General practitioners' use of aspirin in the secondary prevention of vascular events: knowledge, attitudes, and current practice

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SUMMARY

Background. *Aspirin has been shown to significantly reduce mortality when taken by patients with vascular disease. Studies in secondary care have shown its use to be suboptimal, but aspirin use among general practitioners (GPs) has not been directly assessed, although some data on aspirin use in the community exists. Little is known about factors that might influence aspirin use by GPs, despite much recent research on the wider issues of following evidence-based 'best' practice.*

Aims. *To determine the use of aspirin by GPs in preventing vascular events, and to identify factors influencing its use.*

Method. *Postal questionnaire using clinical vignettes sent to all GPs identified from the North Staffordshire Health Authority database.*

Results. *Of 230 questionnaires sent, 123 were returned giving an overall response of 54%. For patients with vascular disease, a median of 86% of GPs advised aspirin use, with a range from 80% to 96% according to the site of the vascular disease. Responses were analysed when an additional diagnosis was added to the clinical situation. These diagnoses were designed to represent conditions in which aspirin may be used, but with caution. For patients falling into this category, the benefits of aspirin prophylaxis usually outweigh the risks of aspirin use. The addition of such a diagnosis was associated with a median reduction to 67% of responders who indicated that aspirin would be used (range = 66% to 85%). A contraindication to aspirin reduced its use to 66% of the sample. In patients without vascular disease but with multiple risk factors for future cardiovascular disease, the use of aspirin ranged from 17% to 54%. There was self-reported confusion among responders about what dose and formulation of aspirin to advise and prescribe.*

Conclusions. *The results obtained from the responders may not represent the opinion of all GPs in the North Staffordshire area owing to the low response rate. There is, however, stated unwillingness to advise aspirin prophylaxis by some GPs, even when it is clearly indicated. The presence of comorbidity reduces its use further, regardless of whether this involves a contraindication to aspirin or not. A substantial proportion of GPs are recommending the use of aspirin in patients with risk factors for, but without actual symptoms of, vascular disease. Further education is required to reduce uncertainty about which formulation and dose of aspirin to use. Recommendations from authorities on the subject should be disseminated and must be practical and clear. Research into the failure to incorporate quality research into everyday practice must continue.*

Keywords: aspirin, cardiovascular disease; general practitioners; secondary prevention.

Introduction

ASPIRIN has been shown to significantly reduce morbidity and mortality when given to patients with diagnosed vascular disease.[1-3] However, the use of aspirin by general practitioners (GPs) has not been formally studied. Eccles[4] showed that patients discharged after an inpatient episode for acute myocardial infarction (MI) were frequently not receiving aspirin. McCallum[5] found that, in a questionnaire study of patients, only 44% of patients post-MI were on aspirin, only 39% of patients after a stroke received aspirin, and only 29% of patients with angina were taking aspirin. Hargreaves[6] found that 35% of patients with suspected angina who were referred to a chest pain clinic were started on aspirin by GPs. The Aspire Study[7] reported aspirin use in 91.5% of patients after a coronary artery bypass graft (CABG), 85.5% after acute MI, and 74% in patients with myocardial ischaemia. These patients were intensively monitored, and it seems reasonable to assume that the extent of aspirin use is lower for patients managed in primary care. There are likely to be several factors influencing this; however, no recent studies in the United Kingdom have looked at prophylactic aspirin use by GPs, who are the principal clinicians involved with the continuing management of cardiovascular disease.

The ever-increasing range of patients who, it seems, would benefit from aspirin prophylaxis, including hypertensives,[10] is likely to further tax the GP in deciding who should receive aspirin. We have, therefore, carried out a study to assess the views of GPs on the use of aspirin for the secondary prevention of vascular events and to identify factors that influence its pattern of use.

Method

A questionnaire was posted to all 230 GPs in North Staffordshire. The questionnaire was not piloted, although a peer review of the questionnaire content was undertaken. Names were provided by the North Staffordshire District Health Authority General Practitioner information database. The questionnaire was anonymous and non-responders could not be followed up. The questionnaire consisted of two sections. The first outlined 14 case vignettes (Appendix 1). After each vignette, the responder was invited to indicate whether they would, or would not, advise aspirin prophylaxis for each patient outlined in the case.

The patient scenarios included patients with vascular disease in various anatomical sites. To these scenarios, a second diagnosis was then added. These additional diagnoses were designed to represent conditions in which aspirin use may be employed, but with caution. For patients falling into this category, the benefits of aspirin prophylaxis usually outweigh the risks of aspirin use.

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Thirdly, a contraindication to aspirin use was added, and, finally, scenarios were created where patients did not possess vascular disease, but had multiple risk factors for its future development.

