Correspondence

Accurate classification of chest pain is important in assessing coronary artery disease by cardiac computed tomography

Dear Sirs,

Statistical probabilistic reasoning is important in understanding the likelihood of 'false-positive' (FP) and 'false negative' (FN) results when requesting any diagnostic test. In cohorts with a low prevalence of disease, a significant number of positive results are likely to be FP. Conversely, when the disease has high prevalence, FN results increase.

Identification of patients with suspected coronary artery disease (CAD) relies on clinical history, examination and electrocardiogram (ECG)/laboratory results. The National Institute for Health and Care Excellence (NICE) define angina as "typical" or "atypical" depending on the presence of key features; diagnostic pathways have thus been developed.[1] Non-cardiac pain within this classification requires no further cardiac investigation.

Computed tomographic coronary angiography (CTCA) has emerged as a valuable diagnostic tool in the evaluation of CAD with sensitivities, specificities and negative predictive values (NPV) of >90%.[2]

Thus whilst CTCA enhances diagnosis,[3] the incidence/prevalence of the disease in cohorts is also paramount. Young patients, for example, have a low disease prevalence, while the elderly have a high prevalence, which may result in significant FP in the former and significant FN in the latter.

Accurate history taking and pre-test probability classification, however, may influence the FN/FP rates. We reassessed the impact of history-taking in 50 consecutive CTCA referrals for chest pain.

Prior to cardiac CT acquisition, a repeat history was taken by a senior cardiologist/radiologist according to NICE criteria. All 15 patients referred with 'typical angina' were confirmed but of the 32 patients referred with 'atypical angina', only 10 out of 32 fulfilled the criteria. Three of the 50 patients referred for CTCA had non-cardiac symptoms. Thus 25 of 50 were classified as 'non-cardiac' chest pain (see **table 1**). Of these 25 patients reclassified as 'non-cardiac' chest pain, 12 had evidence of CAD, none of which was severe, 11 had no evidence of CAD and two did not proceed to CTCA at all.

Conclusion

The following findings emerged from this study:

1. 50% of patients referred may not have needed any cardiac investigation. Such referrals result in unwarranted exposure to radiation as well as unnecessary further investigations, patient anxiety and effectively amounts to using CT as a screening tool for CAD.[4]

2. A failure to account for disease prevalence in research studies may have significantly overestimated the non-predictive value of CTCA.

3. Inaccurate history taking appears to be a major cause of misclassification. This may be due to several factors: a) clinician anxiety about missing significant CAD and consciously/subconsciously misclassifying the patient to justify a CTCA; b) patients' recollection of symptoms may alter over time, or; c) clinicians' lack of awareness of NICE criteria. We recognise that the history taken at the time of CTCA may have been limited.

4. Accurate history taking may reduce the adverse impact on individual patients, protect NHS resources and ensure the appropriate utility of nationally-defined pathways for chest pain management.

Conflict of interest

None declared.

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Table 1. Chest pain classification before and after re-assessment according to NICE criteria

Chest pain classification	Referral to CT service (n=50)	Reassessment in CT (n= 50)
Typical angina	15	15
Atypical angina	32	10
Non-cardiac chest pain	2	25
Other	1	0

Key: CT = computed tomography; NICE = National Institute of Health and Care Excellence

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CORRESPONDENCE

Don't see their heart broken

Dear Sirs,

There has been much debate regarding the prophylactic prescribing of antibiotics in patients deemed at risk of developing infective endocarditis (IE) as a result of certain dental procedures.[1] The National Institute for Health and Care Excellence (NICE), the British Society for Antimicrobial Chemotherapy (BSAC) and the American Heart Association (AHA) have produced differing guidelines for dental practitioners, who may decide to accept one particular code entirely, or a modified version based on discussion with local cardiology departments.

This culture of debate amongst cardiologists, dentists and patients regarding best interest, success rates, allergy and development of antibiotic resistance, can only be of relevance when all preventative parameters are first exhausted and the patient's individual risk is brought to the lowest level reasonably possible prior to scheduled surgery.[2]

Removing potential causes of infection as well as reducing the risk of bacteraemia-associated complications, when preformed preoperatively, could reduce the future likelihood of developing the disease.[3] A pragmatic approach would be to complete a hospital-based, dentist led, oral health risk assessment pre-operatively, for patients scheduled to receive cardiac surgery associated with those conditions which all guidelines consider to pose a risk, with intervention taken where necessary.

Perhaps at hospital level we should place a greater emphasis on oral screening during pre-operative assessment clinics, to both reduce the future risk of IE and add further to the discussion of prophylactic antibiotic prescribing.

Conflict of interest
None declared.

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Mortality due to rheumatic heart disease in India – stringent preventive measures needed in developing world

Dear Sirs,

Rheumatic heart disease (RHD) is the most common acquired heart disease in children in many parts of the world, especially in developing countries. The global burden of disease caused by rheumatic fever and RHD currently falls disproportionately on children and young adults living in low-income countries and is responsible for about 233,000 deaths annually. At least 15.6 million people are estimated to be currently affected by RHD, with a significant number of them requiring repeated hospitalisation and often unaffordable heart surgery in the next five to 20 years.[1] Primary prevention of acute rheumatic fever is achieved by treatment of acute throat infections caused by group A streptococcus. Each attack of rheumatic fever further worsens the damage to the heart valves and if regular secondary prophylaxis is taken after initial attack, the valves may remain unaffected. Secondary prevention is thus very important to prevent further attacks of rheumatic fever with procaine penicillin, a cheaper antibiotic, most commonly used for secondary prophylaxis. Secondary prevention programmes are currently thought to be more cost effective for prevention of RHD than primary prevention and may be the only feasible option for low- to middle-income countries in addition to poverty alleviation efforts.[2] Stuck valve is an important complication in patients with mechanical valves and poses a significant mortality risk.[3]

The Indira Gandhi Institute of Cardiology is the largest tertiary cardiac centre in Bihar, a major state of northern India. The mortality due to rheumatic heart disease in this cardiac centre during 2013 was 120 with more deaths in women (n = 67, 56%) than men (n = 53, 44%). Median age at death was 35 years. Minimum age at death was eight years and maximum age was 73 years. Three patients had balloon mitral valvulotomy (BMV), one had closed mitral valvulotomy (CMV), eight had mitral valve replacement (MVR) and four had double valve replacement (DVR). The highest number of deaths was noted in the 31–40 years age group, (19 women 18 men). Out of a total 120 deaths, four had stuck valves (three had MVR and one had DVR).

A register-based project for control of acute rheumatic fever (ARF)/RHD was launched by the World Health Organization (WHO) in 1972, which showed a significant reduction in health costs. WHO then embarked upon a global programme and, by 1990, ARF registers had been established in 16 countries with over 3,000 cases of RHD or prior ARF detected. A later review highlighted improved compliance with secondary prophylaxis[4] but subsequently only a few countries expanded their programmes.

Today, well-developed telecommunication systems could be very useful in ensuring secondary prophylaxis. Reminders could be sent through patients' registered phone numbers in cases of non-compliance. Thus a higher percentage of secondary prophylaxis could be ensured, which would

ultimately reduce the overall prevalence of RHD and the presence of severe forms of the disease in society. Regular surveys of schools and villages would also detect new cases. The community also needs to be educated about RHD through posters, banners and television shows advising timely medical attention.

Through these multipronged measures the burden of this crippling disease can be reduced in the underprivileged world.

Conflict of interest

None declared.

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