ORIGINAL ARTICLE

Deep vein thrombosis among injecting drug users in Sheffield

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Aims: To identify the proportion of patients testing positive for deep vein thrombosis (DVT) who are injecting drug users (IDUs), and examine differences in the investigation and management of this group compared with non-IDUs.

Methods: Analysis of data collected from emergency department records and a review of patient notes. **Results:** All patients in this study who were known to inject recreational drugs tested positive for DVT on Doppler ultrasound scan.

Conclusions: IDUs should be considered at high risk of developing DVT and should be investigated accordingly.

To identify the proportion of patients testing positive for deep vein thrombosis (DVT) who are injecting drug users (IDUs).

To establish if the IDUs are managed as inpatients more or less often than their non-IDU counterparts.

To highlight any differences in the medical management of patients with confirmed DVT in each group (IDUs and non-IDUs).

BACKGROUND

Sheffield is one of the larger cities in the north of England, with >510 000 residents recorded at the 2001 census. Like many industrial cities of its size, there is a measurable drug-using population.

The Northern General Hospital (Sheffield, UK) provides the only emergency department for patients >16 years of age in the city. At the time of our study, a patient self-presenting with symptoms suggestive of a DVT would present to this emergency department, unless admitted directly to inpatient medical teams via his or her general practitioner. In our experience, IDUs often present to the emergency department with limb problems suspicious of DVT.

Decisions about investigation of patients with symptoms of DVT often rely on the application of models of pretest probability, such as the widely used Well's criteria.¹

From a review of the literature, we found little evidence that injected drug use is a risk factor for DVT, and papers deal with DVT among a female-only study population² or those known to be positive for DVT, with groin infections subsequent to injected drug use.³ We understand that injected drug use does not feature as a risk factor for DVT on the Well's model because IDUs do not constitute a major proportion of Wells' study population.

DATA SOURCE AND METHODS

The Northern General Hospital has been engaged in research to validate bedside D-dimer testing in the emergency department.⁴ Data are available for analysis from this work, the ongoing audit and service evaluation. For the chosen time period of April 2001 to August 2002, all patients (except those of the lowest risk category proved to have a negative laboratory D-dimer) presenting to the emergency department with a painful swollen limb suspicious of DVT underwent a Doppler ultrasound scan (USS) as part of their investigations—the Doppler USS being considered at the time to be

the investigation of choice. All patients had an additional document with their emergency department records, and it was prospectively recorded if the patient was known to be an IDU (fig 1).

If the patient presented to the emergency department at a time when a Doppler USS was not easily accessible, they were allowed home on daily low-molecular-weight heparin (LMWH)-injections, to return for a scan the next working day, for a review of the scan result in the emergency department follow-up clinic. Patients falling into the high-risk pretest probability group on Well's scoring were invited back for a repeat Doppler USS after 1 week if their first scan was negative.

By looking at the patient records, emergency department notes, in-patient notes and the computerised patient tracking system, we have been able to establish

1. whether the patient was admitted to hospital or not (this may have taken place if, for example, the patient was elderly and had multiple complaints or was unable to take his or her dose of low-molecular weight heparin, etc.);
2. the outcome of investigation—that is, whether Doppler USS confirmed the presence or absence of DVT;
3. whether the patient attended any follow-up appointments, and what treatment was prescribed for medium-term treatment; and
4. if the patient is still alive at follow-up (February 2005).

An accepted limitation of this study is that we are unable to assess from our data the incidence of complications or morbidity from DVT in these patient groups (IDUs and non-IDUs). Such a limitation arises predominantly because of the retrospective design of this study.

RESULTS

The data available for this study identify 109 patients who completed the investigations for DVT. Table 1 shows the investigation results for these.

Perhaps the most striking of the figures shown in table 1 is that all patients known to be IDUs who were suspected of having a DVT were shown to have acute thrombus present on

Abbreviations: DVT, deep vein thrombosis; IDU, injecting drug user; LMWH, low-molecular weight heparins; USS, ultra sound scan

Figure 1 A diagrammatic representation of study methods. DVT, deep vein thrombosis; ED, emergency department; USS, ultra sound scan.

USS. For this period of time, just over twice as many non-IDUs as IDUs presented to the emergency department with symptoms suggestive of DVT requiring ultrasound investigation. The median age in the drug-taking group is lower than that of the non-drug taking group, 29 (29 v 51) years.

