Institutional report - Coronary

Risk factor awareness and secondary prevention of coronary artery disease: are we doing enough?

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Abstract

We prospectively assessed the patient awareness of risk factors of coronary artery disease (CAD) in this study by performing a voluntary questionnaire survey of 235 patients undergoing first time coronary artery bypass grafting (CABG) between May and December 2003. We assessed patient awareness of smoking, hypertension (HT), hypercholesterolaemia (HC), obesity, family history (FM) and diabetes (DM) and role of medication in secondary prevention. One hundred and eighty-seven ex- or current smokers (79.6%), 175 hypercholesterolemic (74.5%), 116 had a family history (49.4%), 88 were hypertensive (37.4%), 62 obese (26.4%) and 45 diabetic (19.1%). More patients identified smoking (53.6%) and hypercholesterolaemia (55.3%) as risk factors as compared to hypertension (43%), family history (42.5%), diabetes (14.5%) or obesity (13.6%). A majority of the patients identified their own risk factors correctly. More than 95% of the patients were taking aspirin/clopidogrel and/or a statin. The main sources of information for these patients were hospitals, general practitioners, and booklets. Risk factor awareness in patients undergoing CABG is unsatisfactory. Nearly 95% of patients are taking aspirin/clopidogrel and/or statins, however, just over half realise their role in secondary prevention. For secondary prevention to be effective, more needs to be done to provide patients with necessary information.

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1. Introduction

Coronary artery disease (CAD) is the primary cause of death in the western world [1]. Over the last three decades, invasive procedures such as coronary artery bypass grafting (CABG) and percutaneous coronary interventions (PCI) have resulted in significant improvements in survival and quality of life for patients. This has happened despite a worsening risk profile of patients undergoing CABG [2]. Although our understanding of the pathophysiology of atherosclerotic process and its consequence has been changing over time, it is well known that ‘traditional risk factors’ such as cigarette smoking, hypertension, unfavourable lipid profile, obesity and diabetes would explain as much as 85% of the world’s experience of atherosclerosis [3,4]. Optimal management of risk factors, especially the modifiable ones and appropriately targeted pharmacotherapy have been shown to play a significant role in improving the outcomes and quality of life as secondary prevention in patients who have undergone CABG. These measures include control of hypertension, lifestyle and dietary changes, quitting smoking and a number of interventions including lipid-lowering, anti-platelet agents, angiotensin converting enzyme (ACE) inhibitors and beta-blockers [5–8].

Based on the evidence, the American Heart Association (AHA) and the American College of Cardiology (ACC) have laid down national guidelines in favour of aggressive risk factor modification to prevent the recurrence of cardiac events following CABG [9]. This was followed up with a ‘get with the guidelines’ programme (GWTG) to improve the compliance with secondary prevention measures after CABG in the United States [10].

We designed this study to evaluate the patient’s understanding of risk factors of coronary artery disease and their awareness of secondary prevention after CABG. We believe that patient’s awareness level holds the key to enhancing the compliance for secondary prevention.

2. Materials and methods

This study was carried out over an eight-month period beginning May 2003 until December 2003. Two hundred and thirty-five patients undergoing elective CABG at our institution filled out a seven-question questionnaire. The questions asked were the following ones:

1. How long have you had heart problems?
2. List all the factors you know, which increase the chances of getting coronary artery disease?
3. Which of these risk factors do you have?
4. Are you aware of any methods/treatments (medicines etc.) that you are using, which are aimed at modifying these factors? If so, what are they?

5. Where have you got most of the information about heart disease?

6. Did you attend the pre-admission clinic? If so, how would you rate it out of 10 as a source of information?

7. Do you think more needs to be done to tell the public about heart disease?

All patients undergoing elective CABG were admitted one day prior to their day of operation. The questionnaire was handed over to them with a brief explanation of the issues. The information regarding patient’s demographic and clinical details was collected from the patients analysis and tracking system (PATs) database and the patient’s casenotes. All the data were entered into a Microsoft Excel spreadsheet for further analysis.

The risk factors assessed were smoking, hypertension (HT), hypercholesterolemia (HC), obesity, diabetes mellitus (DM) and family history. They were further assessed for their awareness of the role of aspirin/clopidogrel and/or statins/lipid lowering agents in secondary prevention.

3. Results

Of the 235 patients who completed the questionnaire over the eight-month study period, 170 (72.3%) were men and 65 (27.7%) women (M:F ratio of 2.6:1). Patient’s ages ranged from 40 to 82 years. The patients were symptomatic for between 4 months and 37 years (median duration of symptoms being 24 months).

