacial Surgery at Beijing Stomatological Hospital, Capital Medical University. RESULTS: Vascular thrombosis developed postoperatively in 18 of the 306 free flaps (5.9%): 1 arterial and 17 venous. Of the latter, in 10 patients the thrombosis occurred at the anastomosis site; in 7 patients internal jugular vein thrombosis was detected during emergent reexploration (4 radial forearm free flaps, 1 fibular flap, and 2 anterior lateral thigh flaps). The 4 cases involving radial forearm free flaps were salvaged successfully by venous transfer to bridge the reflow vein to the anterior jugular vein, or removal of the thrombosis in the internal jugular vein and re-anastomosis. The remaining 3 cases of internal jugular vein thrombosis were not salvaged: 2 defects were reconstructed with major pectoralis myocutaneous flaps, and the other was closed directly without reconstruction. CONCLUSIONS: In oral and maxillofacial head and neck cancer surgery, postoperative thrombosis of the internal jugular vein can result in failure of the free flap transfer.


Authors: Yalaza, Metin; Kafadar, Mehmet Tolga; Çıvgın, Esra Yurduseven; Düzgün, Arife Polat
Source: The journal of breast health; Jan 2017; vol. 13 (no. 1); p. 43-45
Publication Date: Jan 2017
Publication Type(s): Journal Article
PubMedID: 28331768
Database: Medline
Abstract: External jugular vein thrombosis is a rare vascular event which may lead fatal complication such as sepsis and pulmonary embolism. Its relation to the visceral solid tumor as an etiologic factor has been established well. Although external jugular vein thrombosis may be seen in malignancy, it is unusual to see as a sign of breast cancer. Most of the external jugular vein thrombosis occurs secondary to compression of the vein. Vascular thrombosis due to hypercoagulability is known as Trousseau syndrome. Herein, we present a case of metastatic breast cancer which presented with external jugular vein thrombosis; Trousseau syndrome.


Authors: Byrnes, James R; Wolberg, Alisa S
Source: Blood; Aug 2017
Publication Date: Aug 2017
Publication Type(s): Journal Article
PubMedID: 28811305
Database: Medline
Red blood cells (RBCs) have historically been considered passive bystanders in thrombosis. However, clinical and epidemiological studies have associated quantitative and qualitative abnormalities in RBCs, including altered hematocrit, sickle cell disease, thalassemia, hemolytic anemias, and malaria, with both arterial and venous thrombosis. A growing body of mechanistic studies suggests RBCs can promote thrombus formation and enhance thrombus stability. These findings suggest RBCs may contribute to thrombosis pathophysiology and reveal potential strategies for therapeutically targeting RBCs to reduce thrombosis.

### 15. A survey of thrombosis experts evaluating practices and opinions regarding venous thromboprophylaxis in patients post major abdominal surgery.

**Authors**
Al Rawahi, Bader; Le Gal, Grégoire; Auer, Rebecca; Carrier, Marc

**Source**
Thrombosis journal; 2017; vol. 15; p. 2

**Publication Date**
2017

**Publication Type(s)**
Journal Article

**PubMedID**
28100960

**Database**
Available at Thrombosis journal from BioMed Central

**Abstract**
**BACKGROUND**
Patients undergoing major abdominal surgery are at high risk for developing venous thromboembolism in the post-operative period. Current evidence-based guidelines recommend routine pharmacological venous thromboembolism prophylaxis in patient at moderate to high risk post major abdominal surgery. However, the type of agent, dose and duration of thromboprophylaxis remain unclear. We sought to survey current clinical practice and assess for potential clinical equipoise regarding pharmacological thromboprophylaxis post major abdominal surgery.

**METHODS**
An electronic survey targeting thrombosis expert members of Thrombosis Canada was conducted.

**RESULTS**
The total response rate was 52.3% (45/86). All thrombosis experts recommended pharmacological thromboprophylaxis for high risk patients post major abdominal surgery. Over 68% of the surveyed thrombosis experts recommended thromboprophylaxis during hospitalization only. The majority of the participants recommended using LMWH (85.9%) over UFH (10.1%). Approximately a third of the surveyed thrombosis experts estimated the incidence of overall VTE at 7 to 10 days post-operatively in patients who do not receive thromboprophylaxis post major abdominal surgery to be between 4 and 6%. A total of 55.3% of the thrombosis experts estimated the incidence of PE to be between 0.5 and 1.0% for the same patient population. The risk of major bleeding episode was estimated to be between 0.5 and 1% in patients receiving 7 to 10 days of pharmacological thromboprophylaxis in the post-operative period by a majority of the thrombosis experts (68.4%). However, approximately 80% of thrombosis experts believed that there is still some clinical equipoise around the use of thromboprophylaxis post discharge (up to 7 to 10 days) in high risk adult patients post major abdominal surgery.

