Attitudes of general practitioners to prehospital thrombolysis

John Rawles

Abstract

Objective—To investigate reasons for general practitioners not giving thrombolytic treatment to eligible patients with acute myocardial infarction.

Design—Postal questionnaires were sent to 424 general practitioners.

Subjects—97 general practitioners who had taken part in the Grampian region early anistreplase trial, 185 whose practices in Scotland were at least 24 km from a district general hospital, and 142 who had attended postgraduate conferences at which thrombolysis had been discussed; 87, 158, and 125 respectively responded.

Main outcome measures—Answers to questions about readiness to use thrombolytic treatment.

Results—Response rate was 87% (370/424). Almost all respondents (350) were convinced of benefits of thrombolysis for acute myocardial infarction, and 277 were convinced that there were additional benefits from its administration in the community at first opportunity. Most doctors working 16 km or more from hospital thought that giving treatment at home would appreciably save time (200/274). Most doctors agreed that they could make time to give thrombolytic treatment (278), and would be willing to record an electrocardiogram (284), and would be able to interpret it (280). Sixty four respondents (17%) reported using thrombolytic treatment in previous year. Among non-users, 150 (49%) were unwilling to use thrombolytic treatment without further training. While many non-users (210 (69%)) were willing to use thrombolytic treatment without encouragement from Department of Health, 184 (60%) were unwilling to use it unless encouraged to do so by their local cardiologist.

Conclusions—The need to become better informed about thrombolysis and lack of encouragement from local cardiologists were important factors preventing wider use of thrombolytic treatment in the community by general practitioners.

Introduction

The acceptance into hospital practice of thrombolysis for acute myocardial infarction, though incomplete,¹ has been rapid.² But use of thrombolytic treatment by general practitioners is uncommon even though there is much theoretical, experimental, and clinical evidence to show that the earlier that thrombolytic treatment is given the greater the benefit.

In the Grampian region early anistreplase trial it was shown that it is feasible and safe for general practitioners to give thrombolytic treatment.³ The 29 practices that participated were located at least 24 km from a district general hospital, and domiciliary thrombolysis resulted in a timesaving of over two hours. This was associated with a reduction in mortality, fewer full thickness Q wave infarctions, and better left ventricular function. Benefits were greatest in patients who received thrombolytic treatment

within two hours of the start of symptoms. In spite of knowing these results, many of the general practitioners who participated in the trial stopped giving thrombolytic treatment when the trial was over. The reasons for this are multiple and may include practical difficulties, expense, uncertainty about the indications and contraindications, fear of side effects, lack of conviction of benefit, lack of approval from official bodies, and discouragement by cardiologists.

A questionnaire designed to identify the main reasons for general practitioners not giving thrombolytic treatment was therefore sent to the doctors who had participated in the trial, to doctors in practices in Scotland at least 24 km from a district general hospital, and to doctors who had attended three postgraduate conferences at which prehospital thrombolysis had been discussed.

Subjects and methods

The questionnaire consisted of statements about thrombolytic treatment (see table) with which the doctors were asked to express agreement, disagreement, or neutrality. The doctors were also asked the distance of their practice from the nearest hospital that took patients with acute myocardial infarction, the number of patients seen in the previous year with suspected acute myocardial infarction that required hospital admission, and the number of such patients to whom they had given thrombolytic treatment. Recipients of the questionnaire were assured of anonymity apart from a code number to permit one reminder to be sent to non-respondents.

Questionnaires were sent to the 97 principals of the general practices that had participated in the Grampian region early anistreplase trial, a principal from each of 185 practices in Scotland believed to be at least 24 km by road from a district or subdistrict general hospital, and 142 general practitioners who had attended postgraduate conferences at which prehospital thrombolysis had been discussed. The conferences were open to all general practitioners and had been advertised nationally.