The distribution of risk factors amongst patients and their ability to identify these accurately are enumerated in Table 1. Either a history of smoking or active smoking was the commonest risk factor prevalent in the study group (n = 187 (79.6%)). Nearly three-quarters were hypercholesterolemic (n = 175); just under half had a family history (n = 116). There were 88 hypertensives (37.4%), 62 obese (26.4%) and 45 diabetics (19.1%).

Over half the patients identified HC (n = 130) and smoking (n = 126) as risk factors whilst a little fewer than half the patient population identified HT (n = 101) and family history (n = 100) as important risk factors. Very small numbers of patients identified DM (n = 34) and obesity (n = 32) as risk factors.

In general, patients were much better in identifying their own risk factors. Whilst nearly 80% of patients with a strong family history identified this as a risk factor (n = 92), three quarters identified HT (n = 66). Just over 60% of the diabetics (n = 28) and hypercholesterolemic (n = 109) identified their own risk factors and a little under 60% identified smoking as a risk factor (n = 106). Of all the patient groups, the obese were the worst in identifying their own risk factor (n = 22 (35.5%)). Patients with multiple risk factors were generally better at identifying their own risk factors. Also, patients who had been symptomatic were more aware of risk factors.

A close inspection of the patient notes revealed that 230 patients (97.9%) were taking aspirin and/or clopidogrel. However, only 130 (55.3%) seem to realise the role of these medications in secondary prevention. Interestingly, whilst slightly fewer patients were actually taking statins/lipid lowering agents (n = 224 (95.3%)), more patients were aware of their role in secondary prevention (n = 138 (58.7%)).

The hospitals (n = 172) and general practitioners (n = 113) were the commonest source of information for patients in matters pertaining to risk factor awareness and secondary prevention. Hospitals tended to provide a wealth of information through pamphlets and posters and a variety of personnel involved in the pre-admission clinic. Of the 172 patients (73.2%) who used the pre-admission clinics, 148 (86%) rated it 7 or better as a source of information. Media, magazines and television were also a significant source of information for a little over a quarter of the patients (n = 62). A small number of patients (n = 12) depended on family and friends for information. Internet usage for gaining information was limited to very few patients (n = 11).

4. Discussion

CABG and PCI are widely performed with excellent results, despite an increasingly worsening patient profile. However, it is vital to realise that their long-term success is also due to appropriate pharmacotherapy including a wide array of drugs such as aspirin and other anti-platelets agents, statins and other lipid lowering agents, ACE inhibitors and beta-blockers. Lifestyle alterations and risk factor modification also play a significant role in optimising outcomes. The importance of secondary prevention is well understood [7,10].

Despite a good understanding of the role of secondary prevention and well established guidelines [9], patient compliance has not been optimum. The publication of a guideline does not automatically translate into practice [11–13]. AHA laid out the GWTG programme, when it was clearly demonstrated that the adherence rates for various

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**Table 1**

<table>
<thead>
<tr>
<th>RF studied</th>
<th>Number of patients having the RF (%)</th>
<th>Number of patients identifying the RF (%)</th>
<th>Number of patients identifying their own RF (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex/current smokers</td>
<td>187 (79.6%)</td>
<td>126 (53.6%)</td>
<td>106 (56.7%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>45 (19.1%)</td>
<td>34 (14.5%)</td>
<td>28 (62.2%)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>88 (37.4%)</td>
<td>101 (43%)</td>
<td>66 (75%)</td>
</tr>
<tr>
<td>Hypercholesterolemia</td>
<td>175 (74.5%)</td>
<td>130 (55.3%)</td>
<td>109 (62.3%)</td>
</tr>
<tr>
<td>Family history of CAD</td>
<td>116 (49.4%)</td>
<td>100 (42.5%)</td>
<td>92 (79.3%)</td>
</tr>
<tr>
<td>Obesity</td>
<td>62 (26.4%)</td>
<td>32 (13.6%)</td>
<td>22 (35.5%)</td>
</tr>
</tbody>
</table>
AHA/ACC guidelines was extremely varied – weight management (10.4%), physical activity (19–42%), smoking (48%), control of HT (25%), DM (45%), lipid levels (31.7%), use of ACE inhibitors (24%), beta-blockers (17–73%) and aspirin (56–84%). (Denton 2003). An audit following up after the British Cardiac Society survey revealed that although compliance rates had improved, they were still not up to the mark [14].

