Angina-like chest pain: a joint medical and psychiatric investigation

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Summary: Sixty three patients with chest pain typical of angina and who had normal coronary angiograms were investigated for left ventricular, oesophageal and psychiatric abnormalities. An additional 21 patients, age and sex matched, who had angina and significant coronary artery disease were also studied.

Eighty six per cent of the 63 patients without evidence of coronary artery disease could be demonstrated to have a physical abnormality (left ventricular dysfunction in 35%, oesophageal disorder 51%). There was, however, a wide variation in the incidence of psychiatric morbidity between the diagnostic subgroups – 18% in left ventricular dysfunction, 29% in those with coronary artery disease and 59% in patients with oesophageal disorders (P<0.01). Thus failure to identify left ventricular dysfunction and inclusion of such subjects in psychological assessments of ‘angiogram-negative’ chest pain might give misleading results.

This study confirms that patients with angina and normal coronary angiography have a high incidence of oesophageal disorders. However psychiatric illness is also common in this group of subjects and management needs to take both these factors into account.

Introduction

It is not uncommon to find angiographically normal or near normal coronary arteries in patients presenting for investigation of angina-like chest pain.1-2 There is now good evidence that a proportion of these patients can be shown to have an oesophageal disorder3 or an abnormality of left ventricular function.4 There remains, however, a group of patients in whom there is no demonstrable organic pathology. Channer et al.5 demonstrated that the probability of a negative exercise test was much greater in those patients with atypical angina and who were anxious and depressed than in those with typical angina but without psychiatric morbidity. Bass et al.6 demonstrated an association between psychiatric morbidity, hyperventilation syndrome and the absence of significant coronary artery disease but their patients were not subjected to investigation of the oesophagus. An association between oesophageal contraction abnormalities and psychiatric disorders7 has also been reported but the subjects studied had a wide variety of symptomatic features and were not routinely submitted for coronary angiography, oesophageal studies and psychiatric assessment.

It was the purpose of this study to perform a systematic psychiatric assessment on patients attending for extensive investigation of angina-like chest pain which included coronary angiography, assessment of left ventricular function and oesophageal function studies.

Patients and methods

Sixty three patients undergoing investigation for angina-like chest pain in whom coronary angiography was normal were studied. Initially all patients had quantitative assessment of left ventricular regional wall motion. The percentage of systolic shortening in seven hemiaxes was calculated from the resting left ventricular angiogram. A hypokinetic segment was defined as a hemiaxis where this was less than two standard deviations from the normal mean.4 Upper gastrointestinal endoscopy and oesophageal motility measurements8 were performed and 52 patients had 24 hour ambulatory pH monitoring. The age and sex incidence of this

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Accepted: 24 March 1988
group of 63 patients was found to be different from that of an unselected population of patients with coronary artery disease. For comparison, therefore, 21 patients with coronary disease, of a similar age and sex distribution as the angiographically normal subjects, were selected from consecutive patients found to have coronary artery disease at angiography and submitted to oesophageal manometry. Thus it was possible to assign patients to one or more of the following diagnoses: coronary artery disease, left ventricular dysfunction without coronary artery disease, oesophageal motility disorder, oesophageal reflux disease or no demonstrable abnormality.

Each patient was interviewed blind by a psychiatrist using the Clinical Interview Schedule (CIS) at the time of the oesophageal studies, i.e., after coronary angiography but before being told the results and significance of the investigations. The CIS is a semi-structured interview which rates a number of defined psychiatric symptoms and signs to derive a total score, a severity rating and a diagnosis according to the International Classification of Diseases. Assessments made by the CIS have been shown to have a high degree of reliability between one psychiatrist and another.

Results

Of the 84 patients studied 21 had coronary artery disease (8 males, 13 females, mean age 50 years) and 63 had normal coronary angiography (23 males, 40 females, mean age 47 years). Of the latter group 22 patients (35%) were detected as having left ventricular regional wall motion abnormalities and 36 had an oesophageal disorder demonstrated by pH monitoring or manometry as we have already reported. For the purpose of comparison patients were assigned to one of 5 diagnostic categories: (1) Coronary artery disease: 21 patients (CAD) (including 2 with oesophageal motility disorder). (2) Left ventricular dysfunction: 22 patients (LVD) (including 4 with oesophageal motility disorder). (3) Oesophageal motility disorder: 27 patients (OMD) (including 19 subjects with gastro-oesophageal reflux). (4) Gastro-oesophageal reflux alone: 5 patients (GOR). (5) No detectable abnormality: 9 patients (NA).

