

Is this woman with diabetes having a heart attack?

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DIABETIC URGENCIES

A myocardial infarction in a person with type 2 diabetes may be asymptomatic or atypically symptomatic rather than typically symptomatic. Appreciation of the increased coronary risk conferred by diabetes and early recognition of symptoms should prompt a patient to seek assistance sooner rather than later, thus optimising clinical outcomes.

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A crushing precordial pain radiating to the neck and left arm is the classic symptom complex of a myocardial infarction (MI). In people with diabetes, however, an MI may be asymptomatic or atypically symptomatic, and diagnosis can be difficult. It is important that these patients recognise the symptoms that should prompt them to seek help as the earlier they present then the greater their chance of receiving the acute interventions that can make a difference to their clinical outcomes.

This article discusses the diagnosis of MI in patients with type 2 diabetes and offers some suggestions to help identify those in whom atypical symptoms should prompt urgent assessment for an MI. It also includes some practical tips for patients who are at high risk of an atypically presenting MI so they can recognise symptoms that might be important to prompt them to seek assistance sooner rather than later.

MI PRESENTATIONS IN TYPE 2 DIABETES

'I didn't think it was serious. I felt a bit sick and a bit faint but I thought I just had a bit of indigestion. Anyway, I wanted to finish pruning while the weather was good.'

Madge, aged 83 years, with type 2 diabetes for 25 years, after her presentation to hospital with severe cardiac failure requiring admission to the intensive care unit. She was later transferred to high level residential care.

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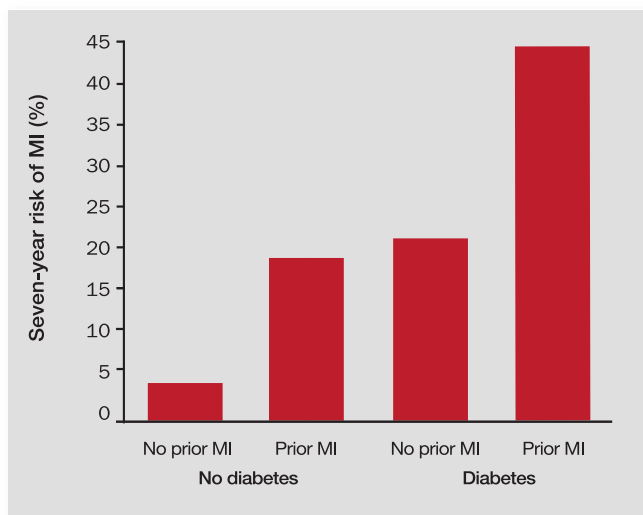


Figure 1. Diabetes equals coronary heart disease.¹ The coronary risk of a person with diabetes and no history of myocardial infarction (MI) is about the same as that of a person without diabetes but with a history of MI.

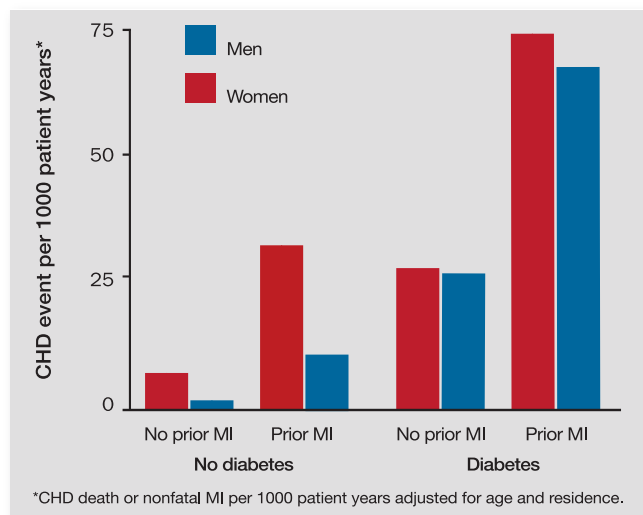


Figure 2. Diabetes and coronary heart disease: men versus women.² Diabetes dramatically increases the coronary risk in both men and women but more in women, effectively eliminating the coronary protection that women usually have compared with men.

Type 2 diabetes is regarded as a ‘coronary equivalent’ by many health professionals because the risk of an MI in a person with type 2 diabetes and no past history of MI is almost equivalent to the risk of a person without diabetes but with a past history of MI.¹ This risk, expressed as a seven-year risk, is about 20% (Figure 1).¹

There is a clear gender difference in the coronary risks of men and women without diabetes, with relative coronary risks being much lower in women (Figure 2, left side).² However, diabetes virtually eliminates this difference, so that women with diabetes have equivalent coronary risks to men with diabetes regardless of MI history (Figure 2, right side).²

Many women with diabetes (and their health professionals) have not appreciated this excess risk. These women do not recognise the symptoms that should prompt them to seek help and their doctors may not recognise that the symptoms (classic or atypical) may be those of an MI.

Some 20 to 60% of MIs are unrecognised and only diagnosed retrospectively

because of abnormalities on an ECG.^{3,4} This proportion is higher in women and increases with increasing age and probably with diabetes (because of autonomic neuropathy). Half of these unrecognised MIs are asymptomatic and half have atypical symptoms not recognised as indicating an MI at the time.

Some of the documented atypical presentations of MI in people with diabetes are summarised in the box on page 56. A complete list would include most symptoms arising in the torso and an MI would be included in the differential diagnosis of a wide range of common conditions that are generally much more likely than an MI. However, to arrange urgent MI assessment for every person presenting with a symptom from the complete list so as not to miss an atypical presentation of an MI is not practical, possible or useful.

