Secondary prevention in patients awaiting CABG in the North West of England

This study looks at how well cardiovascular risk factors were being controlled in a high-risk group of patients awaiting coronary artery bypass surgery. It shows significant short falls in the implementation of currently advocated strategies.

Abstract

Recent guidelines emphasise the importance of cholesterol, blood pressure and diabetes control in the progression of coronary artery disease. In this study, the implementation of therapies to control such cardiovascular risk factors was assessed in patients with established coronary artery disease awaiting coronary artery bypass surgery. Some 15% of patients continued to smoke and a significant proportion of patients did not achieve target levels for total cholesterol, low density lipoprotein and blood pressure control. Amongst the diabetic patients, 88% demonstrated a HbA_{1C} above 7%.

Key words: coronary artery disease, smoking, cholesterol, hypertension, diabetes.

Introduction

Secondary prevention of cardiovascular events is a key priority for public health.[1] Optimal control of hyperlipidaemia,[2] hypertension,[3] smoking,[4] and glycaemic control[5] in diabetic patients has been shown to limit the development and recurrence of major coronary events. The North West of England has one of the highest prevalence rates for coronary heart disease (CHD) in England. Those listed for coronary artery bypass surgery (CABG) represent a group of high-risk patients in whom optimal control of risk factors should be aimed. The aim of this study was to determine whether this was achieved in such a group of patients in the North West of England.

Methodology

During January-March 2000, 100 consecutive patients listed for CABG to the Cardiothoracic Surgical Centre of the Manchester Royal Infirmary were assessed for their smoking habits, lipid profile, blood pressure (assessed three to four weeks before and on the day prior to operation). In diabetic patients glycaemic control (HbA_{1C}), was also assessed.

> ***'The study highlights the inadequate control of the major risk factors determining cardiovascular outcomes'***

Results

The study included 84 males and 16 females aged 41 to 82 (median 62) years. The mean duration for time on the waiting list from coronary angiography, demonstrating significant coronary artery disease necessitating CABG, and admission for surgery was 244.7 (44–863) days.

Of this group, 24 patients were non-smokers, 61 patients were ex-smokers, and 15 were smokers. Only 10 of the 61 ex-smokers had stopped whilst awaiting CABG. Some 72 patients had a confirmed abnormality in their lipid profile at initial review by the cardiologist; 68 were receiving a HMG CoA reductase inhibitor (statin), and four a fibrate at the time of admission. Despite being on therapy 45 patients had a random cholesterol level greater than 5 mmol/L and 35 had low density lipoprotein levels greater than 3 mmol/L; 24 of the 45 (68.6%) patients with total cholesterol above 5 mmol/L and 27 of the 35 (67.5%) patients with an LDL above 3 mmol/L were on lipid-lowering therapy (table 1).

The mean systolic blood pressure was 130.8 mmHg (SD 18.5); mean diastolic blood pressure was 74.9 (SD 10.2) mmHg. Some 38 patients had a systolic blood pressure greater than 140 mmHg and a diastolic blood pressure greater than 85 mmHg on both occasions.

Twenty five patients had diabetes (22 type 2; 3 type 1). Mean HbA_{1C} in the diabetic patients was 7.7% $\pm$ 3. However, only three of the 25 (12%) had an HbA_{1C} under 7%, six of the 25 (24%) had an HbA_{1C} between 7.0–8.1% and 16 of the 25 (64%) had an HbA_{1C} over 8.1%. Of the type 2 diabetic patients, five were on diet only, 13 were on oral hypoglycaemic agents, and four were on insulin.

Discussion

The present study of patients with established coronary artery disease highlights the inadequate control of the major risk factors determining cardiovascular outcomes. Our study confirms the high prevalence of smoking in patients with CHD and also highlights that a significant proportion of patients continue to smoke despite advice to

Table 1. Random serum total cholesterol, LDL, HDL and triglyceride levels (mmol/L)

Cholesterol	LDL	HDL	Triglyceride
Mean 4.89 (SD1.07)	Mean 2.94 (SD1.07)	Mean 1.2 (SD 0.3)	Mean 1.98 (SD1.30)
45 patients > 5 mmol/L	35 patients > 3 mmol/L	97 patients < 1.8 mmol/L	42 patients > 1.8mmol/L

Key: LDL = low density lipoprotein; HDL = high density lipoprotein; SD = standard deviation

Key messages

- Risk factors for CHD are not being optimally controlled in high-risk patients
- Many high-risk patients continue to smoke
- Many high-risk patients fail to reach target levels for cholesterol, LDL and blood pressure control
- The majority of diabetic patients showed inadequate glycaemic control

the contrary. A recent study assessed the pre-operative and post-operative smoking habits of 985 patients undergoing CABG over 20 years and demonstrated that smoking cessation after surgery was an important independent predictor of a lower risk of death and coronary re-intervention.[4]

With regard to the management of hyperlipidaemia, whilst it is encouraging to see that all patients are on therapy, disappointingly, a very small proportion are actually achieving target levels currently recommended for secondary prevention of CHD.[2]

The evidence for optimal blood pressure control as a means of reducing coronary events is clear,[3] yet 38% of our patients failed to achieve target levels. Looking at glycaemic control, the majority of our patients showed inadequate glycaemic control with only 12% achieving UKPDS recommendations.[5] In the UKPDS each 1% reduction in mean HbA_{1C} was associated with reductions in risk of 21% for deaths and 14% for myocardial infarction. Disappointingly, our poor results were primarily due to inadequate implementation of currently available therapy, as 23% were still on diet, 59% were on oral agents and only 18% were on insulin.

In conclusion, our study shows significant shortfalls in the implementation of currently advocated strategies in the secondary prevention of coronary artery disease. We recommend closer liaison between primary care, cardiology and cardiothoracic surgery to implement the recommendations of the NSF for coronary artery disease.

'Poor results are primarily due to inadequate implementation of currently available therapy'

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