**CONCLUSION**
Thrombosis experts recommend LMWH prophylaxis post major abdominal surgery. There is still, however, significant clinical equipoise regarding the duration of thromboprophylaxis (hospitalization only vs. total to 7-10 days). The result of the survey might not be generalizable to non-academic centers and to other countries.

### 16. Idiopathic thrombosis.

**Authors**
Tsuda, Hiroko

**Source**
[Rinsho ketsueki] The Japanese journal of clinical hematology; 2017; vol. 58 (no. 10); p. 2087-2095

**Publication Date**
2017

**Publication Type(s)**
Journal Article

**PubMedID**
28978853

**Database**
Medline

**Abstract**
Idiopathic thrombosis involves a group of inherited thrombophilia predisposed to severe thrombosis of early onset and associated with an adverse outcome due to recurrence, and therefore, requires long-term anticoagulation therapy. The causative factors of a predisposition to thrombosis include immobility, dehydration, infection, surgery, injury, cancer, pregnancy, and estrogen use. The inherited deficiencies of antithrombin (AT), protein C (PC), and protein S (PS) are specified as “Specific Pediatric Chronic Diseases.” However, medical expense assistance for patients terminates when they reach the age of 20 years. On April 1st 2017, “Idiopathic Thrombosis due to Inherited Thrombophilia,” consisting of inherited AT, PC, and PS deficiencies, was specified as an "Intractable Disease," and aid for medical expenses became available. Accordingly, progress in the research and practice of idiopathic thrombosis is expected in future to improve the medical care system and to construct a database via clinical surveys.

### 17. The impact of femoral arterial thrombosis in paediatric cardiac catheterisation: a national study.

**Authors**
Kim, Jina; Sun, Zhifei; Benrashid, Ehsan; Southerland, Kevin W; Lawson, Jeffrey H; Fleming, Gregory A; Hill, Kevin D; Tracy, Elisabeth T

**Source**
Cardiology in the young; Jul 2017; vol. 27 (no. 5); p. 912-917

**Publication Date**
Jul 2017

**Publication Type(s)**
Journal Article
BACKGROUND Previous studies have identified risk factors for femoral arterial thrombosis after paediatric cardiac catheterisation, but none of them have evaluated the clinical and economic significance of this complication at the population level. Therefore, we examined the national prevalence and economic impact of femoral arterial thrombosis after cardiac catheterisation in children.

METHODS Patients?18 years of age who underwent cardiac catheterisation were identified in the 2003-2009 Kids' Inpatient Database. Patients were stratified by age as follows: <1 year of age or 1-18 years of age. The primary outcome was shunt thrombosis of the lower extremity during the same hospitalisation as cardiac catheterisation. Propensity score matching was used to determine the impact of femoral arterial thrombosis on hospital length of stay, cost, and mortality.

RESULTS Among the 11,497 paediatric cardiac catheterisations identified, 4558 catheterisations (39.6%) were performed in children <1 year of age. This age group experienced a higher prevalence of reported femoral arterial thrombosis, compared with children aged 1-18 years (1.3 versus 0.3%, p<0.001). After matching, femoral arterial thrombosis in children <1 year of age was associated with similar mortality (5.4 versus 1.8%, p=0.28), length of stay (8 versus 5 days, p=0.11), and total hospital cost ($27,135 versus $28,311, p=0.61), compared with absence of thrombosis.

CONCLUSIONS Femoral arterial thrombosis is especially prevalent in children <1 year of age undergoing cardiac catheterisation. Clinicians should be vigilant in monitoring femoral arterial patency in neonates and infants after cardiac catheterisation.

18. Risk factors for in-hospital shunt thrombosis and mortality in patients weighing less than 3 kg with functionally univentricular heart undergoing a modified Blalock-Taussig shunt†.

Authors Chittithavorn, Voravit; Duangpakdee, Pongsanee; Rergkliang, Chareonkiat; Pruekprasert, Napat
Source Interactive cardiovascular and thoracic surgery; May 2017
Publication Date May 2017
Publication Type(s) Journal Article
PubMedID 28520941
Database Medline
Abstract OBJECTIVE To determine the association between several perioperative variables and in-hospital shunt thrombosis and mortality in patients weighing less than 3 kg with functional univentricular heart (UVH) who underwent modified Blalock-Taussig shunt.

