Editorial

Hearts and minds: psychological factors and the chest pain of cardiac syndrome X

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This editorial refers to "Distinct psychosocial differences between women with coronary heart disease and cardiac syndrome X" by E.A. Asbury et al. on page 1695.

The pathophysiology of cardiac syndrome X (CSX, anginal pain and ischaemic-like stress ECG despite angiographically normal coronary arteries) has evolved from a paradigm centred around myocardial ischaemia, via the conceptual bridge of abnormal autonomic neural regulation of the heart, to one based upon neurophysiological differences affecting pain perception. The direction of therapeutic strategies has moved in parallel. This development of thinking has brought with it an increased interest in psychological factors.

Psychological factors in CSX

In the present issue of the European Heart Journal, Asbury et al., report an extensive study of psychosocial factors and the illness of women with CSX, as compared to women with known coronary artery disease (CAD) and normal controls. The definition of CSX was strict and included 'angiographically smooth coronary arteries'. Asbury et al.'s principal focus has been (a) the psychological profile of the CSX patients vs. CAD patients and (b) oestrogen status (see below).

The principal psychological findings were that patients with CSX patients displayed greater anxiety than CAD patients who, in turn were more anxious than normals. There was an equivalent degree of depression in both patient groups but both patient groups reported higher total Health Anxiety Questionnaire (HAQ) scores than normals (this relates to worry and preoccupation, fear of illness and life interference). There was a similar prevalence of family history of CAD in both patient groups.

There were no differences among the three groups for size of social network. Both patient groups, when they had small social networks, had higher Hospital Anxiety and Depression Scale (HADS) depression and interference with life. There was no difference in the prevalence of life events among the three groups. However, when there was a high life event score, CSX patients responded with general anxiety and reassurance seeking; the CAD patients responded with higher general anxiety and depression.

Historical context

Psychological features reported in CSX are a higher life event score preceding the onset of pain, an excess of family and social difficulties and inhibition in the expression of emotions. In the latter study, Corlando et al., also found low scores for irritability, hostility and neuroticism, making the type A behaviour pattern unlikely. A high incidence of panic disorder has also been noted. Major depressive disorder has been described in patients with chest pain and normal coronary arteries by Carney et al. but the relatively high rate of mitral valve prolapse among their series makes interpretation of their results more difficult.

In a further study, we aimed to assemble a broad psychological profile of 25 patients with CSX, strictly defined. In summary, we discovered that CSX patients were more likely than controls to feel exhausted, to hyperventilate and to somatise symptoms. Among the patients, there were no differences between the sexes for the psychological assessments. Comparing our data to that from Pisa, the difference in somatisation between CSX patients and controls remained, despite the cultural
The study by Zachariae and colleagues\(^8\) refocused us to modulate the threshold for ischaemia in the presence of coronary microvascular function, or, it might simply authors suggested that neuroticism might cause changes increased transient ST segment changes on Holter. The and a high degree of anxiety that correlated with in-

- higher number of ischaemic episodes in NCA patients to neuroticism in 22 patients with anginal symptoms and
- defined as 'no significant coronary artery stenosis (<50% luminal narrowing).’ Clearly this would not exclude pa-
- patients with minor CAD. The latter is associated with endothelial dysfunction, which is known to confer, for example, abnormal vasomotor responses to stress.

Follow-up studies on morbidity in CSX

The study by Zachariae and colleagues\(^8\) refocused us to look at the extent to which psychopathology develops as a consequence of the chest pain syndrome and then contributes to the maintenance of ill health. Whilst the cardiac course of chest pain patients with NCA indicated it to be a nonprogressive disorder, follow-up studies reported continued chest pain and diminished physical activity. Lantinga and colleagues\(^9\) aimed to assess whether the patients' higher neuroticism scores at the time of catheterisation persisted following angiography or whether such elevated indices of neuroticism were transient phenomena associated with precatheterisation anticipatory stress. Their findings established continued high neuroticism scores among patients with anginal symptoms only, one year later, and supported the findings of other investigators regarding continuing chest pain and restricted physical activity. Disappointingly, the knowledge alone of benign coronary artery status resulted in virtually no change in the psychosocial status of these patients.

A much longer follow up study was that of Potts and Bass.\(^{10}\) Forty-six patients with chest pain but normal or near-normal coronary arteries were assessed using standardised interviews and rating scales at the time of angiography, after 1 year, and again 11.4 years later. Psychological morbidity was substantial and enduring: 61% of patients were designated as psychiatric cases at angiography and 49% at 11.4 years. Both at the time of angiography, and 1 year later, levels of morbidity were significantly greater than in a control group of 53 patients with CAD. Anxiety disorders were common at all three interviews, with panic disorder (15% of patients) the most common diagnosis at final follow-up. Current somatoform disorders were diagnosed in 9 patients (22%), and 11 (27%) reported previous episodes of major depression. Psychological morbidity was associated with continuing chest pain, which was reported in 74% of patients, and with ongoing functional incapacity.

The oestrogen hypothesis

Oestrogen status has been proposed as a potential contributor to a unified hypothesis of CSX, through possible effects on myocardial blood flow and central effects on pain perception. Asbury et al’s study included data on gynaecological history, treatment with hormone replacement therapy (HRT) and plasma oestriadiol.

As in most CSX reports, Asbury et al, reported an excessive prevalence of hysterectomy.\(^3\) However, with appropriate allowance made for age, hormone therapy and hysterectomy, there were no differences among the groups with respect to plasma oestrogen. The level of plasma oestrogen was unrelated to any measure of HADS or HAQ. These data present a powerful refutation of the oestrogen hypothesis and should encourage the cardiovascular community to move on from it.

There is no shortage of pathophysiological hypotheses to account for CSX; their very multiplicity argues for the joint and several inadequacies of most of them. However, for the patient, more effective therapeutic approaches are even more pressing. No single pharmacological intervention has been shown to be
consistently effective, apart from (probably) tricyclic antidepressants. Unlike the tendency to depression in the CAD patients (an association already well established), the CSX patients tended to seek reassurance. However the follow-up data suggest that these patients keep coming back to their doctors time and time again, despite having lots of reassurance.

Besides laying to rest the oestrogen hypothesis, Asbury et al’s paper is of significant value in refining thinking on the subtleties of psychological factors in CSX and this should contribute to the development of more refined and effective psychological interventions.11

References