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MAIN ARTICLE

Does the continuation of warfarin change management outcomes in epistaxis patients?

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Abstract

Objective: This study aimed to compare management, readmission rates and length of in-patient stay amongst warfarinised and non-warfarinised patients to ascertain future treatment protocols.

Methods: A 12-month retrospective review was conducted of ENT epistaxis admissions. Admission details such as length of in-patient stay, clotting profile and management plan were recorded. Comparisons of management and outcome for warfarinised and non-warfarinised patients were made using the Fisher's exact paired *t*-test.

Results: Of 176 epistaxis patients admitted, 31 per cent were warfarinised, 18 per cent were on another form of anticoagulation or antiplatelet therapy, and 51 per cent were not on any medication that might impose a bleeding risk. The international normalised ratio at admission was high in 13 per cent of warfarinised patients; the remaining patients had therapeutic or sub-therapeutic international normalised ratios and so warfarin was continued. The mean in-patient stay was similar for all cohorts; however, warfarinised patients had a higher readmission rate.

Conclusion: Warfarinised epistaxis patients may be safely managed without stopping their anticoagulation therapy, provided their international normalised ratio is at therapeutic or sub-therapeutic levels. By continuing regular anticoagulation therapy, warfarinised patients may be discharged without delay.

Key words: Epistaxis; Patient Admission; Cost; Pain; Patient Discharge; Warfarin

Introduction

Therapeutic advances to prevent atrial fibrillation complications have resulted in softer criteria for initiating anticoagulation, which has led to an increase in the population eligible for oral anticoagulation.[1] The use of anticoagulants has increased in recent years, and patients taking warfarin in particular now represent 1 per cent of the UK population.[2] It is thought that increased warfarin use in the UK has contributed to a rise in epistaxis patients. With 11 862 admissions every year,[3] epistaxis remains a significant emergency department and ENT problem. However, no definite causal link has been identified and, with an ageing population and an increased incidence of potential co-morbidities that affect bleeding risk,[4] many other variables can be implicated in the increase of epistaxis patient admissions. Nevertheless, with their higher bleeding risk, warfarinised patients represent an important subgroup of epistaxis admissions.

There are some guidelines for the management of warfarinised patients who experience minor bleeds. Scottish Intercollegiate Guidelines Network guideline 129 recommends that a small 1–2 mg dose of vitamin K is provided.[5] The guidelines of other trusts recommend that warfarin is omitted in lower thromboembolic risk patients.[6] However, restarting warfarin and serially checking international normalised ratio (INR) levels thereafter can lead to delayed discharge and extended investigations. For some high thromboembolic risk patients, the risk associated with omitting anticoagulation is not acceptable, leading to a complex multidisciplinary problem. The balance between bleeding risk and the risk of a thromboembolic event must be decided on a case-by-case basis and management planned accordingly.

This study compared the post-treatment outcomes of anticoagulated and non-anticoagulated epistaxis patients after the application of a simple, consistent management strategy: continued normal anticoagulant or antiplatelet therapy unless bleeding was not controlled by intranasal packing. We compared management, readmission rates and length of in-patient stay.

Materials and methods

Using departmental in-patient lists and the hospital patient database, a retrospective review was conducted of ENT epistaxis admissions to our unit in one calendar year (2013). Admission details were recorded using a

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pre-designed proforma, which included information on patient demographics, length of in-patient stay and management plan adopted. Patients were categorised into three groups: warfarinised patients, antiplatelet or non-warfarin anticoagulation therapy patients, and patients not taking any medication that modifies clotting or coagulation. Management and outcome comparisons were made using Fisher's exact paired *t*-test.

The INR levels of all epistaxis patients were checked. Warfarinised patients were categorised according to their own therapeutic range, which was usually 2.0–3.0 for atrial fibrillation prophylaxis, and 2.5–3.5 for prophylaxis after recurrent venous thromboembolism or the presence of a mechanical heart valve.[7]

Only patients who required a hospital ward bed to manage their epistaxis were included in the study. Day 1 was defined as the initial day of hospital bed usage and day 2 accounted for an overnight stay. Post-operative epistaxis patients or patients admitted from another specialty were excluded from the study.

Results

Patient demographics

In the 12-month study period, there were 176 epistaxis patients (51 per cent male and 49 per cent female) admitted to the ENT department.

Figure 1 shows the distribution of admitted epistaxis patients. Thirty-one per cent ($n = 54$) were warfarinised, 18 per cent ($n = 32$) were on another form of anticoagulation or antiplatelet therapy, and 51 per cent ($n = 90$) were not on any medication that might impose a bleeding risk. Two patients were taking warfarin and an antiplatelet; these patients were included in the warfarinised cohort.