The second section asked the responders to indicate their agreement with statements related to aspirin use (Appendix 2). The available responses ranged from 'I strongly agree' to 'I strongly disagree' on a six-point Likert-scale. The results were analysed using the EPI-Info software.

Results

One hundred and twenty-three (54%) questionnaires were returned. Table 1 shows the number of responders who would advise aspirin use categorized by the main cardiovascular diagnosis of the case vignettes. The effects of adding other diagnoses and risk factors for vascular disease are also shown.

Table 2 examines attitudes towards aspirin formulation and dose, and to the co-prescribing of aspirin and non-steroidal anti-inflammatory drugs.

Aspirin use by diagnosis

For patients with vascular disease, a median of 86% of GPs advised aspirin use. In patients with peripheral vascular disease, 80% of GPs advised aspirin use, this rose to 96% for patients post-CABG.

The addition of a second diagnosis was associated with a reduction to a median of 69% of responders who indicated that aspirin would be used. The reduction was most marked for the addition of dyspepsia (66%) and least marked for the addition of chronic congestive cardiac failure (85%).

The presence of a contraindication such as a potential bleeding disorder was not regarded as precluding aspirin use — 78 (66%) responders stated that they would still prescribe aspirin, although most indicated that this would be dependent on a normal haematological screen.

Risk factors

In patients without vascular disease but with multiple risk factors for its future development, the use of aspirin prophylaxis ranged from 17% to 54%. For patients with non-insulin dependent diabetes only, 17% of responders would advise aspirin use.

The number of risk factors, as well as their nature, appeared to influence consideration of aspirin prophylaxis. A combination of smoking with a family history of acute MI and hypertension would prompt 52% of GPs to advise aspirin use; the substitution of hypertension for hypercholesterolaemia produced a reported aspirin use of 54%.

Reported confusion over dose

There was obvious confusion among responders concerning what dose and formulation of aspirin to use. There appeared to be no preference for a 75 mg or 150 mg dosage, although most responders would not routinely advocate a 300 mg dose. Importantly, 42% of responders reported that they were confused over which dose to use.

Side-effects

Only 54% of responders disagreed with the co-administration of aspirin and another non-steroidal anti-inflammatory drug. When managing a patient on long-term low dose aspirin, 4% of responders often used prophylactic anti-ulcer therapy. The minority of responders use enteric coated aspirin as their preferred antiplatelet agent (27% versus 38% for plain aspirin and 45% for soluble aspirin).

Discussion

Importance

This is the first United Kingdom study to examine variations in GPs' attitudes towards prophylactic aspirin prescribing. Communications with GPs in the district had pointed out that, for the North Staffordshire area, if all patients with diagnosed vascular disease were treated with aspirin, an estimated 450 vascular deaths, 450 non-fatal MIs, and 252 non-fatal strokes could be prevented over two years.[2]

Possible selection bias

The results obtained from this study are a reflection of the viewpoint held by GPs in the North Staffordshire district only. The response rate of 54% means that the views expressed may not be representative of all GPs in this district. However, it can be argued that the responders were likely to represent a selectively more aware and motivated group. The level of audit activity

Table 1. The use of aspirin by 123 responding GPs according to diagnosis.

Diagnosis	Aspirin used by responding GP (% of total)
Single cardiovascular diagnosis	
Post-coronary artery bypass graft	115 (96)
Acute myocardial infarction	113 (94)
Stroke	104 (87)
Stable angina	102 (84)
Peripheral vascular disease	97 (80)
Atrial fibrillation	95 (81)
Addition of another diagnosis	
Past history of stroke and congestive cardiac failure	103 (85)
Past history of transient ischaemic attack and inactive duodenal ulcer	92 (78)
Past history of acute myocardial infarction and asthma	81 (67)
Past history of acute myocardial infarction and dyspepsia	78 (66)
Transient ischaemic attack and potential bleeding disorder	78 (66)
Risk factors for cardiovascular disease	
Smoker and family history of acute myocardial infarction and hypercholesterolaemia	65 (54)
Smoker and hypertension and family history of acute myocardial infarction	62 (52)
Non-insulin dependant diabetes mellitus	20 (17)

'Another diagnosis' represents those patients with vascular disease who also possess a second condition that may exaggerate the side-effects of aspirin but does not contraindicate aspirin use.

Table 2. Attitudes towards aspirin dose, formulation, and co-prescribing in 123 GPs (%).

