Leaders

Audit of oral anticoagulant treatment

P E Rose on behalf of the BCSH Haemostasis and Thrombosis Task Force of the British Society for Haematology

Introduction

In 1990 the British Committee for Standardization in Haematology (BCSH) Task Force issued guidelines on recommended practice for oral anticoagulant control.¹ Considerable time and resources have been used to minimise the risks of haemorrhage or thrombosis due to over- or under-anticoagulation as a result of varying sensitivities of thromboplastin reagents used in current laboratory tests.² The current quality assurance schemes, however, only ensure that different laboratories attempt to produce equivalent International Normalised Ratios (INRs); they do not ensure that patients receive adequate treatment.

The value of the national and regional laboratory quality assessment schemes is partly undermined if clinicians are not aiming to produce a common code of practice for anticoagulant management.

At the recommendation of the current BCSH Haemostasis and Thrombosis Task Force, an audit was undertaken to ascertain if these recommendations were being followed.

The audit

A questionnaire was sent to consultant haematologists in a region to seek information on current practice in anticoagulant clinics within their district. Clinicians (doctors, nurses, etc) taking the clinics were asked to state the INR range they were hoping to achieve for 15 clinical conditions outlined in the BCSH recommendations (1990), together with duration of treatment. They were also asked how frequently they checked the percentage of results falling within predetermined ranges.

Results for all patients receiving long term warfarin for mechanical heart valve prosthesis were collected for a one week period. Duration of anticoagulation was studied and the numbers of patients receiving anticoagulants within each district were compared. Information was sought to identify non-attenders who had missed appointments by more than four weeks and district audit practice in anticoagulant treatment was examined.

Questionnaires were completed in full by

16 of the 22 districts. Clinical management of anticoagulant clinics was performed by a variety of personnel. In 70% of districts consultant haematologists have direct involvement in the anticoagulant clinics. Other personnel being used included nurses (n = 2), pharmacists (n = 1), medical laboratory scientific officers (n = 1); computer assisted dosage was used in one. Both clinical assistants and junior medical grades were used in 41% of districts. The percentage compliance of hospitals in the BCSH therapeutic ranges are shown for six of the commonest clinical problems (table).

The findings

Using the BCSH guidelines as the therapeutic standard for the audit, levels below recommendation were aimed for by one in three clinics for recurrent thromboembolic disease and patients with mechanical prosthetic valves. Levels of anticoagulation above the BCSH recommendations were considered desirable by two thirds of districts for patients with atrial fibrillation and transient ischaemic attacks. A particularly wide and variable range of anticoagulation was being used for patients with atrial fibrillation. In contrast, one clinic aimed to treat all patients receiving oral anticoagulants in an INR range of 2-2.5, irrespective of the clinical condition. Four clinics in the region routinely reviewed to see how many patients were within their predetermined therapeutic ranges. This contrasted with the fact that all hospitals took part in national quality assessment schemes for laboratory control of anticoagulation. Only four districts treated all patients according to the BCSH guidelines.

Results from 258 patients with mechanical prosthetic valves collected across the region showed that 49% of patients were in the BCSH recommended range of 3-4.5 at the time of the audit, with 47% below the desired range and 4% overanticoagulated. Considerable variation from different centres was observed, ranging from 7% to 81% of patients with mechanical valves being anticoagulated in the BCSH range.

Duration of anticoagulation for deep vein thrombosis (DVT) ranged from four weeks to six months, and was less than the recommended three months in two thirds of districts. Anticoagulation for pulmonary embolism was also less than the recommended six months, with two thirds anticoagulated for only three months. Duration of anticoagulation ranged from three months to long term for patients with one episode of pulmonary embolism.

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	BCSH INR ranges	% Hospitals using BCSH INR range	Range of INR values in use
Proximal deep vein thrombosis	2-3	64%	2-4
Pulmonary embolism	2-3	50%	2-4.5
Mechanical prosthetic heart valves	3-4.5	60%	2-4.5
Transient ischaemic attacks	2-3	37%	1.8-4.5
Atrial fibrillation	2-3	33%	1.8-4
Recurrent venous thromboembolic disease	3-4.5	33%	1.8-4.5

Most districts had between 200 and 500 patients attending anticoagulant clinics, with two districts with more than 1000 patients. The size of anticoagulant clinic did not seem to influence the standard of anticoagulant management. The BCSH recommendations were not being used in districts where junior medical staff performed the bulk of the out-patient work.