Results

The response rate was 87% (370/424), and was similar in each group of doctors; participants in the anistreplase trial, those from remote Scottish practices, and conference delegates (87/97 (90%), 158/185 (85%), and 125/142 (88%) respectively). Of the respondents, 64 (17%) reported using thrombolytic treatment in the previous year, leaving 306 who had not. Of the users of thrombolytic treatment, 25 had participated in the anistreplase trial, 38 came from remote practices in Scotland, and one was a conference delegate. The mean number of patients who had presented in the previous year with acute myocardial infarction that required admission to hospital was significantly higher for users of thrombolytic treatment than non-users (5.3

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Medicines Assessment
Research Unit, University
of Aberdeen,
Aberdeen AB9 2ZD
John Rawles, *honorary senior
lecturer*

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	Users (n=64)	Non-users (n=306)	Total (n=370)
I am convinced of the benefits of thrombolytic treatment in acute myocardial infarction	64 (100)	286 (93)	350 (95)
I am convinced that there are additional benefits from giving thrombolytic treatment in the community at the earliest opportunity after symptoms start	60 (94)	217 (71)	277 (75)
In my practice giving thrombolytic treatment at home would not result in any appreciable timesaving	21 (33)	123 (40)	144 (39)
I could make time to give thrombolytic treatment to patients with acute myocardial infarction	58 (91)	220 (72)	278 (75)
Thrombolytic treatment is too expensive for use in general practice	3 (5)	71 (23)	74 (20)
Thrombolytic treatment is safe for use in general practice	51 (80)	138 (45)	189 (51)
Thrombolytic treatment is too difficult to use in general practice because it needs to be given intravenously	1 (2)	10 (3)	11 (3)
Thrombolytic treatment is too inconvenient for use in general practice because it has to be stored in a refrigerator	13 (20)	128 (42)	141 (38)
Thrombolytic treatment should not be given without recording an electrocardiogram	50 (78)	206 (67)	256 (69)
I do not have an electrocardiograph that I could use on call	8 (13)	66 (22)	74 (20)
I would be willing to record an electrocardiogram in cases of suspected acute infarction	61 (95)	223 (73)	284 (77)
I could interpret an electrocardiogram in cases of suspected acute myocardial infarction	58 (91)	222 (73)	280 (76)
Thrombolytic treatment should not be given unless there is access to a defibrillator	35 (55)	159 (52)	194 (52)
I do not have access to a defibrillator	10 (16)	136 (44)	146 (39)
I know how to use a defibrillator	59 (92)	245 (80)	304 (82)
I am not willing to use thrombolytic treatment unless encouraged to do so by the Department of Health	2 (3)	96 (31)	98 (26)
I am not willing to use thrombolytic treatment unless encouraged to do so by local cardiologists	17 (27)	184 (60)	201 (54)
I am not willing to use thrombolytic treatment unless it is promoted by the drug manufacturers for use in general practice	8 (13)	82 (27)	90 (24)
I am not willing to use thrombolytic treatment without further training	0	150 (49)	150 (41)
I am not willing to use thrombolytic treatment unless there is additional remuneration	0	17 (6)	17 (5)
Mean distance of general practice from nearest hospital that takes patients with acute myocardial infarction (km)	47.3	36.5	38.5
Mean no of cases of suspected acute myocardial infarction requiring hospital admission seen in past year	5.27	3.30	3.64
Mean no of cases in which thrombolytic treatment used in past year	2.84	0	0.49

v 3.3, $P < 0.001$). On average 54% of such cases were given thrombolysis by users, who administered a mean of 2.8 doses in the previous year.

The table shows the numbers of users, non-users, and all respondents who expressed agreement with the statements in the questionnaire. Almost all respondents replied to all the statements, and the few instances where no response was recorded were taken to be neutral responses.

CONVICTION OF BENEFIT

Almost all respondents (95%), and all users, were convinced of the benefits of thrombolytic treatment for acute myocardial infarction. Most were convinced that there were additional benefits from giving thrombolytic treatment in the community at the earliest opportunity after symptoms started (75%), significantly more among users than non-users (94% v 71%, $P < 0.001$).