The mean age in the warfarinised cohort was 75 years (range, 45–97 years). The mean age in the non-anticoagulated and the non-warfarinised anticoagulation cohorts was 62 years (range, 17–95 years) and 77 years (range, 51–101 years) respectively. Patients taking anticoagulants were significantly older than those not on any anticoagulants (*t*-test, $p < 0.001$).

Management of warfarinised patients

Initial treatment was the same for all patients: prompt resuscitation, first aid measures and haemostasis by cauterisation of a visible bleeding site. This was undertaken in the emergency department. If the patient was warfarinised, INR was checked, although many non-warfarinised patients also had their clotting profiles checked.

The majority of admitted warfarinised epistaxis patients were treated with an anterior nasal pack. Other treatments included posterior nasal packing or dissolvable nasal packing in the form of Sinu-Foam™ or Surgicel®. In the study period, 10 patients were admitted for overnight observation because of the high chance of re-bleed and relative risk of being

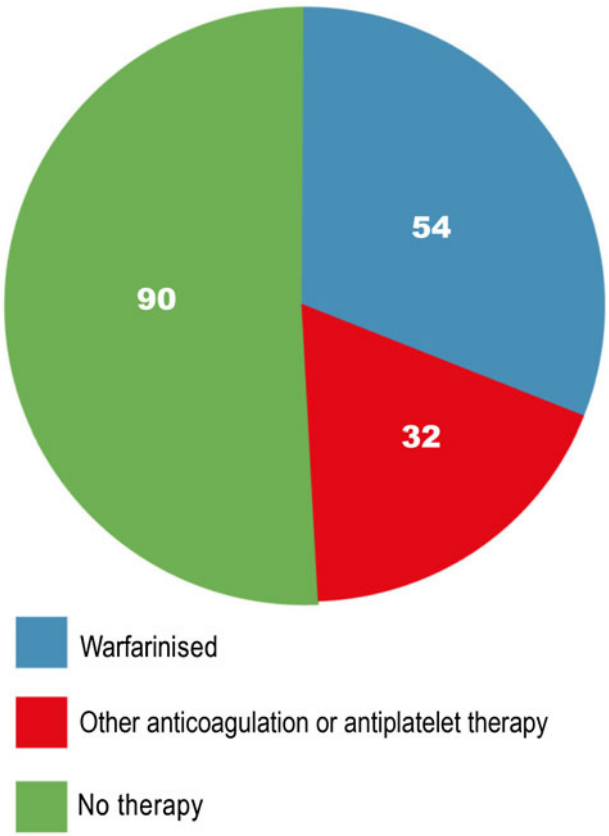

FIG. 1
Epistaxis patients admitted to the ward in 2013.

home alone. Warfarinised patients were more likely to require posterior nasal packing when compared to patients who were not on any antiplatelet or anticoagulation therapy (*t*-test, $p < 0.05$).

Only 13 per cent ($n = 7$) of warfarinised patients had initial INRs that were above their target therapeutic range (Figure 2). In these patients, the next prescribed warfarin dose was omitted. Four per cent ($n = 2$) required INR reduction through vitamin K administration. Sixty-one per cent ($n = 33$) of warfarinised patients had INRs within their therapeutic range (appropriately warfarinised); in these patients, the warfarin regimen was continued, with no change to the daily prescribed dosage. The remaining 26 per cent ($n = 14$) of warfarinised patients had sub-therapeutic INRs (under warfarinised); these patients were reloaded with warfarin to achieve their target INR. Patients in this cohort were referred for further monitoring by the out-patient medical access team once the epistaxis had resolved and the patient was medically fit for discharge.

Within the study period, four patients required surgical intervention and one required referral to a specialist centre for radiological intervention; none of these patients were warfarinised on admission.

Length of in-patient stay

The mean duration of in-patient stay was similar for all cohorts (Figure 3): 2.6 days for warfarinised patients,