A total of 34 patients were considered to have a psychiatric disorder, 18 had a depressive illness, 13 an anxiety neurosis and 3 had agoraphobia. The distribution of psychiatric illness amongst diagnostic categories is shown in Table I.

The prevalence of psychiatric disorders in those patients with coronary artery disease (29%) was less than half that in those with an oesophageal
disorder (59%) but due to low numbers in each of
the diagnostic subgroups this did not achieve sta-
tistical significance ($\chi^2 = 3.68$). However, there was no
significant difference between the prevalence of
psychiatric disorders in those patients with coro-
mary artery disease and those with left ventricular
abnormalities ($P=0.42$), thus for comparison these
two groups were combined to form one with car-
diac abnormalities. The prevalence of psychiatric
disorder in this group was significantly less than in
those patients with chest pain and an oesophageal
disorder, 23% versus 59% ($P<0.01$). In those
patients with no detectable abnormality and those
with an oesophageal disorder the prevalence of
psychiatric disorder was similar and significantly
greater than in those patients with a cardiac abnor-
mality ($P=0.001$). In particular those patients with
oesophageal abnormalities had approximately twice
the prevalence of psychiatric disorder as did the
patients with coronary artery disease and three
times that of those with left ventricular dysfunction
($P<0.01$).

Discussion

The prevalence of psychiatric morbidity in patients
without coronary artery disease (44.5%) is less than
that found by Bass et al. (61%) in their study of
patients with chest pain and normal coronary arte-
ries. They suggested that the symptoms may be due
to the somatic manifestations of anxiety and over-
breathing rather than the consequences of under-
lying cardiac disease, although their study included
patients with atypical angina. In this study, when
the 63 patients without coronary artery disease but
with typical angina were subjected to further car-
diac and oesophageal investigations, abnormalities
could be detected in 54 (86%). The prevalence of
psychiatric disorders was not evenly distributed
amongst the various diagnostic categories but was
greatest in those with oesophageal abnormalities
(59%). Thus an association between psychiatric
morbidity, oesophageal disorders and absence of
cardiac pathology in patients presenting with pain
typical of angina has been demonstrated.

Explanations of this association include the pos-
sibility that the abnormal oesophageal motility
detected is a concomitant of a psychiatric disorder,
similar to the abnormal colonic motility found in
psychoneurotic patients described by Latimer in
his investigation of the irritable bowel syndrome.

Alternatively, symptoms of an oesophageal disorder
may occur frequently in the community but with
the majority of sufferers not seeking help for their
problem as is seen in subjects with symptoms of
bowel dysfunction. In this situation the inde-
pendent occurrence of a psychiatric disorder may
bring the patient to the attention of their doctors at
a stage where their symptoms alone would not have
done so. Such selective referral would lead to a
spuriously high association between psychiatric ill-
ness and oesophageal motility disorders in subjects
studied in the outpatient department.

A history of chest pain which is typical of angina
pectoris, with normal coronary angiograms and
with an abnormal exercise electrocardiogram is
often referred to as syndrome X. Some of these
patients have been demonstrated to have oesope-
hal disorders and others abnormal left ventricu-
lar function. Several mechanisms have been
proposed in order to explain ischaemia in the
absence of coronary occlusive disease. Richardson
et al. suggested the possibility of cardiomyopathy
on the basis of myocardial biopsy specimens. More
recently it has been shown that some patients have
a decreased coronary vasodilator reserve. This
implies a limited capacity to decrease coronary
resistance and increase coronary bloodflow in re-
response to increased demand. Our patients with
abnormal left ventricular regional wall motion
demonstrated features during treadmill exercise test-
ing that were suggestive of myocardial ischaemia.
Patients with congestive cardiomyopathy often
complain of chest pain, despite the presence of
normal or even large coronary arteries, and they
have been found to have reduced coronary blood
flow at rest and during cardiac pacing.

These results confirm the association between
chest pain, psychiatric morbidity and negative
investigations for coronary disease, but this group
is not diagnostically homogeneous. The clinician
should be particularly alert for psychiatric illness in
those subsequently shown to have oesophageal dis-
orders and in those without demonstrable abnor-
malities. It remains to be determined whether
psychiatric treatment of such patients could relieve
their symptoms or even possibly alter motility
patterns.

Acknowledgements

The authors would like to thank Dr C.L. Bray and Dr C.
Ward for permission to study patients under their care.

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Postgrad Med J 1988 64: 743-746
doi: 10.1136/pgmj.64.756.743

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