TIMESAVING AND DISTANCE FROM HOSPITAL

A large minority of respondents (39%) thought that giving treatment at home would not result in any appreciable timesaving, the proportions being similar among users and non-users (33% v 40%, NS). The average distance of practices from a hospital taking patients with myocardial infarction was 38 km and was significantly greater for users than non-users (47 km v 37 km, $P < 0.05$). Most of the doctors practising under 16 km from a hospital agreed that there would be no timesaving from domiciliary thrombolysis (70/96 (73%)), but at 16 km or more from hospital most did not agree with that statement (200/274 (73%)).

Most doctors agreed that they could make time to give thrombolytic treatment (75%).

SAFETY

There was a considerable difference in opinion between users and non-users with regard to the safety of the treatment in general practice. Most users (80%) and most of the doctors who had participated in the

anistreplase trial (67 (69%)) considered thrombolytic treatment safe for use in general practice, while only 45% of non-users and 25 (39%) of those who had never used thrombolytic treatment thought that it was safe.

CONVENIENCE

Only 3% of doctors thought that the need to give thrombolytic treatment intravenously made it too difficult to use in general practice. Like the perceived danger from side effects, the perception of inconvenience was higher in non-users than users (42% v 20%, $P < 0.001$).

ELECTROCARDIOGRAPHY

Most users and non-users agreed that thrombolytic treatment should not be given without recording an electrocardiogram (78% v 67%, NS), and only 20% of doctors did not have an electrocardiograph that they could use when on call. Most, more among the users than non-users, were willing to record an electrocardiogram and interpret it in cases of suspected acute myocardial infarction (95% v 73%, $P < 0.001$).

DEFIBRILLATION

Only 52% of doctors agreed that thrombolytic treatment should not be given without access to a defibrillator, and only 16% of users did not have access to one; most doctors said they knew how to use it (82%).

UNWILLINGNESS TO USE THROMBOLYTIC TREATMENT

The questionnaire included five statements about possible factors affecting the respondents' willingness to use thrombolytic treatment. Both users and non-users ranked encouragement from local cardiologists as the most important, with 27% of users and 60% of non-users being unwilling to use thrombolytic treatment without it. Next in importance among non-users was further training, which produced the greatest difference between users and non-users: 49% of non-users and none of the users being unwilling to use thrombolytic treatment without further training. About one third of non-users were unwilling to use thrombolytic treatment unless encouraged to do so by the Department of Health (31%), or unless it was promoted by the drug manufacturers for use in general practice (27%). Only a small minority of non-users were unwilling to use thrombolytic treatment without additional remuneration (6%).

Discussion

EVIDENCE OF BENEFIT FROM PREHOSPITAL THROMBOLYSIS

The rapid uptake of thrombolytic treatment in hospital practice is attributed to the conclusive evidence of benefit obtained from large clinical trials involving many centres.² Centres that participated in trials tended to show higher use of thrombolytic treatment after the trials were completed than did centres that had not participated.¹

In contrast with the overwhelming evidence of benefit when thrombolytic drugs are compared with placebo,^{4,7} the clinical evidence of increased efficacy of thrombolytic treatment with earlier administration is rather weak, as trials of prehospital thrombolysis are few and small in size. A meta-analysis of five trials of prehospital thrombolysis comprising 6318 patients showed a 17% relative reduction in mortality at one month ($P = 0.03$),⁸ but a significant reduction of mortality at this time has not been shown in any single trial. However, the Grampian region early anistreplase trial, the only trial of prehospital thrombolysis with information on follow up for more than one month, showed that the survival curves for home treatment

and hospital treatment groups diverged: at the end of one year mortality was halved in the group treated at home, with an absolute reduction in mortality of 11% (95% confidence interval 3% to 18%, $P=0.007$).⁹ Thus, the most conservative estimate suggests that the efficacy of thrombolysis is doubled with prehospital administration. In addition, the theoretical and experimental support for a policy of giving thrombolysis at the first opportunity is powerful and has provided the rationale for auditing and attempting to improve "door to needle time" in hospital.