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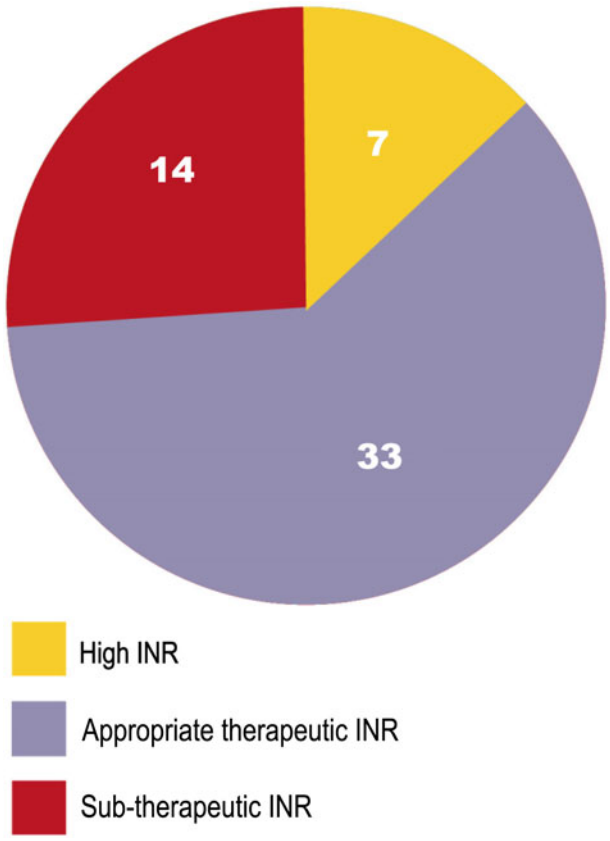

FIG. 2
International normalised ratio (INR) levels for warfarinised epistaxis patients at admission.

2.6 days for non-anticoagulated patients, and 2.2 days for patients on other anticoagulation or antiplatelet medications (aspirin, clopidogrel, ticagrelor and rivaroxaban). Therefore, the majority of patients had 1 overnight stay and were discharged on day 2. The longest in-patient stay was a complex patient with a systemic bleeding risk (hereditary haemorrhagic telangiectasia).

Readmission rates

The 30-day readmission rate for warfarinised patients and those on other anticoagulation or antiplatelet medications was 7.4 per cent and 6.3 per cent respectively (Figure 4). The 30-day readmission rate for patients not taking any anticoagulation or antiplatelet medications was much lower, at 1.1 per cent, but the difference was not statistically significant.

Discussion

The aetiology of epistaxis is often a mixture of local and systemic factors, of which oral anticoagulation remains an important consideration. Our results do not agree with the findings of others which suggest that warfarinised epistaxis patients are usually over-anticoagulated at the time of admission and require longer in-patient stays.[8] The conflicting results can probably be explained in terms of differences in: management strategies adopted at different ENT units, INR monitoring in primary care, staffing and out-of-hours care regimens.

The mean age of the anticoagulated cohorts (warfarinised patients and patients on other anticoagulation or antiplatelet therapy) was higher than that of the overall study population. In addition, most of the warfarinised in-patients had therapeutic or sub-therapeutic INRs at the time of admission. This supports the conjecture that epistaxis may be more commonly caused by factors other than anticoagulation, even within this cohort, as these patients were not experiencing

