EVERY year deep vein thrombosis (DVT) occurs in about one in 2,000 people in the general population, ranging from less than one in 3,000 in those below the age of 40 to one in 500 in those over 80 (Department of Health, 2002). Thrombosis usually develops as a result of venous stasis or slow flowing blood around venous valve sinuses. Extension of the primary thrombus occurs within or between the deep and superficial veins of the leg. The propagating clot damages valves and may cause a thromboembolism (Gorman et al, 2000).

The traditional management of patients with suspected DVT involves admission to hospital for diagnostic investigations either by venography or duplex ultrasonography (Braithwaite, 2001). Once diagnosis is confirmed, the patient is detained for approximately six days while anticoagulation is initiated. It was noted that the treatment of patients with DVT was inconsistent in Tameside and Glossop Acute services NHS Trust by the consultant vascular surgeon.

Four years ago a consultant vascular surgeon opened a dedicated vascular studies unit at Tameside General Hospital. The aim of the unit was to support the increasing move towards non-invasive vascular techniques. These units tend to be operated by technologists, but in this case the unit was staffed by vascular nurse specialists, who were also trained in duplex scanning.

An audit was initiated in April 2000 to analyse the workload undertaken by the nurses in the vascular studies unit over a 12-month period. This highlighted that a significant proportion of duplex scans were undertaken for the diagnosis of DVT and that in 55 per cent of these scans DVT was not diagnosed. The point of referral was also analysed to determine which areas of patient care were referring patients to the unit for a suspected DVT.

It became increasingly apparent that after the diagnosis of a DVT by duplex scan in the unit, the subsequent management of patients was diverse, primarily because individual patients returned to their original point of referral. Some patients being treated in the trust received anticoagulation treatment while others did not. Other treatment options that were prescribed to only some patients included:

- Full-length anti-embolic stockings or below-the-knee compression stockings.

This situation was unacceptable for two reasons. First, the variation in treatment indicated that the local population was not receiving a consistent, high standard of care. Second, it became apparent that the way DVT was being managed within the trust had significant cost implications in terms of bed occupancy during investigation and treatment.

In order to address this situation a fundamental change in the management of patients with DVT or suspected DVT was proposed. The service would be changed from one which was performed in an inpatient setting to one where the investigations, diagnosis and subsequent treatment occurred in the vascular studies unit on an outpatient basis.

Developing the diagnosis protocol
A working group, consisting of the vascular surgeon, vascular specialist nurses and the business manager, was set up to develop a protocol for both the diagnosis and management of DVT in an outpatient setting. The group’s primary purpose was to utilise existing audit material and create a robust business plan that could be submitted to the trust board.

The audit results demonstrated that the proposed DVT protocol could have several benefits for the trust. These included a potential reduction in bed occupancy for patients with a sole diagnosis of DVT and a reduction in the cost of managing and treating patients with a suspected DVT.

The traditional management of patients with suspected DVT was divided between the deep and superficial veins of the leg. The propagating clot damages valves and may cause a thromboembolism (Gorman et al, 2000).
The treatment protocol

Patients with a diagnosis of calf vein thrombus have four-layer compression bandages applied and receive written and verbal information explaining all aspects of aftercare, including the long-term benefits of compression therapy. They receive a duplex scan one week later to ensure that the thrombus has not propagated. Duplex scans are thereafter repeated at weekly intervals until the thrombus has resolved. The four-layer compression bandage is re-applied at each visit until the swelling has decreased enough to allow the fitting of grade two graduated compression stockings.

Braithwaite (2001) states that there is still some uncertainty about whether calf vein DVT requires anticoagulant therapy. The DVT protocol reflects the view that anticoagulant therapy is not necessary for calf vein DVT. Anticoagulation would be commenced for patients with thrombosis in the popliteal or more proximal veins. All such patients receive daily subcutaneous tinzaparin (175 antifactor Xa IU/kg body weight) injections and are commenced on a loading dose regime of warfarin according to protocol.

Information regarding drug therapy and compression bandaging is given to patients with proximal DVT. A district nurse referral is completed and faxed to the appropriate health centre to complete the administration of the required dosage of heparin. Liaison with the district nursing service enables this transfer of care to take place. Patients can receive daily heparin at home.

The use of compression breaks down the initial oedema associated with DVT, acts as resistance to the muscle pumps and accelerates venous return. It also provides relief from the discomfort associated with DVT. Netzer and Rudofsky (1991) support this, stating that decreasing the diameter of the veins results in increased venous return and prevents thrombus formation. It is hoped that by addressing such symptoms, which are associated with DVT, will avoid problems in future. Indeed, McCollum (1998) supports this, stating that failure to address post-phlebitic symptoms may lead to a lifestyle of debility, attributed to ulcer formation and a chronic swollen leg.

Patients return to the vascular studies unit on the fourth day for: an INR (international normalised ratio) check to monitor the effects of warfarin; prescription of further warfarin; and an assessment of the compression therapy. Patients can also enquire about any aspect of their treatment at this session, and are given information on satellite leg ulcer clinics throughout primary care. They can contact these clinics directly if they require further guidance on their compression therapy. The specialist nurse coordinating these clinics provided liaison for the initiation of the service.

The treatment protocol includes exclusion criteria, which prevent some patients from being treated as outpatients. Although the majority of patients can be treated as outpatients, it was recognised that a complete change to ambulatory DVT management was not possible.

Patients were excluded for the following reasons:

- Suspected pulmonary emboli;
- Pregnancy;
- Known thrombophilia;
- Severe hepatic or renal failure;
- Uncontrolled hypertension;
- Acute peptic ulcer;
- Endocarditis;
- Diabetic retinopathy;
- Cerebral haemorrhage;
- Allergy to heparin.

The vascular studies unit has a philosophy of easy access and a commitment to providing quality care for patients. It aims to ensure that all patients feel that they can play an integral part in the decision-making process with regard to their treatment and care.

This change in the management of DVT has now been fully implemented in the trust. The transition from inpatient care to an ambulatory service required a great deal of dedication and commitment from the vascular studies team.

Impact of the new system

From November 2001 all patients with suspected DVT have been managed via the vascular studies unit according to the agreed protocols. Patients presenting outside ‘office hours’ are treated with tinzaparin as outpatients and given an appointment for the next working day. Those with positive scans are managed as outpatients unless they fall into an exclusion category. Anticoagulant treatment is controlled by the vascular studies unit until taken over by an anticoagulant clinic. Additionally, all patients are given compression bandaging unless they had evidence of arterial disease (ABPI <0.8). Isolated calf vein thrombosis is managed without anticoagulation.

Of 1,454 scans performed in the first year of the service, 75 per cent were negative. The unit treated 106 people with proximal DVTs. Of these 43 were calf vein only. No admissions occurred as a result of complications of treatment. This has resulted in significant reductions in bed occupancy in the trust for the investigation and treatment of DVT.

The service continues to be audited and any requirements to changes in service provision are implemented. It is recognised that this continual monitoring and evaluation of the protocol will ensure that the vascular studies unit can continue to provide a quality, evidence-based service that develops as necessary.

Keywords

- Deep vein thrombosis
- Vascular studies unit

References


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