The replies to the questionnaire in this study do not suggest that lack of belief in its efficacy is an important reason for non-use of prehospital thrombolysis. It is surprising, though, that use of thrombolytic treatment was not significantly higher among the participants in the anistreplase trial than among the Scottish doctors whose practices were at a similar distance from a district general hospital. However, the proportion of users among participants and doctors with remote Scottish practices was significantly higher than among conference delegates, few of whom came from Scotland (26% v 1%). Perhaps this difference reflects the longstanding involvement of Scottish general practitioners with coronary care, particularly if they look after their own patients in community hospitals.^{10,11}

MAKING AND SAVING TIME

In the anistreplase trial the median time from a general practitioner's arrival at a patient's house to the administration of thrombolytic treatment was 43 minutes, and in the Royal College of General Practitioners' study of acute myocardial infarction the corresponding time was 45 minutes. In the latter study the time taken to record an electrocardiogram and give thrombolytic treatment additional to the time taken for general medical care was 15 minutes (P Hannaford, personal communication). Thus, for the average general practitioner seeing three or four eligible cases a year, domiciliary thrombolysis entails about an extra hour's work a year. Most of the respondents agreed that they could make time to give thrombolytic treatment to coronary patients.

However, a majority opinion that domiciliary thrombolysis would save time compared with hospital administration was only found in doctors working at least 16 km from a hospital that took patients with myocardial infarction. Many doctors expressed the view that time spent giving thrombolytic treatment at home was time wasted and that patients would be better off going to hospital without delay. These opinions do not take into account the median "door to needle time" in hospital, which is seldom less than an hour.¹² To this must be added the time taken to transfer the patient to and from the ambulance and the journey time, amounting to a total timesaving of over two hours in rural practices in the anistreplase trial. Giving

thrombolytic treatment at home may postpone a patient's departure by 15 minutes, but that may prevent a much greater delay in starting thrombolytic treatment when the patient reaches hospital.

NEED FOR MORE TRAINING

More than any other factor, the expressed need for more training distinguished non-users from users. The safety of thrombolysis, the indications and contraindications for its use, making a clinical diagnosis of acute myocardial infarction, and recording and interpreting an electrocardiogram were all aspects of the subject about which users appeared better informed and more confident than non-users. Although the word "training" is convenient, it suggests formal instruction from a trainer; "becoming well informed" might be a better term. Becoming well informed about new treatments is the continuing responsibility of every doctor. General practitioners, like other doctors, are largely self taught and mostly learn by doing. However, some cardiologists imply that prehospital coronary care is not a general practitioner's job at all and recommend that patients with chest pain should bypass their general practitioner by telephoning for an ambulance to take them directly to hospital.¹³ Tests of competence of general practitioners who are not using thrombolysis have led to the conclusion that they should not give thrombolytics until they become more competent.¹⁴⁻¹⁶ General practitioners are therefore in a Catch 22 situation since they are discouraged from using thrombolytic drugs until they are more competent but are unlikely to become competent until they use such drugs.

LACK OF ENCOURAGEMENT FROM CARDIOLOGISTS

After the need to be better informed, lack of encouragement from cardiologists was the next most important disincentive to non-users becoming users of thrombolytic treatment.

There are about 32 000 general practitioners in the United Kingdom, who would need to find an extra hour a year for domiciliary thrombolysis. By contrast there are only 351 whole time equivalent cardiologists treating adult patients in the country.¹⁷ There is no way in which this small number of cardiologists could supervise let alone administer thrombolytic treatment for all patients with acute myocardial infarction entering hospital. If all eligible patients are to receive timely thrombolytic treatment it must be given by the first doctor to encounter the patient, and usually this will be a general practitioner. General practitioners must be encouraged to give thrombolytic treatment whenever there would be a temporal advantage in them doing so.¹⁸ They should abide by locally agreed protocols, and, particularly while on the learning curve, their care of patients with myocardial infarction—including their use of thrombolytic drugs—should be audited.

