Chapter 9

Stress

The word 'stress' is quite fashionable nowadays, and is blamed for much ill health. But what is stress?

It is comfortable to think that stress is an outside event which happens to us - a car crash, floods and earthquakes. With this point of view we can believe that we have no control over how much stress we receive. We can say: 'Life has treated me badly, that is why I have become ill'. Or 'There are too many demands on me, I am exhausted - I have to strive so hard at work'. These are the attitudes of people who see themselves as victims.

Just as fever is not caused by germs, but by the body's reaction to infection, so stress itself need not cause ill health; it is the *reaction* to stress that determines if one is badly affected.

Stress means anything which disturbs the equilibrium of mind or body. The tendency of the living person is towards stability, whether of body temperature, blood sugar, or the emotions. So 'stress' has a broader definition than that of a difficult job or a demanding family. Extreme heat or cold, hunger, trauma, infection, exhaustion, or fear can all be stressors.

Dr Hans Selye, Professor of Experimental Medicine and Surgery at the University of Montreal, has studied the effects of stress on living things since the 1930s. He was the first to show that the adrenal gland cortex produces cortisone in response to any disturbance to the body. Selye performed careful experiments on rats, using exposure to severe cold as the stress. He observed three stages in the animals' response to repeated exposure to cold:

1. Stage one - a shock response to the first exposure to the stress, followed by a reaction, and then recovery.

2. Stage two - on repeated exposure the animals appeared to adapt and become resistant to the cold. In this stage, the adrenal glands enlarged, in response to a stimulus from the pituitary gland (located below the brain). The changes in the animals to counteract the stress became more permanent. The rats appeared to be coping.

3. Stage three - exhaustion. The rats gradually failed to thrive; in those that died, post-mortem investigations showed that the adrenal glands were shrunken and had ceased functioning.

Selye called these events the 'general adaptation syndrome'. These stages are similar in humans:

1. The first exposure to stress produces an outpouring of cortisone and of adrenaline, to prepare the body for 'fight or flight' - the initial arousal state. If the stress passes, this reaction settles, and the body returns to its status quo.

2. Repeated stressing leads to a stage of adaptation, and the arousal changes become more or less permanent. The person may appear to adapt, but general health declines. There are chronic symptoms such as migraine, asthma, rashes, high blood-pressure, heart problems, mental symptoms, and poor blood-sugar control. The body cannot remain constantly trying to adapt to stress without permanent damage.

3. In stage three there is a breakdown in the adaptation. The result is collapse and exhaustion. This may take the form of a heart attack, nervous breakdown, or perhaps a major illness such as cancer. The breakdown may occur following an apparently minor stress, which acts as the last straw.

The second stage of the general adaptation syndrome is the one in which most GPs see their patients, with a whole range of chronic non-life-threatening illnesses. At this stage, if the stress is removed, recovery can take place.

In M.E., the viral infection which appears to trigger it off may have been the 'last straw' for a chronically stressed system. Not all patients have been stressed before developing M.E., but the stress may not have been obvious - intensive athletic training can injure the immune system, yet the subject would have believed him- or herself to have been supremely fit! Maybe this is why many M.E. sufferers are those who were very physically active pre-illness.

But maybe the chronic stress was not emotional, nor overwork, perhaps it was exhaustion brought on by raising small children - or a major accident, or surgery, just before exposure to a common virus.

There are many stressors, but what is essential, if you reach the stage of adaptive exhaustion and become seriously ill, is to accept where you are, to stop struggling to adapt, and to allow your adrenal glands and immune system to recover.

Having M.E. is of course a continuing new stress. The patient is fighting to get back to work, to get a diagnosis, to cope with daily functions such as maintaining enough income to eat, to look after a family while ill, etc. Some cope better than others with M.E.-induced stress; some have emotional support and help, and helpful doctors. Others may live alone, or be accused of malingering by their GP and family. Practical support is the first major way to reduce stress. Other ways are: relaxation, learning to breathe properly, meditation, and counselling to gain insight into the reality of becoming ill, and the possibility of getting better.

The symptoms of M.E. appear to be greatly influenced by both mental and physical stress. Although the illness is triggered in most cases by a viral infection, which then becomes persistent, there is also a psychological dimension to M.E. and CFS. *All* illness has a psychological dimension.