We believe that the patient’s understanding of the various risk factors of CAD and measures of secondary prevention, including the role of medication, is vital to improving the compliance rate and to achieve the targets set out in the guidelines. Hence, we designed this questionnaire to assess these issues. The aim was to keep the questionnaire brief and simple, but at the same time gather maximum information on these issues. Whilst there are no significant differences between male and female patients, not surprisingly patients who have been symptomatic for a longer period of time are more aware of the risk factors. Even so, amongst the various risk factors studied, awareness levels are highest for HC (55.3%) and smoking (53.6%), followed by HT (43%), family history (42.5%) with very few patients being aware of DM (14.5%) and obesity (13.6%). Interestingly, these are the least frequently prevalent risk factors in the study population (19.1% and 26.4%, respectively).

Patients are much better at identifying their own risk factors, especially those with a family history of CAD (79.5%) and HT (75%). Hypercholesterolemia (62.3%), diabetics (62.2%) and smokers (56.7%) also do quite well. Just over a third of the obese patients identify obesity as a risk factor (35.5%). It is quite likely that patients with a strong family history would be discussing the issues with their close family and friends and the precedents in the immediate family of cardiac problems would serve as a good reminder of the role of this particular risk factor. Not surprisingly, patients who are taking medications for specific problems such as HT, hypercholesterolemia and DM also tend to be more aware of the role of these factors in enhancing the risks of CAD. It is surprising that only about a third of the obese patients are aware of the risk of obesity. We could speculate that there is probably a degree of denial with regards to obesity amongst these patients.

The compliance rate of taking aspirin and/or clopidogrel (97.9%) and statins and/or other lipid lowering agents (95.3%) has been high in our patients. This is probably a reflection of the fact that there has been a widespread dissemination of knowledge of the role of antiplatelets and lipid lowering agents in both primary and secondary prevention amongst the primary care personnel and general practitioners. Also, as all these patients are elective patients with varying duration of symptoms, they would have had the opportunity to interact with cardiologists who would have further optimised their medical treatment. However, it is important to note that just over half the patients are actually aware of the role that these drugs play in secondary prevention. This could potentially lead to lower compliance rates over a prolonged period of time, especially if they have to discontinue these drugs temporarily for some reason.

As one would expect, hospital personnel and general practitioners are the most important sources of information for patients. Patients tend to interact with various medical personnel and support staff as they pass through the different departments before reaching the cardiothoracic surgical wards for CABG. Specialist nurses and pamphlets available at hospitals are particularly vital. Pre-admission clinics are proving to be a very effective way of disseminating information regarding CAD. In our study, 86% of the patients who attended it rated it as 7 or better on a scale of 10 as a source of information.

Whilst media and television reach out to just over a quarter of the patients in this regards, the number is quite low, especially as a lot of investment has gone into advertising campaigns in the recent past. Perhaps, greater emphasis on the modifiable risk factors, lifestyle alterations and the importance of secondary prevention in improving long-term outcomes is warranted. Internet usage to gain knowledge seems to be the very limited. There is however, a tremendous scope for the future as, in general terms, the availability of Internet and its usage is expanding. Perhaps, the mass media could be used as a tool to direct people to various websites, thus providing accurate information based on current evidence in a way that the lay person would understand. More than 90% of the patients felt a greater need for better information regarding heart diseases.

Our priority whilst formulating the questionnaire was to gain maximum information and at the same time, keeping the questionnaire short and focused to ensure maximum compliance. We believe that one major drawback of the study has been the failure to gather information regarding the educational and social background of patients, as that would most certainly have had an impact on their ability to understand these issues. Despite this, we believe that this study provides important information regarding these issues amongst patients undergoing elective CABG at our institution.

5. Conclusions

Despite the extent of evidence available regarding the importance of secondary prevention after CABG, there is a significant lack of awareness of risk factors for CAD and subsequently, the role of secondary prevention amongst patients undergoing CABG. Although this study reflects the awareness levels amongst a small group of patients at one institution over a limited period of time, we believe that the information gathered has some important value in directing our efforts at disseminating this information in the future. Pre-admission clinics are an effective tool for dispersing information. We also believe that this can also be improved through a greater utilization of mass media and Internet to establish the importance of secondary prevention in managing patients who have undergone PCI or CABG.

References


Appendix. Conference discussion

Dr J. Roquette (Lisbon, Portugal): Did you analyse the social status of these patients? Sometimes the higher social status, the more aware of the risk factors.

Dr Karthik (Leeds, United Kingdom): I would like to thank you for raising that issue, because about halfway through the study we realized that this was a drawback of this study and we actually started entering data on this issue. We were more than halfway through the study.

Now, we do have information on about half these patients regarding their educational background, their social levels, their employment status, or profession that they follow. We have not included that in this paper because it’s quite a complex interaction between these issues that then leads to patient awareness levels. There is something to suggest, in the data, that there is a correlation between awareness levels and the social level of a patient, but we have not analysed that in total.