Administrative support for clinics was generally good, although three districts were unable to say how many patients had missed appointments by more than four weeks and only four out of 16 laboratories within the region regularly audited clinical management of anticoagulant control.

Comment

The BCSH initiated the first steps for audit of oral anticoagulant treatment by producing guidelines for standard treatment. For BCSH guidelines and quality assurance schemes to be meaningful, however, it is important to see if these standards are being achieved, and if not, why not? This may give information on the quality of clinical practice. Equally well, audit can provide feedback on the perceived quality of initial guidelines.

In this region anticoagulant clinics were performed by consultant haematologists, junior medical staff, nurses, pharmacists, medical laboratory scientific officers and computers. With such diversity, it is perhaps understandable that common management was not found. Problems were found in communicating information to clinicians with different medical backgrounds. This could be improved if consultant haematologists ensured a greater input into postgraduate education in respect of therapeutic guidelines within their district, particularly where other clinicians and junior medical staff are advising on oral anticoagulant dosage. A further method for disseminating guidelines is for laboratories to report results along with recommended INR ranges, or to have INR ranges on anticoagulant clinic referral forms.

This audit has highlighted the fact that many clinicians might be unaware of the BCSH recommendations and have therefore not incorporated them into their routine clinical practice. Failure to have standard anticoagulant ranges or to audit the results of treatment undervalues the quality assessment schemes for laboratory control of oral anticoagulation.

Many clinicians still seem to be concerned about anticoagulation in the higher therapeutic range 3–4.5. This is a major reason for underanticoagulation of patients with mechanical heart valve prosthesis. Two clinicians indicated reluctance to use high levels of anticoagulation and supported the case following improvements in prosthetic heart valves and recent reports of adequate anticoagulation at a lower therapeutic range.³ Current reported findings would, however, favour a higher level of anticoagulation.^{4–6} A recent computer based survey of over 5000 anticoagulant patients in England showed no significant increase in haemorrhagic problems

until an INR of greater than 5 was achieved.⁷ In particular, there was no difference in haemorrhagic complications with patients anticoagulated in the therapeutic ranges 2–3 and 3–4.5.

A stronger case can, however, be made for lower levels of anticoagulation for patients with recurrent venous thrombotic problems, with higher levels of anticoagulation reserved for cases of recurrent thrombotic problems on lower intensity anticoagulation.⁶ Higher levels of anticoagulation than recommended are commonly being used for patients with transient ischaemic attacks and fibrillation, and while one district anticoagulated patients in a therapeutic range of INR 1.8–2.5, another routinely maintained patients with transient ischaemic attacks with an INR of between 3–4.5. Such variation in anticoagulation may reflect the preferences of clinicians from different medical specialties.

A case may also be made for review of duration of oral anticoagulant treatment. The survey has shown that it is common practice to prescribe shorter periods of anticoagulation than are recommended in the guidelines. This does have considerable resource implications for laboratories and hospitals. Results from the Regional Committee of the British Thoracic Society⁸ would support the view that venous thromboembolism arising after surgery may be adequately treated for a much shorter period than currently recommended. Results of audit of readmissions for recurrent thromboembolic disease are also eagerly awaited. All these issues should be considered when the guidelines are next reviewed.

In conclusion, we have identified that the policies of oral anticoagulation across the region are not consistent. It is therefore reasonable to assume that there is a similar lack of consistency nationally. A more detailed audit and subsequent rationalisation of anticoagulant management would be beneficial to both patients, in terms of quality of treatment, and to hospitals in terms of cost effective use of resources. This audit needs to be reflected in a review of future BCSH oral anticoagulant guidelines.

Finally, the guidance on guidelines⁹ emphasises that guidelines are considerably easier to write than to carry out. This is a sentiment that this study would endorse.

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- 6 Poller L, Thompson J. *Thrombosis and its management*. Edinburgh: Churchill Livingstone, 1993.
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