Table 2 shows the number of patients from each patient group who received inpatient investigation and management after assessment by the emergency department doctor. The trend in this study is that a higher proportion of IDUs than non-IDUs were admitted for inpatient investigation and

treatment, and, once admitted, the IDUs had a longer inpatient stay.

Table 3 refers only to those patients who have tested positive for DVT, showing the treatment received by each group. The information in this table has been collected from inpatient records (and as a result is incomplete in some areas).

Finally, at the time of follow-up, the hospital records system shows all patients from the IDU group to be alive.

DISCUSSION

It is apparent from our results that among this sample population, all patients suspected of having DVT who were IDUs tested positive for DVT on Doppler USS. As a group, the IDUs were more often admitted to hospital for investigation and management, and treatment received was variable in both type and duration. The DVT investigation and management pathways in Sheffield have been streamlined as a result of these findings.

Several reasons may explain the difference in admission rates and, in addition to physical symptoms and signs of severe proximal disease such as gross oedema and poorly controlled pain, we can speculate that factors associated with

Table 1 Investigation results and median age of patients in the injecting drug user (IDU) and non-IDU groups

	DVT +	DVT –	Median age (IQR), years
IDUs (n = 33)	33 (100%)	0	29 (19–46)
Non-IDUs (n = 76)	32 (42.1%)	44 (57.9%)	51 (18–86)

DVT, deep vein thrombosis; IDUs, injecting drug users; IQR, inter quartile range.

Table 2 Numbers of patients managed as outpatients and those admitted for in-patient management

	Outpatient management	Admitted	Average length of inpatient stay (days)
IDU DVT +	18	15 (45%)	6
IDU DVT –	N/A	N/A	N/A
Non-IDU DVT +	24	8 (25%)	4
Non-IDU DVT –	38	6	4

DVT, deep vein thrombosis; IDU, injecting drug user; N/A, not applicable.

Table 3 Treatment received by patients testing positive for deep vein thrombosis

	LMWH only	LMWH then warfarin	Absconded before treatment	Data unavailable
IDUs	12	9	1	11
Non-IDUs	1	26	0	5

IDU, injecting drug users; LMWH, low-molecular weight heparins.

a chaotic lifestyle of drug taking will have contributed to the decisions to admit some of these patients for investigation and treatment. Contributory factors to admission may include difficulties with accommodation, impaired cognitive function of the patient secondary to the drug misuse and a lack of patient funds to make return journeys to the hospital for further investigations or treatment.

With most UK emergency departments now initiating outpatient treatment for proved DVT,⁵ the decision for admission or outpatient management of IDUs should be made solely on a basis of the clinical scenario, and should of course be made without prejudice towards the drug user. IDUs constitute a patient group that may attract prejudice and treatment bias, and clinicians have a responsibility to avoid prejudice and ensure that the most appropriate treatment is given. Nursing studies have shown that attitudes towards IDUs can vary with the clinical grade of the health professional, with senior professionals tending to be more positive in their attitudes towards IDUs.⁶ We found a lack of uniformity in the type of treatment received by our IDU group at follow-up appointments.

For patients of either group testing positive for DVT, most clinicians would choose one of two management options: LMWH or oral anticoagulation. Limited evidence exists on the optimum treatment for an IDU with DVT, with current suggestions to follow local guidelines.⁷ LMWH produce predictable anticoagulation, and are reasonably simple to give. Patients receiving LMWHs also require less frequent blood monitoring than those receiving warfarin—it has been local policy in Sheffield to simply monitor weekly full blood count to screen for complications of LMWH. However, the intended duration of treatment may affect a clinician's prescribing, and it is here that a balance between risk and benefit must be maintained. The duration of treatment for an IDU may be shorter than that for a non-IDU, to reduce the

incidence of complications such as haemorrhage; however, with shorter treatment regimens, there is increased likelihood of recurrence and morbidity.

Unfortunately, we have been unable to monitor the incidence of complications or recurrence of DVT in this study for either patient group. We are, however, able to confirm that all patients from the IDU group are alive at the time of writing (February 2005), irrespective of how their investigation and treatment was conducted.

In summary, these results show IDUs to be at increased risk of DVT. Patients presenting to the emergency department with symptoms suggestive of DVT should be asked if they inject recreational drugs and investigated as high-risk patients if they do inject.

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