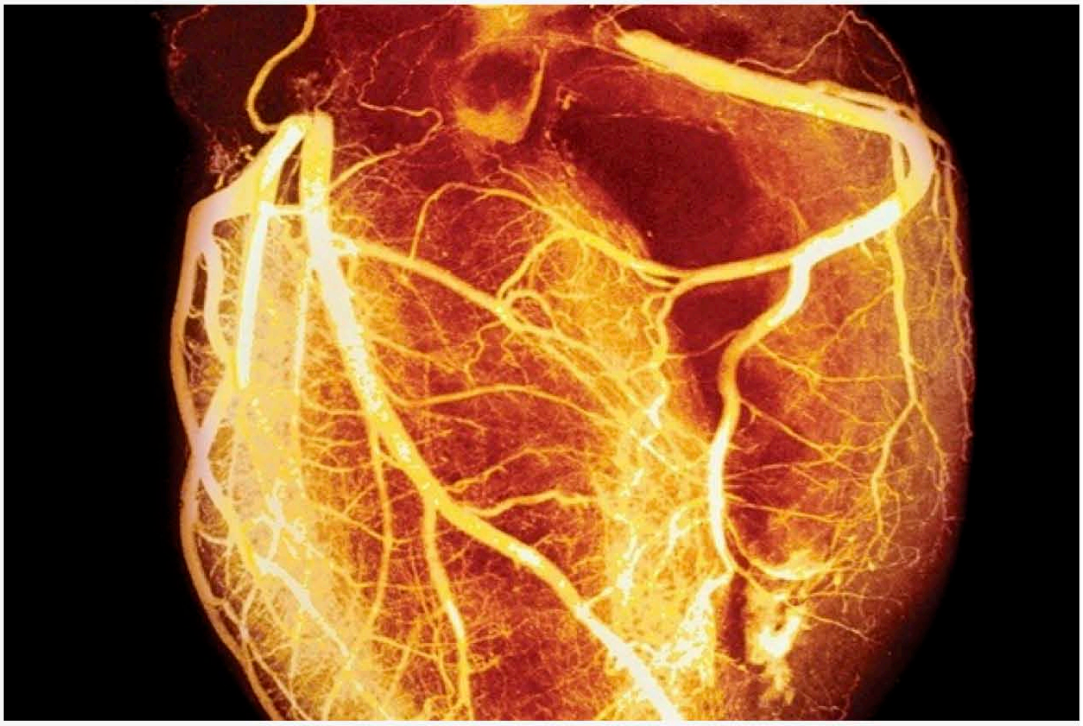
Referral of the month – chest pain

27 October 2015

Consultant cardiologist Dr TW Koh advises on this uncertain case of a patient with chest pain.



Dear consultant,

I'd appreciate your opinion regarding this 58-year-old lady.

She was referred to your department three years ago with what sounded like exertional angina, although there were some atypical features. Ultimately, she had coronary angiography, which was normal.

No specific diagnosis was made, and she was referred back to our care. However, during the course of her assessment she was put on a ß-blocker and GTN spray to use when necessary. She came to my attention recently because she was recalled for a treatment review.

It struck me as odd that she continues to use these treatments despite ischaemic heart disease having been excluded. Apparently, she still gets an angina-type pain, which she insists is helped by both the ß-blocker (it is worse when she stops) and the GTN (used during an episode).

I'm not clear where I should be going with her. Should she be reassessed cardiologically now we are three years further on? Is it appropriate for her to be 'half treated' as though she has cardiac disease? She is not on a statin or aspirin. Is this cardiac syndrome X – if so, what is the current consensus as to the cause and management? Or could this be something else entirely, such as oesophageal spasm, which I believe also responds to GTN and ß-blockers – in which case, should we just continue as we are?

Thank you for unravelling this.

Regards, GP

Dear GP,

Thank you for asking for my opinion on this 58-year-old lady who is known to our department. She first came to our attention three years ago when she complained of exertional chest discomfort. Our investigations at the time included a myocardial perfusion scan, which showed evidence of myocardial ischaemia. She underwent invasive coronary angiography and this revealed unobstructed coronary arteries. She has been taking bisoprolol 2.5mg once a day since then.

She does not have diabetes, but has a raised BMI of 37. She stopped smoking three years ago.

In general, the bisoprolol has helped reduce her episodes of exertional chest discomfort but the response may be inconsistent, and she still has to use sublingual GTN occasionally when the chest discomfort is persistent.

Recommendations

I do not think a further cardiac assessment is required since the coronary angiogram was only performed three years ago, and the typical angina symptoms and response to ß-blockers would be compatible with a diagnosis of microvascular angina (syndrome X).

She has not noticed any change in the character of her chest symptoms (she describes retrosternal 'tightness'), and their frequency has remained stable. I do not propose adding any further regular medication and reminded her that she can use sublingual GTN prophylactically, as well as for immediate relief of angina. She is happy with this recommendation, and with her current level of symptoms.

The European Society Cardiology guidelines include specific recommendations for the management of microvascular angina. It recommends such patients should receive secondary prevention medications, including statin and aspirin (class I indication).

Our patient's case presents a common scenario, not only in general practice, but also in invasive cardiological practice. This is because studies show at least 40% of subjects undergoing coronary angiography actually turn out to have unobstructed (<75% stenosis) coronary arteries.

