



Research Article

Practice Patterns for Outpatients With Stable Coronary Artery Disease: A Case Vignette-based Survey Among French Cardiologists



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ABSTRACT

Background: Although medical management of patients with coronary artery disease (CAD) is often based on scientific guidelines, a number of everyday clinical situations are not specifically covered by recommendations or the level of evidence is low. The aim of this study was to assess practice patterns regarding routine management of patients with stable CAD.

Methods: A survey comprising six questions on two clinical scenarios regarding stable CAD management was sent to 345 cardiologists from the Nord-Pas-de-Calais Region (France). We first assessed practice patterns globally and then searched for associations with physician characteristics (age, gender, sub-specialty, and type of practice).

Findings: The response rate was 92%. Regarding management of asymptomatic CAD, 86% of the cardiologists performed routine exercise testing, before which, 69% withdrew β -blockers. After a positive exercise test, 26% immediately performed coronary angiography and 67%, further imaging tests. In the absence of left ventricular dysfunction or history of myocardial infarction, routine β -blocker prescription for stable CAD was selected by 43%. When anticoagulation was needed for atrial fibrillation, 41% initiated direct oral anticoagulants rather than vitamin-K antagonists and 50% combined aspirin with anticoagulants. For recurrent stable angina in patients with known CAD, 24% performed coronary angiography directly, 49% requested a stress test, and 27% opted for medical therapy without further diagnostic testing. Age, gender of the cardiologist, academic environment, and practice of interventional cardiology were associated with certain management patterns.

Interpretation: When not guided by high-level recommendations, practice patterns for routine clinical situations in stable CAD vary considerably. Future clinical trials should address these clinical interrogations.

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1. Introduction

Coronary artery disease (CAD) is a leading cause of mortality and morbidity worldwide (Roth et al., 2015). The medical management of CAD patients is increasingly dictated by clinical practice guidelines issued by experts and scientific authorities (Fihn et al., 2012; Montalescot et al., 2013; Steg et al., 2012; O'Gara et al., 2013; Windecker et al., 2014). However, certain clinical decisions, including routine decisions, are not specifically covered by guidelines or the level of evidence is low (Tricoci et al., 2009). Examples of these everyday

clinical situations are: routine exercise testing in asymptomatic patients with known CAD, the management of asymptomatic CAD patients with positive exercise tests, the management of CAD patients with recurrent chest pain, or the management of such patients with atrial fibrillation requiring anticoagulation. In these cases, the medical choice may depend primarily on the physician's opinion, personal experience and preferences. There is currently a paucity of literature addressing these issues, and little is known about the variability in practice among cardiologists. We therefore designed the present study to: (1) assess practice patterns regarding the routine management of patients with stable CAD; and (2) analyze whether several variables (age and gender of the cardiologist, type of cardiology practice, etc.) are associated with specific medical decisions. To this end, the cardiologists of a geographical region of France, where the prevalence of cardiovascular disease is high (Tunstall-Pedoe et al., 1994), were all invited to take part in a case vignette-based survey (Tunstall-Pedoe et al., 1994).

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2. Methods

2.1. Survey Design

We conducted a cross-sectional survey of cardiologists in the Nord-Pas-de-Calais Region (population, 4.05 million) of France. A mailing list of cardiologists actively working in the area was built up from the list of physicians certified in cardiology ($N = 414$) and cross-checked with professional directories. Physicians working solely as pediatric cardiologists and those working solely as vascular physicians were not included in the survey. Physicians with a cardiology certification but for whom clinical cardiology was not the primary activity were also excluded, as were those who had recently retired. We ended up with a list of 345 cardiologists who were the target population of the present study. The survey was sent out in December 2014 using the French Postal Service. A reminder notice was sent in February 2015. The project was approved by the local Institutional Review Board of the University Hospital of Lille (France).

2.2. Questionnaire

The survey tool was developed by cardiologists routinely involved in the clinical care of CAD patients. To maximize the response rate, we developed a very simple, anonymous questionnaire that could be

answered quickly. The survey consisted of six questions pertaining to two clinical scenarios regarding stable CAD patients (Tables 1 and 2). Demographic information (age and gender of the cardiologist, private vs. hospital practice, academic vs. non-academic cardiologist, interventional [coronary] vs. non-interventional cardiologist) was recorded to further define the participating population of physicians.

2.3. Statistical Analysis

Statistical analyses were performed with the SPSS 20.0.0 IBM software. Continuous variables are presented as means \pm standard deviation (SD). Categorical variables are presented as absolute numbers and/or percentages. Univariate analysis using the χ^2 test was performed to search for associations between answers and physician characteristics (age tertiles, gender, private vs. hospital practice, academic vs. non-academic, interventional vs. non-interventional cardiologist). Logistic regression analysis was used to determine which physician characteristics were independently correlated with management patterns. Odds ratios (OR) and corresponding 95% confidence intervals (CI) were calculated. Statistical significance was assumed at P -value < 0.05 .