METHODS Between January 2006 and February 2016, 85 patients who weighed less than 3 kg with functional UVH and underwent modified Blalock-Taussig shunt were reviewed. In-hospital shunt thrombosis and mortality were the primary outcomes. The associations between perioperative variables and outcomes were assessed with univariate and multivariate analyses.

RESULTS In-hospital shunt thrombosis was 14% (12 of 85). Hospital mortality was 18% (15 of 85), which resulted in an 82% discharge survival rate. Shunt thrombosis was significantly associated with in-hospital mortality (odds ratio 18.9, 95% confidence interval 4.5-78.9). There were no statistically significant associations between weight, specific diagnosis of functional UVH and shunt thrombosis or mortality. Multivariate analysis identified delayed initiation of anticoagulant (P < 0.01) and postoperative cardiac arrest (P < 0.01) as risk factors of shunt thrombosis, while intraoperative bradycardia (P < 0.01), high postoperative haemoglobin (P = 0.03) and shunt thrombosis (P < 0.01) were risk factors for hospital mortality.

CONCLUSIONS In this high-risk group of patients who weighed less than 3 kg with functional UVH and who underwent modified Blalock-Taussig shunt, in-hospital mortality was strongly associated with the occurrence of shunt thrombosis. Our study highlighted the perioperative variables of delayed postoperative initiation of anticoagulant, cardiac arrest and the occurrence of intraoperative bradycardia that were significant risk factors for shunt thrombosis and mortality. Achieving better quality of perioperative care potentially improves outcomes.


Authors Koupenova, Milka; Kehrel, Beate E; Corkrey, Heather A; Freedman, Jane E
Source European heart journal; Mar 2017; vol. 38 (no. 11); p. 785-791
Publication Date Mar 2017
Publication Type(s) Journal Article
PubMedID 28039338
Database Medline
Abstract Haemostasis and thrombosis are complex, multifactorial processes. There is an evolving understanding of the mechanisms influencing vascular occlusion and the role of inflammation and immunity. Despite major advances in elucidating the mechanistic pathways mediating platelet function and thrombosis, challenges in the treatment of vascular occlusive diseases persist. Pharmacological advances have greatly affected thrombotic outcomes, but this has led to the unwanted side effect of bleeding. Detailed assessment of the impact of non-thrombotic diseases on haemostasis and thrombosis is necessary to better evaluate thrombotic risk and establish optimal treatment. This review will focus on recent advances in understanding the contribution of evolving risk factors to thrombosis.

20. Circulating Extracellular DNA: Cause or Consequence of Thrombosis?
Thrombosis leads to ischemic organ damage in cardiovascular and thromboembolic diseases. Neutrophils promote thrombosis in vitro and in vivo by releasing neutrophil extracellular traps (NETs). NETs are composed of DNA filaments coated with histones and neutrophil enzymes such as myeloperoxidase (MPO). Circulating extracellular DNA (ceDNA) is widely used as a surrogate marker to monitor NET formation in thrombosis. This narrative review summarizes the association of ceDNA with human thrombosis. Levels of ceDNA indicate the extent and outcome of several cardiovascular and thromboembolic diseases, including myocardial infarction, stroke, and venous thromboembolism. ceDNA correlates with markers of coagulation and platelet consumption, thus supporting the hypothesis that ceDNA may be a surrogate marker of thrombus formation. In addition, ceDNA levels correlate with markers of cell injury and size of ischemic lesions, suggesting that ceDNA does not derive from NETs but is probably released from damaged organs. Few studies identified NET-specific biomarkers such as DNA-MPO complexes in the blood of patients with thrombosis. In conclusion, it remains to be established whether ceDNA in patients derives from NETs and is a cause or consequence of thrombosis.