CONCLUSIONS

Acute myocardial infarction recognises no boundaries, the patient's greatest need occurs just at the interface between general practice and hospital. General practitioners constitute a generous and willing resource for the provision of prehospital coronary care, including thrombolysis. In contrast, hospitals have difficulty providing timely treatment for more than a minority of cases. General practitioners need encouragement to acquire the knowledge, skills, and equipment to fulfil their vital role as providers of prehospital coronary care.

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Clinical implications

- Domiciliary thrombolysis for acute myocardial infarction may save time, particularly in rural locations, but few general practitioners give it
- In this postal survey of general practitioners most respondents were convinced of benefits to giving thrombolytic treatment in the community, but only 17% had given it in the previous year
- Most doctors said that they could make time to give the treatment and were able to record and interpret electrocardiograms
- Important factors preventing doctors from giving treatment were the need for more training and lack of encouragement from local cardiologists
- General practitioners may need more training and support if more patients with myocardial infarction are to receive thrombolytic treatment at home

those doctors who took the time and trouble to complete the questionnaire, especially those who wrote to amplify their opinions.

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Cancer Prevention in Primary Care

Screening for colorectal cancer

Joan Austoker

This is the ninth in a series of articles looking at how cancer can be prevented in general practice

In the United Kingdom there are almost 31 000 new cases of colorectal cancer each year and nearly 20 000 deaths. It is the second most common cause of all deaths from cancer in the United Kingdom. The efficacy of screening with faecal occult blood tests to detect and treat tumours at an early stage, and thereby to reduce mortality, is currently being assessed in several randomised controlled trials. In general, faecal occult blood tests have a low sensitivity and only moderate levels of uptake among the population invited for screening. Until the studies in Denmark, Sweden, and Nottingham report their findings, there is no case for providing such screening routinely to an asymptomatic population. Detecting and removing premalignant adenomas by flexible sigmoidoscopy could be more effective than detecting early localised, asymptomatic cancers in reducing deaths from colorectal cancer. It is estimated that screening people at about the age of 60 by a single flexible sigmoidoscopy examination with appropriate colonoscopic surveillance could prevent 5500 cases of colorectal cancer and 3500 deaths in the United Kingdom each year. A randomised controlled trial to confirm these observations should be seen as a priority.

Colorectal cancer: current facts

In the United Kingdom in 1988 there were almost 31 000 new cases of large bowel cancer, 19 336 in the colon and 11 636 in the rectum. Figure 1 shows the general distribution of cancers of the large bowel. Tumours in the sigmoid colon, rectosigmoid junction, and the rectum account for nearly 70% of all cases.

In all parts of the large bowel by far the most common histology is adenocarcinoma (90-94% of cases), and a substantial proportion of colorectal cancers may arise from adenomatous polyps.

Colorectal cancer is the second most common cause of all deaths from cancer in the United Kingdom (12% of all deaths from cancer), accounting for 19 625 deaths in 1992. Most deaths from colorectal cancer (93%) occur in people over 55 (fig 2). Death rates have fallen

FIG 1—Distribution of cases of cancer by site in large bowel¹

since 1921. Rates are continuing downwards except for colon cancer in men, in whom rates have increased slightly over the past few decades.

Colorectal cancer has a fairly poor prognosis, with a relative survival rate at five years of 37%. Because nearly half of all patients present late there has been little improvement in survival rates in recent decades, despite the introduction of new surgical techniques

FIG 2—Number of deaths from large bowel cancer in the United Kingdom, 1992

Cancer Research
Campaign Primary Care
Education Research
Group, Department of
Public Health and Primary
Care, University of Oxford,
Oxford OX2 6PE
Joan Austoker, director

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