Table 1

Case #1.

A 62-year-old man has sustained an inferior ST segment-elevation MI. He has undergone successful primary angioplasty with implantation of a drug-eluting stent for acute occlusion of the right coronary artery. There were no other significant coronary lesions, and the left ventricular ejection fraction at hospital discharge was 55%. Smoking was the sole cardiovascular risk factor and was stopped at time of MI. Six months after MI, an exercise test was performed (80% of maximum predicted heart rate; negative). At present, two years post-MI, the patient is asymptomatic and is receiving optimal medical therapy for secondary prevention. Assuming that the patient is still asymptomatic:

1. During this latest visit (2 years after MI), you send him for a non-invasive stress test to screen for myocardial ischemia
2. You wait 3 years after MI before sending him for a stress test
3. You wait 4 years after MI before sending him for a stress test
4. You wait 5 years after MI before sending him for a stress test
5. You do not send the patient for a stress test as long as he remains asymptomatic

Choose only one answer (your ideal choice)

Assuming that you send the patient for a treadmill exercise test and that he has been on β -blockers since his MI:

1. You tell him to stop taking the β -blocker before the test
2. You maintain treatment with the β -blocker for the test

Choose only one answer (your ideal choice)

Assuming that you send the patient for a treadmill exercise test and that the results are as follows: exercise duration on BRUCE protocol: 11 min; test stopped for fatigue at 90% of maximum predicted heart rate; no chest pain; no arrhythmia; significant downsloping ST-segment depression at 9 min (reaching 1.4 mm at peak exercise).

1. You send the patient for a coronary angiography
2. You do not send the patient for additional tests. You simply plan clinical follow-up (unless the patient becomes symptomatic)
3. You do not send the patient for additional tests. You increase the anti-ischemic medication and organize clinical follow-up (unless the patient becomes symptomatic)
4. You send the patient for a second non-invasive test (stress echocardiography, nuclear stress test). If ischemia is confirmed, you send the patient for a coronary angiography. If the second test is negative, you organize clinical follow-up (unless the patient becomes symptomatic)

Choose only one answer (your ideal choice)

MI, myocardial infarction.

Table 2

Case #2.

A 76-year-old diabetic woman underwent coronary angiography because of exercise-induced angina (no history of MI). Three-vessel coronary disease was documented. Firstly, a right coronary stenosis, which appeared as the more severe lesion, was treated by implantation of a drug-eluting stent. However, the patient remained symptomatic, and a CABG (left anterior descending artery, left marginal artery) was performed.

After surgery, the patient joined a cardiac rehabilitation program. At the end of the program, the exercise test was submaximal but showed no sign of ischemia. Left ventricular ejection fraction was 60%.

Three months after CABG, the patient is doing well. She has no angina. Blood pressure is 130/80 mm Hg, and heart rate is 67 beats/min (in sinus rhythm). Medical treatment includes low-dose aspirin, a statin, an ACE inhibitor, and treatment for diabetes. LDL-cholesterol and glycosylated hemoglobin are well controlled. Renal function is normal. Would you add a β -blocker?

1. Yes
2. No

Choose only one answer (your ideal choice)

Two years later, atrial fibrillation is diagnosed. The patient still has no symptoms of angina. Which anticoagulation treatment would you choose?

1. Vitamin-K antagonist and discontinue aspirin
2. Vitamin-K antagonist and continue with aspirin
3. Direct oral anticoagulant and discontinue aspirin
4. Direct oral anticoagulant and continue with aspirin

Choose only one answer (your ideal choice)

The patient is now 84 years old (CABG was performed 8 years ago). She has osteoarthritis and is no longer very active. During a routine outpatient visit, the patient reported recurrent angina that began approximately 6 months previously. The chest pain is similar to what she experienced prior to CABG, although less severe (only 1 or 2 episodes per month, when she goes shopping, and with rapid [≤ 1 min] spontaneous cessation at rest).

1. You send the patient for a coronary angiography
2. You send the patient for a non-invasive stress test. If positive, you send her for a coronary angiography
3. You send the patient for a non-invasive stress test. If positive, you increase anti-ischemic medication and continue with clinical follow-up
4. You do not send the patient for additional tests. You simply increase anti-ischemic medication and pursue clinical follow-up

Choose only one answer (your ideal choice)

MI, myocardial infarction. CABG, coronary artery bypass graft. ACE, angiotensin-converting enzyme.

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