DEEP VENOUS THROMBOSIS OF THE LOWER LIMB IN YOUNG AMBULANT GHANAIANS

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SUMMARY

Background: Deep venous thrombosis (DVT) usually affects patients who are over 40 years old, obese, bed ridden or have had major operations or have hypercoagulable states. Healthy and ambulant young people are usually not affected.

Objectives: To report the observation of DVT in young patients below the age of 40 years

Methods: A study of all healthy and ambulatory patients below the age of forty years with a diagnosis of DVT seen on one surgical unit at the Korle Bu Teaching Hospital, Accra was performed from 1st January 2000 to 30th June 2003.

Results: Eleven patients, eight (8) females and three (3) males aged between 20 and 40 years with a median age of 32 years were treated. All the patients had deep venous thrombosis of the lower limb confirmed with Doppler studies and duplex scan of the lower limb. Swollen lower limb was the commonest presenting symptom and sign. Prolonged sitting was the main factor in 9 out of eleven patients.

Conclusions: Deep venous thrombosis may not be a rare condition in the young ambulant Ghanaian and may be related mainly to a sedentary life style. Diagnosis should be suspected in patients who present with unilateral swollen and oedematous leg. There is the need to study the ailment in greater detail.

Keywords: Venous thromboembolism, deep vein thrombosis

INTRODUCTION

Deep vein thrombosis (DVT) is quite common but its diagnosis may be difficult and in most cases requires a high index of suspicion. The common presenting features of painful, tender, swollen limb which is warmer than the other limb are non specific and may be mimicked by other conditions including cellulitis and lymphangiitis.

There is a paucity of reports on the condition in Africa, which creates the impression that the condition is uncommon in the African. The few reports on DVT in the African literature have mainly been on postoperative patients[1].

The triad of stasis, hypercoagulable states of blood and endothelial damage have long been known to be factors that favour the formation of thrombi. DVT usually complicates the course of ill hospitalized, recuperating, postoperative or pregnant patients. Others risk factors may include past history of DVT, varicose veins, intra-abdominal tumours, age over 40 years, obesity and the types of operation a patient undergoes.

Occasionally DVT may affect ambulatory and otherwise healthy young individuals. The risk factors in these cases may include long distance travels on long haul flights, the so called 'economy class syndrome,[2,3,4] where the cramped conditions of the flight cabins and immobility promote venous stasis. Similar conditions are found in long distance bus or train travels.

Other factors that may promote DVT are the presence of genetic clotting defects due to activated protein C resistance (factor V Leiden mutation)[5,6,7,,8,9], prothrombin G20210A gene mutation,[5,7] deficiencies of anti-thrombin III, proteins C, and S,[5,6] and hyperhomocysteinaemia[6,8,10]. The presence of antiphospholipid and lupus antibodies[5,12] are also associated with an increased risk of venous thromboembolism.

PATIENTS AND METHODS

Between January 2000 and June 2003 we treated eleven young patients with deep venous thrombosis on one unit of the Department of Surgery, Korle-Bu Teaching Hospital, Accra. All the patients had no antecedent surgical operation or any known acquired or genetic risk factors for venous

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thromboembolism. A comprehensive history including a family history of DVT was taken and patients were fully examined. All the patients had a full blood count, sickling test and clotting profile performed. In addition, all the patients had Doppler ultrasound test and duplex scan of the affected lower limb performed. All the female patients had a pelvic ultrasound scan to exclude a pelvic mass compressing the pelvic veins. All the patients were admitted and treated by elevation of the limb, anticoagulation initially with bolus heparin 10,000 units followed by subcutaneous heparin 15,000 units twice daily and concurrent tablet warfarin 10mg on the first and second days followed by 5mg daily subsequently. Anticoagulation was monitored with regular clotting screen and heparin treatment was stopped after an INR of 2-3 was achieved. All the patients were then put on daily warfarin 5 to 15 mg for periods ranging between three months and one year and the INR monitored regularly to keep it between 2 and 3. All the patients were asked to wear graded compression stockings regularly on discharge from hospital. The patients have been followed up for periods between two and three years.

RESULTS

Eleven patients were diagnosed with DVT in the period of the study. Eight (72.7%) were females and three (27.3%) were males with an age range of 20 to 40 years. The median age was 32 years.

Table 1 Demography and site of DVT

Patient	Sex	Age	Occupation	Site of DVT by duplex scan (veins)
1	F	20	Apprentice hairdresser	Right popliteal
2	F	23	Salesgirl	Right popliteal
3	F	29	Doctor	Left external iliac, femoral, Popliteal
4	M	29	Businessman	Left femoral and popliteal
5	F	32	Trader	Right femoral and popliteal
6	M	32	Accountant	Left femoral
7	F	34	Trader	Right femoral and popliteal
8	F	37	Trader	Left femoral and popliteal
9	F	40	Trader	Left external iliac and femoral
10	F	40	Seamstress	Right external iliac, femoral and popliteal
11	M	40	Estate agent	Right external iliac, femoral and popliteal

The profile of the patients and the site of DVT are given in Table 1. The 20 year old apprentice hairdresser developed the condition after a three hour journey in a minibus and the 29 year old businessman developed the condition after a four and a half hour flight in the economy class. The female doctor, the estate agent and the accountant were very active professionals who did not think their jobs were sedentary. The six others were made up of four traders, a seamstress and a salesgirl spent most of their working time sitting.

Swollen lower limb was the most common and consistent presenting symptom and sign in these patients and it was present in all eleven patients. The other presentations are given in Table 2.