When dealing with such patients complaining of chest pains with unobstructed coronary arteries, it is helpful to classify them in three broad clinical groups:

Group 1

This is where patients demonstrate typical angina chest pains on exertion. Importantly, there is objective evidence of ischaemia with abnormal exercise stress test or myocardial perfusion scan results. There may be atypical features in the symptomatology, for example, the chest pain may be prolonged and sometimes may not consistently be related to exertion. There is a preponderance of females with this syndrome. This group can be considered as having 'microvascular angina', a name more favoured than the former term 'syndrome X' because it alludes to its potential aetiology.

Group 2

This group is patients who have typical angina-type pain, but in contrast to group 1 or patients with established coronary artery disease, it occurs predominantly at rest. There is associated ST elevation during chest pain and the aetiology is thought to be coronary spasm. These patients are difficult to diagnose in the clinic setting because ECG evidence of ST elevation is often lacking, except when they come for emergency coronary angiography due to ongoing chest pain. These patients are less common in clinical practice than patients with other forms of chest pain. They can be regarded as having 'vasospastic angina' since the aetiology is thought to be focal coronary spasm. Other terms include Prinzmetal angina or variant angina. Rarely, such coronary spasm can lead to myocardial infarction. In practice, intracoronary infusions of acetylcholine or ergonovine during coronary angiography are not performed to establish this diagnosis invasively, and it is therefore often a diagnosis of exclusion.

Group 3

Patients in this group have left-sided chest pain lasting hours or days, and most often have musculoskeletal pain – 'non-anginal chest pain'. Other causes for chest pains, such as oesophageal, pulmonary, pericarditic and aortic pathology, deserve their respective investigations. This group is important because these patients should not be regarded as having angina.

Our patient firmly belongs to group 1, and her diagnosis is microvascular angina (syndrome X).

The pathogenesis of microvascular angina is not fully understood and the pathophysiological features exhibited by such patients can be disparate, hence the term 'syndrome X', which was first coined to describe them.

It is thought that such patients have impaired relaxation or increased sensitivity to vasoconstriction in the intramural arterioles and pre-arterioles. This results in impaired myocardial blood supply and episodes of ischaemia, causing chest pain.

Some studies have actually disputed the existence of ischaemia in microvascular angina, even in those patients who have abnormal ECG stress tests. The fact that stress echocardiography does not show any wall motion abnormality in microvascular angina patients is cited as evidence against ischaemia as the underlying cause.

Coronary microvascular dysfunction is by no means the only theory. An alternate mechanism to ischaemia is enhanced pain sensitivity – the 'sensitive heart' theory. Abnormal cardiac pain perception is thought to be responsible for the induction of characteristic chest pains during coronary angiography, catheter movement or saline injection – manoeuvres that do not induce ischaemia.

The lack of a unifying pathogenic mechanism accounts for a wide range of treatments found to be potentially helpful. These include ß-blockers, nitrates, calcium blockers, tricyclic antidepressants (imipramine) and ACE inhibitors.

Key messages

1 Patients diagnosed with microvascular angina and unobstructed coronary arteries have a good prognosis in relation to MI and cardiovascular death compared with patients who have established coronary artery disease. Reassurance is helpful, but many patients continue to suffer morbidity due to repeated chest pain presentations.

2 Patients presenting with angina and unobstructed coronary arteries have significantly higher rates of obesity, hypertension, family history of ischaemic heart disease, diabetes and smoking history. These modifiable risk factors should be addressed accordingly.

3 Secondary prevention with a statin and aspirin may be appropriate, according to European Society of Cardiology guidelines.

4 First-line treatment is with a ß-blocker.

5 Calcium channel blockers are recommended if the ß-blocker does not achieve sufficient symptomatic benefit.

6 Short-acting nitrate (GTN) is recommended to treat acute angina attacks.

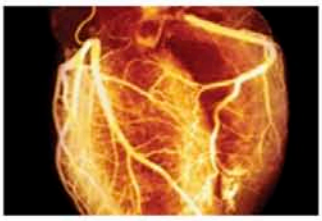
7 This is a difficult condition to treat, and chest pains can often be debilitating and have inconsistent response to treatment. Although this condition is associated with morbidity from recurrent chest pain, serious complications such as cardiovascular death and MI are reassuringly very unlikely.

Thank you for the referral.
Yours sincerely,

Dr TW Koh
Dr TW Koh is a consultant interventional cardiologist at Barts Health NHS Trust and the London Clinic.

Clinical

IN-DEPTH



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COMMENTS (5) | RATING ★★★★★

READERS' COMMENTS (5)

Anonymous | GP Partner | 28 Oct 2015 8:07am

Wow did you really write that back? Excellent explanation

UNSUITABLE OR OFFENSIVE? REPORT THIS COMMENT

Anonymous | Salaried GP | 29 Oct 2015 7:42pm

Very useful thank you.

UNSUITABLE OR OFFENSIVE? REPORT THIS COMMENT

Anonymous | Practice Manager | 30 Oct 2015 4:03pm

If only all consultants were so helpful in reply.

UNSUITABLE OR OFFENSIVE? REPORT THIS COMMENT

Nicola Mazey | GP Partner | 06 Nov 2015 10:12pm

Learnt lots from a short article. Thank you

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Nayana Patel | 09 Nov 2015 10:22pm

Very good .

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