	Agree[a]	Neutral[b]	Disagree[c]
Aspirin form			
Mainly prescribe plain aspirin	44 (38)	17 (15)	54 (47)
Mainly prescribe soluble aspirin	52 (45)	19 (16)	45 (39)
Mainly prescribe enteric coated	31 (27)	25 (22)	58 (51)
Aspirin dose			
Mainly prescribe 75 mg	55 (50)	14 (13)	41 (37)
Mainly prescribe 150 mg	62 (54)	23 (20)	30 (26)
Mainly prescribe 300 mg	14 (13)	23 (22)	70 (65)
I am often confused by what dose to use	48 (42)	25 (23)	41 (36)
Co-prescribing			
I often use prophylactic anti-ulcer drugs with aspirin	5 (4)	25 (22)	84 (74)
I often co-prescribe aspirin and NSAIDs	23 (20)	30 (26)	62 (54)

NSAIDS = non-steroidal anti-inflammatory drugs. [a]Responders stating either 'agree' or 'strongly agree'; [b]responders stating either 'do not know' or 'neither agree nor disagree'; [c]responders stating either 'disagree' or 'strongly disagree'. When 'mainly prescribe' is analysed, the total exceeds 100% as this statement is not exclusive to one option.

among responders was enquired about in the questionnaire, and 70% of responders stated they felt they could easily identify their patients with ischaemic heart disease and could readily delegate audit to someone else within the practice. These findings suggest a high level of audit awareness and activity, and such practices are usually more likely to follow good clinical practice.[11] The study responders may therefore represent doctors with a higher absolute level of aspirin use than the community of GPs as a whole. Although this may impair our ability to make generalizations around the absolute levels of aspirin use, it should not affect the wider relevance of the internal variations observed.

Variation with diagnosis

For an uncomplicated diagnosis of vascular disease, 5% to 20% of GPs in this sample would not advocate aspirin use to patients, but this was dependent on the actual diagnosis. The variation in aspirin use according to diagnosis appeared to reflect a lack of awareness of the range of diagnoses for which aspirin has been shown to improve outcome.

The addition of a second diagnosis to the clinical vignette, even when it was not a contraindication to aspirin, reduced the proportion of GPs who would advise or prescribe aspirin. This suggests caution by GPs as the complexity of the clinical case increases. This may be one of the most important reasons why good evidence-based messages are not incorporated into everyday practice. Dinant[9] commented that the realities of managing complex patients are often not addressed in clinical trials, as such patients are excluded at source. Consequently, when guidelines based on this work are produced, no mention of complicated patients is made. GPs are unable to enjoy such luxuries and must approach their patients holistically. Therefore, complex decision-making processes are frequently employed before arriving at a decision on the appropriateness of treatment. Such processes are bound to throw up results and outcomes that are subject to highly individualized interpretation, perhaps explaining the documented variations.

Side-effects

One possible reason for the cautious use of aspirin may be concerns surrounding potential side-effects, in particular its gastrotoxicity. Where the case vignette included a patient with vascular disease and a hiatus hernia, aspirin use was lowest at 66% of responders. Is this caution justified?

The relative risk of a gastrointestinal bleed requiring hospital admission is 3.3 for all aspirin preparations at antiplatelet doses,[12] and this translates to an absolute risk of a bleed on 300 mg aspirin, which requires hospital admission of 1.5 per 1000 people taking it.[13] The absolute risk reduction for vascular death achieved by taking aspirin daily for one to two years is 15 deaths per 1000 patients.[2,3] Potential gastrointestinal morbidity may thus be outweighed by the reduction in vascular death that can be achieved.

This caution, coupled with the lack of firstline use of enteric coated aspirin or the option to use appropriate anti-ulcer medication in combination with low dose aspirin, suggests that responding GPs vary in their awareness of the relative effects on the gastric mucosa of different prescribing strategies. The inconsistent prescribing behaviour reported in the study group reflects this variability.

Other 'perceived' complicating factors, such as asthma and chronic congestive cardiac failure, were also associated with a lower reported aspirin use. However, recent evidence suggests that there is no sound reason to exclude these patients from receiving aspirin prophylaxis.[14]

Risk factors

General practitioners seem to be generally divided on whether to treat patients who have no established vascular disease but who do have multiple risk factors for its development. Evidence on which to base such a decision is inconsistent. Some evidence points towards there being no benefit in terms of a reduction in mortality in such patients, or a possible additional morbidity owing to an increased incidence of haemorrhagic stroke.[15,16]

In the Antiplatelets Trialists Collaboration study,[2,3] outcome in non-insulin dependent diabetics has been suggested to be worse if prophylactic aspirin is given, yet it was recommended by 17% of responders. New evidence, such as the latest report from the General Practice Research Framework, suggests overall benefits and may help to clarify policy in this area.[17]

Risk factor status appears to present the GP with management and therapeutic dilemmas. The line between risk factors, symptoms, and a proven diagnosis is a fine one, and the difficulty this presents is reflected in our results.