OBJECTIVES The effect of portal vein thrombosis on the progression of liver disease is controversial, with no consensus on optimal treatment. We aimed to assess how portal vein thrombosis affects wait list outcomes, identify risk factors associated with its development while on a wait list, and assess its effects on patient and graft survival. MATERIALS AND METHODS This US-based retrospective cohort study analyzed 134,109 adult patients on wait lists for or undergoing primary orthotopic liver transplant between January 2002 and June 2014. Rate of portal vein thrombosis development, time from entry on wait list to transplant, comparisons of wait list drop-off rates between patients with versus those without portal vein thrombosis, risk factors associated with its development while on a wait list, and its effects on patient and graft survival were analyzed. RESULTS We found that the rate of portal vein thrombosis at listing increased. Patients with the disease at listing were more likely to be removed from wait lists because of being too sick. Portal vein thrombosis at listing was an independent risk factor for being removed from a wait list. Of 63,265 patients who underwent primary orthotopic liver transplant, those with the disease were more likely to have higher Model for End-Stage Liver Disease scores and incidence of nonalcoholic steatohepatitis and diabetes mellitus. Portal vein thrombosis had a negative effect on patient and graft survival. Nonalcoholic steatohepatitis, body mass index, diabetes, and hepatocellular carcinoma were identified as risk factors for its development. CONCLUSIONS Portal vein thrombosis represents an increasing management and outcome burden in liver transplant. Having this disease at listing and/or at time of transplant is associated with worse patient and graft survival. Nonalcoholic steatohepatitis and hepatocellular carcinoma are among the biggest risk factors for its development while on a wait list.

22. A systematic review of clinical prediction scores for deep vein thrombosis.

OBJECTIVES The effect of portal vein thrombosis on the progression of liver disease is controversial, with no consensus on optimal treatment. We aimed to assess how portal vein thrombosis affects wait list outcomes, identify risk factors associated with its development while on a wait list, and assess its effects on patient and graft survival. MATERIALS AND METHODS This US-based retrospective cohort study analyzed 134,109 adult patients on wait lists for or undergoing primary orthotopic liver transplant between January 2002 and June 2014. Rate of portal vein thrombosis development, time from entry on wait list to transplant, comparisons of wait list drop-off rates between patients with versus those without portal vein thrombosis, risk factors associated with its development while on a wait list, and its effects on patient and graft survival were analyzed. RESULTS We found that the rate of portal vein thrombosis at listing increased. Patients with the disease at listing were more likely to be removed from wait lists because of being too sick. Portal vein thrombosis at listing was an independent risk factor for being removed from a wait list. Of 63,265 patients who underwent primary orthotopic liver transplant, those with the disease were more likely to have higher Model for End-Stage Liver Disease scores and incidence of nonalcoholic steatohepatitis and diabetes mellitus. Portal vein thrombosis had a negative effect on patient and graft survival. Nonalcoholic steatohepatitis, body mass index, diabetes, and hepatocellular carcinoma were identified as risk factors for its development. CONCLUSIONS Portal vein thrombosis represents an increasing management and outcome burden in liver transplant. Having this disease at listing and/or at time of transplant is associated with worse patient and graft survival. Nonalcoholic steatohepatitis and hepatocellular carcinoma are among the biggest risk factors for its development while on a wait list.
Abstract

Objective Diagnosis of deep vein thrombosis remains a challenging problem. Various clinical prediction rules have been developed in order to improve diagnosis and decision making in relation to deep vein thrombosis. The purpose of this review is to summarise the available clinical scores and describe their applicability and limitations. Methods A systematic search of PubMed, MEDLINE and EMBASE databases was conducted in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidance using the keywords: clinical score, clinical prediction rule, risk assessment, clinical probability, pretest probability, diagnostic score and medical Subject Heading terms: ‘Venous Thromboembolism/diagnosis’ OR ‘Venous Thrombosis/diagnosis’. Both development and validation studies were eligible for inclusion. Results The search strategy returned a total of 2036 articles, of which 102 articles met a priori criteria for inclusion. Eight different diagnostic scores were identified. The development of these scores differs in respect of the population included (hospital inpatients, hospital outpatients or primary care patients), the exclusion criteria, the inclusion of distal deep vein thrombosis and the use of D-dimer. The reliability and applicability of the scores in the context of specific subgroups (inpatients, cancer patients, elderly patients and those with recurrent deep vein thrombosis) remains controversial. Conclusion Detailed knowledge of the development of the various clinical prediction scores for deep vein thrombosis is essential in understanding the power, generalisability and limitations of these clinical tools.