Table 2 Symptoms and signs of lower limb DVT in 11 patients

Symptoms and Signs	No. of patients	Percentage
Waist, low back and hip pain	4	36.3
Calf pain	7	63.6
Swollen limb	11	100
Swollen limb(whole)	7	63.6
Swollen calf & ankle only	4	36.3
Pitting oedema of lower limb	10	90.9
Warm limb	2	9.1
Tenderness	5	45.5
Prominent superficial veins	1	9.1
Pelvic mass	1	9.1

The sites of involvement with DVT are given in Table 1.

A venogram done on one patient after six weeks of anticoagulation confirmed the presence of organised thrombus and recanalisation of the lower limb veins. The tests for activated protein C resistance (APCR), antithrombin III and proteins C and S on the same patient were all normal.

Complications recorded during the period of follow up included recurrent DVT in one patient ten weeks after presentation, which was successfully managed with warfarin and recurrent leg swelling in two patients. All these patients had external iliac vein thrombosis. There was no pulmonary embolism or death during the period of follow up.

DISCUSSION

Deep vein thrombosis can cause serious morbidity through chronic lower limb venous insufficiency which can result in the chronic leg swelling and ulceration (the postthrombotic leg). It can also be the cause of death through pulmonary embolism or may contribute to the genesis of pulmonary hypertension.[11]

In our study there were eleven otherwise normal young patients who developed deep vein thrombosis. .Four of the patients were traders, one seamstress and another salesgirl. It can be implied that probably the long sitting positions of these patients while they ply their trades might have predisposed them to venous stasis and hence deep vein thrombosis. Two of the patients developed DVT after journeys lasting more than 3 hours and hence might have suffered from the so called "economy class" syndrome.[2,3,4] No explanation can however, be given for the deep venous thrombosis in the doctor and the estate agent who were otherwise active. It was possible to screen only one of these two patients for activated protein C resistance, antithrombin III, and protein C in South Africa but the results on two occasions were normal. The cost of these tests prevented their routine use in the investigation of all the patients in this study.

Deep venous thrombosis can be asymptomatic and hence may be missed while it leads to the serious complication of pulmonary embolism.The condition has usually been associated with hospitalized patients or patients who have undergone surgical operations especially pelvic and orthopaedic operations.

The risk factors of venous thromboembolism undergoing surgical operations have been divided into acquired factors and genetic factors. Acquired factors include immobilization, obesity, pregnancy, nephrotic syndrome, malignancies, cardiac failure, oral contraception, hormone replacement therapy, antiphospholipid antibodies[6] and hyperhomocysteinaemia [5,6,10,]. Genetic factors on the other hand include activated protein C resistance (Factor V Leiden mutation)[5,6,7,8,9] in which the genetic defect leads to the production of factor V whose activated form cannot be readily inactivated by activated protein C. The other genetic factors include Prothrombim G202100A mutation[6,9,] leading to an increase in serum prothrombin levels, deficiencies of antithrombin III, protein C and protein S are rare, and hyperhomocysteinaemia[5,10]. The incidence of activated protein C resistance in the United States is reputed to be 5.3% in the general Caucasian population, 2.2% in Hispanic Americans, 1.2% in African Americans and less than 1% in the Asian population. Unfortunately the prevalenceof these genetic defects is not known in the African population. The rarity of activated protein C resistance in the African may be due to a genuine rarity of the condition in black people as evidenced by the low incidence in the African-American[5] or probably due to low reporting or lack of research in this field of medicine on the African continent. The cost of carrying out these investigations may also limit the ability of doctors to really find out which patient is thrombophilic and who is not.

Occasionally venous thromboembolism occurs in patients after long distance journeys by aircraft, train or motor vehicles in which cases the cramped sitting positions encourage venous stasis. This has given rise to the term "economy class" or "coach class" syndrome in medical terminology[2,3,4,]. The time for the journey and the interval between these journeys and onset of DVT has by some authors to be at least four hours and within 31 days[3,4] respectively.

The diagnosis of deep venous thrombosis of the lower limbs requires a high index of suspicion since the condition can be mimicked by other conditions. For example the swollen painful leg can also be caused by cellulitis, lymphangiitits or ruptured Baker's cyst.

Investigation of deep vein thrombosis includes, the use of Doppler ultrasound to detect flow in the veins when they are compressed or when the patient performs a vasalva manoeuvre. This is operator dependent and may not be reliable unless the operator is very experienced in this procedure.[12] Radiological investigations include the use of venograms which remain the 'gold standard' in most cases[12], duplex or triplex ultrasonography which in some centres have accuracies comparable to venograms. Plethysmography, which includes digital photoplethysmography, computerised strain plethysmography[12] and impedance plethysmography and other forms of this procedure have also been used.

In patients who have not had any trauma or surgical operation like the patients in this study, the measurement of fibrin degradation products like the D-dimer test[12,13] offers an opportunity to confirm the presence of thrombosis in a part of the body but will not localise the exact spot of thrombosis. Clinical examination and other tests will

therefore have to be performed to establish the site of thrombosis.

We conclude that deep venous thrombosis in young ambulant people may not be uncommon in Ghana and has to be thought of in all patients who present with unilateral painful or non painful swollen lower limbs. A sedentary life style or work pattern seems to be the foremost predisposing factor. We recommend that a national database be established to document and obtain the true incidence of this potentially deadly disease. The genetic basis of the disease needs to be assessed in the young ambulant patient.

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