Reported confusion over dose

A further issue for clinicians who wish to prescribe aspirin to patients with vascular disease is which dose and formulation of aspirin to use. Importantly, 42% of responders reported that they were confused over which dose to use. Similarly, no preferences for formulation of aspirin emerged.

The lack of clear guidance regarding dosage and formulation are likely to inhibit the use of aspirin. Information on the safety profile of aspirin may need to be clearer and more easily available to GPs as they become more involved in the long-term management of patients with chronic vascular disease. Although no definite consensus presently exists on these issues, it is generally agreed that 75 mg to 150 mg is adequate to reduce vascular risk.[2,3,18] Such a dosage results in a lower incidence of the dose-dependent gastrointestinal side-effects. Evidence, however, does exist for a 300 mg daily aspirin dose in patients with non-rheumatic atrial fibrillation.[2,3,18] However, even this slight variation in dose is likely to lead to problems, since compliance may change when individuals with the same diagnosis find themselves on different aspirin dosage to their friends, relatives, and peers.

1. A 49-year-old man with angina for two years who uses occasional glyceryl tri-nitrate. He has never had an acute myocardial infarction (MI).
2. A 59-year-old woman who is 12 months post-coronary artery bypass graft. She has experienced no chest pains since her operation.
3. A 60-year-old man who is a non-insulin dependent diabetic. He has no chest pains and is normotensive.
4. A 64-year-old woman who smokes 20 cigarettes a day; she is on treatment for hypertension and has a family history of MI.
5. A 75-year-old man who had a stroke six years ago.
6. A 69-year-old smoker who experiences pain on walking and who has absent distal foot pulses.
7. A 76-year-old man who had an MI two years ago and who has a proven hiatus hernia. He experiences infrequent dyspepsia.
8. A 58-year-old woman who you are called to visit and who is complaining of severe central chest pain radiating to the arm, she is breathless and nauseated.
9. A 72-year-old man who had a MI four years ago. He is prescribed a salbutamol inhaler for asthma.
10. A 76-year-old man who you find to be in atrial fibrillation with a radial rate of 80.
11. A 59-year-old woman with a past history of transient ischaemic attacks (TIAs) and who had surgery for a duodenal ulcer 10 years ago. She has no dyspepsia.
12. A 79-year-old woman with a past history of a stroke four years ago who is on frusemide 40 mg daily for congestive cardiac failure.
13. A 64-year-old man with recurrent TIAs who mentions a tendency to bruise easily over the past two years.
14. A general practitioner who is a patient on your list and has a strong family history of MI. His cholesterol is 7.4. He smokes

Appendix 1. Case vignettes for GPs to indicate whether they would prescribe aspirin.

1. I would find it easy to identify my patients with ischaemic heart disease.
2. I would find it easy to identify my patients with TIA or stroke.
3. I am able to identify patients with ischaemic heart disease by using my repeat prescribing system.
4. I am able to delegate audit to someone else within the practice.
5. I consider aspirin for all patients with vascular disease.
6. I feel that the practice nurse is aware of the role of aspirin in patients with vascular disease.
7. Most of my patients receive their aspirin on prescription.
8. Patients without vascular disease ask me if they should be taking aspirin daily.
9. I mainly prescribe plain aspirin tablets.
10. I often prescribe aspirin with prophylactic anti-ulcer medication.
11. I mainly prescribe soluble aspirin tablets.
12. I often prescribe aspirin with NSAIDs; e.g. Ibuprofen.
13. I mainly prescribe enteric coated aspirin.
14. Patients tell me if they buy aspirin ‘over the counter’.
15. I record in the patients’ records whether I have advised them about aspirin.
16. I mostly use 75 mg aspirin.
17. I mostly use 300 mg aspirin.
18. I mostly prescribe 150 mg aspirin.
19. I am often confused by what dose of aspirin to prescribe.

Appendix 2. Statements for GPs to indicate their response on a six-point scale from ‘strongly agree’ to ‘strongly disagree’.

Barriers to evidence-based changes to clinical practice

To effect the uptake of evidence into clinical practice requires a planned, stepwise approach using a combination of interventions linked to the specific obstacles to change. The evidence for the effectiveness of aspirin is clear, but the message is being diluted by controversies such as dose and use in the presence of comorbidity. A standardized message on dose and formulation, along with clinical guidance on managing those more complicated patients, might add much to the resolution of the practical problems surrounding aspirin prophylaxis in primary care.

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