Authors
Martin, Karlyn

Source
Current hematologic malignancy reports; Sep 2017

Publication Date
Sep 2017

Publication Type(s)
Journal Article Review

PubMedID
28948496

Database
Medline

Abstract
PURPOSE OF THE REVIEWThe Philadelphia chromosome-negative myeloproliferative neoplasms (MPN) are characterized by both thrombotic and bleeding complications. The purpose of this review is to describe the risk factors associated with bleeding and thrombosis in MPN, as well as to review prevention strategies and management of these complications.RECENT FINDINGSWell-described risk factors for thrombotic complications include older age and history of prior thrombosis, along with traditional cardiovascular and venous thromboembolic risk factors. More recently, JAK2 V617F mutation has been found to carry an increased risk of thrombotic complications, whereas CALR has a lower risk than JAK2 mutation. Factors associated with an increased risk of bleeding in MPN include a prior history of bleeding, acquired von Willebrand syndrome, and primary myelofibrosis. Recent findings suggest that thrombocytosis carries a higher risk of bleeding than thrombosis in MPN, and aspirin may exacerbate this risk of bleeding, particularly in CALR-mutated ET. Much of the management of MPN focuses on predicting risk of bleeding and thrombosis and initiating prophylaxis to prevent complications in those at high risk of thrombosis. Emerging evidence suggests that sub-populations may have bleeding risk that outweighs thrombotic risk, particularly in setting of antiplatelet therapy. Future work is needed to better characterize this balance. At present, a thorough assessment of the risks of bleeding and thrombosis should be undertaken for each patient, and herein, we review risk factors for and management of these complications.


Authors
Caparelli, Michael L; Perlman, Steven; Lalezari, Sepehr

Source
Annals of vascular surgery; Sep 2017

Publication Date
Sep 2017

Publication Type(s)
Journal Article

PubMedID
28916305

Database
Medline

Abstract
Thrombosis of the inferior vena cava (IVC) continues to be a rare event, and there is a scarcity of evidence with regard to its etiology. One source for IVC thrombosis is external compression from adjacent structures. In this case series, we present 1 case of IVC thrombosis caused by a severely distended bladder and a case of external iliac thrombosis caused by external compression from an abnormally enlarged uterus. The treatment of each case is varied and included novel oral anticoagulation, catheter-directed thrombolysis in conjunction with mechanical thrombectomy, or a combination of these. We conclude that the choice of therapy should be tailored on a case-by-case basis.


Authors
Yu, Y-D; Kim, D-S; Han, J-H; Yoon, Y-I

Source
Transplantation proceedings; Jun 2017; vol. 49 (no. 5); p. 1202-1206

Publication Date
Jun 2017

Publication Type(s)
Journal Article

PubMedID
28583558
Portal vein thrombosis remains a challenging issue in liver transplantation. When thrombectomy is not feasible due to diffuse portosplenic thrombosis, other modalities are adapted such as the use of a jump graft or portal tributaries or even multivisceral transplantation. For patients with diffuse thrombosis of the splanchnic venous system, a large pericholedochal varix can be a useful vessel for providing splanchnic blood flow to the graft and for relieving portal hypertension. We report our experience of successfully treating a patient with diffuse portosplenic thrombosis using a pericholedochal varix for portal flow reconstruction during deceased donor liver transplantation and eventually preventing unnecessary multivisceral transplantation. A 56-year-old man diagnosed with liver cirrhosis due to hepatitis B underwent deceased donor liver transplantation due to refractory ascites. Preoperative imaging revealed diffuse portosplenic thrombosis with large amount of ascites. During the operation, dissection of the main portal vein was not possible due to the development of multiple large pericholedochal varices and cavernous change of the main portal vein. After outflow reconstruction, portal inflow was restored by anastomosing the graft portal vein to a large pericholedochal varix. Postoperatively, although abdominal computed tomography scan showed stenosis of portal vein anastomosis site, liver function tests improved, and Doppler sonogram revealed no flow disturbance. During follow-up, the patient repeatedly developed hydrothorax and ascites. In addition, stenosis of the portal vein anastomosis and thrombosis of the portomesenteric system still remained. The patient underwent transhepatic portal vein stent insertion. After portal vein stent insertion, hydrothorax and ascites improved and the extent of thrombosis of the portomesenteric system decreased without anticoagulation therapy. In conclusion, enlarged pericholedochal varix in patients with totally obliterated splanchnic veins can be a source of useful inflow to restore portal flow and decrease the extent of thrombosis, thereby preventing unnecessary multivisceral transplantation.
## Search Strategy

### Medline

1. (thrombosis).ti,ab
   - Results: 114,978
2. (thrombosis).ti,ab [DT 2017-2017] [Languages English]
   - Results: 4,710