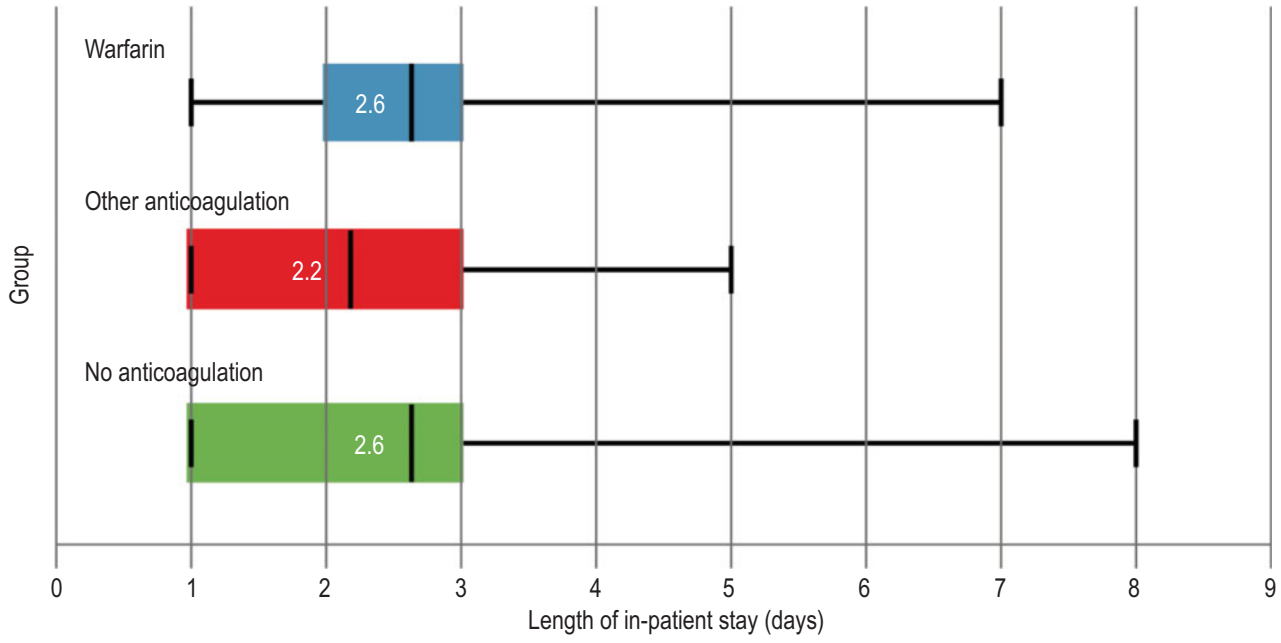

FIG. 3
Length of in-patient stay (day 2 represents an overnight stay).

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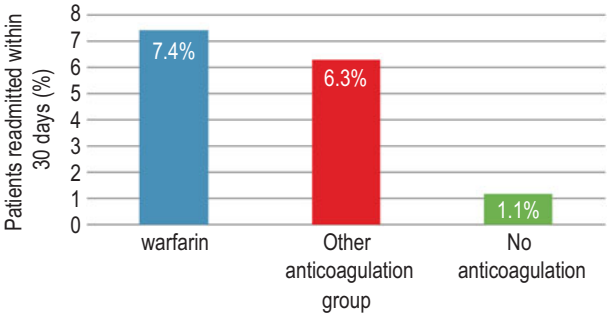

FIG. 4
Thirty-day readmission rate for epistaxis patients in 2013.

epistaxis requiring admission on a regular basis. It does not clarify whether admission of the warfarinised patients for management of bleeding would have been less likely had they not been anticoagulated, although we know that advancing age increases bleeding risk in warfarinised patients.[9]

There was no significant difference in in-patient stay for warfarinised, non-anticoagulated, and antiplatelet or other anticoagulation therapy patients. This was despite the warfarinised cohort being of an older age. This suggests that continuing regular anticoagulation therapy in appropriately warfarinised or inadequately warfarinised epistaxis patients may have prevented the need for extended blood tests or monitoring. Shortened hospital stays have also been reported in patients undergoing endonasal laser surgery,[10] where the continuation of warfarin did not lead to higher epistaxis rates and resulted in improved patient convenience. In this study population, the medical access team and out-patient phlebotomy service helped with the discharge planning of patients with sub-therapeutic INRs by providing domiciliary bridging therapy with therapeutic low molecular weight heparin.

None of the warfarinised epistaxis patients in this study underwent surgical intervention, although one patient, who was admitted with an INR of 7.1 (over-coagulated), required an extended in-patient stay (7 days). In recent years, the treatment of epistaxis has undergone significant changes, with new packing materials, balloons and haemostatic agents, and the encouragement of junior staff to involve seniors at an early stage of management. This has provided multiple management options for patients who may otherwise be inappropriate for surgical treatment. Where feasible, early sphenopalatine artery ligation or embolisation may shorten the length of in-patient stay and prove more cost effective.[11,12] However, sometimes a general anaesthetic is unsuitable and patients may be too high risk for transfer to a specialist unit (where surgical intervention may be more frequent). In the current study, warfarin was discontinued in the patient affected by these issues, as per local protocol, and advice was sought from the haematologist and acute medical teams. As a result of delays in re-establishing community care, this patient was an in-patient for a further 3 days.

- **There is no standardised UK practice for managing warfarinised epistaxis patients, but some trusts have their own local policies**
- **Patients on anticoagulation therapy represent a significant proportion of admitted epistaxis patients**
- **In this study, warfarinised epistaxis patients did not have longer in-patient stays than non-warfarinised patients**
- **Most warfarinised epistaxis patients had therapeutic or sub-therapeutic international normalised ratios (INRs) at admission**
- **Epistaxis in-patients can be safely managed whilst continuing anticoagulation medications, providing INR levels are therapeutic or sub-therapeutic**

In this study, warfarinised epistaxis patients had a higher 30-day readmission rate than non-warfarinised patients, although this difference was not significant; a larger study population may be required to establish a significant readmission risk. For the patients who were admitted and discharged with sub-therapeutic INRs, performing the bridging therapy on hospital premises allowed for easy access to the ENT team should a re-bleed occur, although all patients were advised to attend the emergency department if first aid measures did not stop further epistaxis at home.

Conclusion

Warfarinised epistaxis patients may be safely managed without stopping their anticoagulation therapy, provided their INR is sub-therapeutic or within therapeutic range. By not stopping their regular anticoagulation therapy, warfarinised patients may be discharged without delay, after an in-patient stay of similar duration to non-anticoagulated epistaxis patients.

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