ASSESSING RISK OF AN ATYPICALLY PRESENTING MI

The two components that are important when assessing a person’s risk of an

atypically presenting MI are:

- absolute risk of an MI
- relative risk of an atypical presentation.

The higher each of these components is, the higher the likelihood that the next presentation that could feasibly signal an MI is indeed a true signal.

Factors influencing the absolute risk of an MI are summarised in the box on page 56. It is important to assess both the fixed and modifiable risk factors because both contribute to absolute risk. The two most commonly used cardiovascular risk assessment tools in Australia are those promoted by the Heart Foundation of Australia (Australian cardiovascular risk charts) and by the National Vascular Disease Prevention Alliance (web cardiovascular disease risk calculator; see the resources box on page 57). Both of these tools include some but not all of the risk factors. Three important risk factors, each of which independently more than doubles an individual’s absolute coronary risk, that are not included in either tool are:

ATYPICAL PRESENTING SYMPTOMS OF MI IN PEOPLE WITH DIABETES

- Abdominal or epigastric pain
- Dyspnoea
- Fatigue
- Nausea and vomiting
- Nonproductive cough
- Palpitations
- Syncope

- previous history of a cardiovascular event (angina or an acute coronary syndrome)
- previous transient ischaemic attack or stroke
- peripheral vascular disease that is symptomatic or indicated by an ankle to brachial pressure index of less than 0.9.

Patients at high risk are generally considered to be those with a five-year coronary risk exceeding 15%.

Patients who are likely to have atypical symptoms if they have an MI include the elderly, women and those with autonomic neuropathy (itself associated with long diabetes duration and signalled by somatic neuropathy).

INFORMING PATIENTS

Informing patients with diabetes about their particular risk of heart attacks, how to recognise atypical presentations and the action they should take if they think they might be having a heart attack can be aided by the provision of some resources.

The Summer 2010/2011 issue of *Conquest*, the national magazine for Australians with diabetes published by Diabetes Australia, contained an article about heart attacks and action plans. This article reminds readers that heart attacks are more important than cancer for everyone and that heart attacks are especially important in people with

RISK FACTORS FOR CARDIOVASCULAR EVENTS**Fixed**

- Previous history of cardiovascular event
- Increasing age
- Diabetes
- Longer duration of diabetes
- Male gender (unless diabetes present)
- Family history of cardiovascular event

Modifiable**Lifestyle**

- Smoker
- Poor nutrition
- Alcohol misuse
- Physical inactivity

Medical

- Poor diabetes control (ABCs – high A_{1c}, blood pressure and cholesterol, smoking and not taking salicylates)
- Renal impairment (microalbuminuria and/or decreased GFR)

Effects of factors on absolute and relative risks

Although fixed risk factors are not modifiable, they are important in determining the absolute risk and thus the potential benefits of interventions on modifiable risk factors.

As an illustration, the use of a statin reduces the relative risk of a CHD event by 25% but the absolute risk reduction is, for example, much less in a woman without diabetes than in a man with diabetes.^{2,5} Using the data in Figure 2, use of a statin in a woman without diabetes and no prior MI reduces her relative risk of a CHD event by 25% from 1.1 to 0.8 events per 1000 patient years – an absolute risk reduction of 0.3 per 1000 patient years. However, for a man with diabetes and no prior MI, the comparable reduction is from 26.9 to 20.2 CHD events per 1000 patient years – which is an absolute risk reduction of 6.7 per 1000 patient years.

USEFUL RESOURCES

Australian cardiovascular risk charts (Heart Foundation of Australia)

- www.heartfoundation.org.au/SiteCollectionDocuments/aust-cardiovascular-risk-charts.pdf
- Also available from Diabetes Australia at:
www.diabetesaustralia.com.au/en/For-Health-Professionals/Absolute-Cardiovascular-Risk

Australian absolute cardiovascular disease risk calculator (National Vascular Disease Prevention Alliance)

- www.cvdcheck.org.au

diabetes – both women and men. A simple tool based on the Framingham risk equations is presented to allow readers to assess their personal risk and an action plan is provided to guide someone who thinks he or she might be having a heart attack.⁶

Advice to give patients about the actions they should take if they think they might be having a heart attack is provided in the box on this page.

COMMENT ON CASE

An older woman like Madge is at high risk of both an MI and an atypical presentation. Had she presented earlier to an astute clinician she may well have had a better outcome. However, she did not recognise that her symptoms could be indicating a serious problem until it was too late, so she missed the opportunity and lost her independence.

SUMMARY

- Diabetes increases coronary risk in both men and women, and eliminates the gender difference that exists for coronary risk in those

HEART ATTACK ACTION PLAN – WHAT TO TELL THE PATIENT

What to do

- If you think you are having a heart attack
 - Stop and rest
 - Tell someone how you feel
- If symptoms persist for more than 10 minutes
 - Call 'triple zero' for an ambulance
 - Take an aspirin tablet
 - Take glyceryl trinitrate, and repeat if pain persists

What not to do

- Don't dismiss the discomfort
- Don't waste time
- Don't drive to hospital – go by ambulance

- without diabetes.
- The fact that women with diabetes have about the same coronary risk as men with diabetes, regardless of MI history, is often not appreciated by such women or by their health professionals.
- An MI in a person with type 2 diabetes may be asymptomatic or atypically symptomatic rather than have typical symptoms.
- Patients with diabetes often do not recognise the symptoms that should prompt them to seek help and their doctors may not recognise that the symptoms may be those of an MI. Early intervention gives better clinical outcomes. MT

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COMPETING INTERESTS: Dr Phillips has received research and travel grants, acted on advisory boards and been involved with clinical trials and seminars sponsored by a range of pharmaceutical companies. He does not think these associations have influenced the content of this article.



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