Research into causes and treatment of M.E. can be hindered by the artificial division of disease into 'physical' and 'psychological'. (David et al., 1988). The mind and the body operate as one unit. A structural disorder in the brain can manifest in psychiatric symptoms - such as can be experienced after a mild stroke. A hidden psychological disorder can manifest as physical symptoms (e.g. abdominal pain); this is called

'somatization' in psychiatry. It is fashionable and acceptable nowadays to attribute ill health to stress. But in Northern European cultures it is not socially acceptable to attribute physical symptoms to mental illness.

So management of M.E. requires not only physical rest but also mental and emotional rest, and sometimes the treatment of mental as well as physical symptoms.

In M.E., there seems to be increased sensitivity to stress. The heart rate is raised, with accompanying palpitations, out of proportion to the stimulus of anxiety or minimal physical effort; the breathing is often disordered, with feelings of breathlessness, or of a weight on the chest; and nightmares, sleep disturbance and panic states are common. M.E. patients are constantly exhausted, sweat profusely, have unstable blood-sugar levels; their peripheral circulation is often poor, and their body thermostats don't work. They are oversensitive to noises, smells, touch, and pain, and are emotionally unstable.

All these symptoms can reflect an overactive sympathetic nervous system (a part of the nervous system controlled by the hypothalamus). In a study, Levine and others (1990) found average plasma noradrenaline levels - both when lying down and standing - were higher in 20 CFS patients when compared to normal controls. The authors suggest that patients with CFS have a dysregulated adrenergic system, a theory that could unify the diverse symptoms of the illness. The hormone noradrenaline, released in response to a 'fight or flight' situation, causes rapid heartbeat, palpitations, flushing, and sweating. These symptoms may respond to self-relaxation techniques such as meditation, autogenic training, self-hypnosis, etc.

The Hyperventilation Theory of CFS

Dr Rosen and others (1990) studied 100 patients referred to them with diagnosis of CFS. Measurements of end tidal (after breathing out fully) carbon dioxide levels were measured at rest, after a period of overbreathing, and after a 'think test' during which subjects were asked to recall stressful events. The results were compared with those of healthy controls. The authors claim that the results showed 'chronic habitual hyperventilation', testing positive in 93 per cent of CFS patients. Suggested treatment for this would be: Training in breathing techniques and relaxation; counselling, and education about the mechanisms of one's symptoms.

These results have *not* been duplicated in a further study on overbreathing.

A common symptom in M.E., during a relapse, is the feeling of 'not getting enough breath', commonly waking up the sufferer from sleep. Could it be that the disturbance of the mid-brain and hypothalamus referred to by Professor Behan, affects some central controls for breathing? If the brain senses a shortage of oxygen, it stimulates deeper and more rapid breathing, which washes out carbon dioxide from the blood. Therefore 'chronic overbreathing; as diagnosed by Rosen et al., could be yet another complication of M.E. in some patients, rather than its cause.

Dr P. Nixon, cardiologist at Charing Cross Hospital and one of the authors of the above hyperventilation study, has pioneered work on stress reduction and correct breathing for

patients with high blood-pressure and heart disease. Looking at M.E. patients, he thought that their overbreathing 'was a symptom of fear or panic, that can be experienced by people who demand a lot of themselves and fall short in their achievements'.

Looking at these two new theories about M.E. and CFS - the hyperventilation one (above) and the 'inactivity' theory, proposed by Dr Wellesley and others, they rather contradict one another. The hyperventilation theory suggests rest, relaxation and improved sleep as treatment. The psychiatrists suggest that M.E. symptoms are perpetuated by inactivity and *too much* rest, and advocate increasing levels of activity as part of therapy.

Both these theories probably apply to some people complaining of chronic fatigue, but *not* to the causes, symptoms and long-term disablement of people with virally induced M.E.

Meditation

Meditation is a technique for getting very high-quality mental rest; but it is not only the mind that is quiet. Transcendental meditation, for example, produces a state of profound physiological rest of the body, at the same time as increasing mental alertness. Some people may be put off meditation because they have wrong ideas about it.

Popular Misconceptions about Meditation

Meditation is thought to require effort in order to control the mind, and thus to be difficult and mentally taxing.

It is thought to be appropriate only for a particular lifestyle - that of mystics and religious people who withdraw from the world - or that you have to join a sect or convert to a new religion.

Most people do not know about any of the bodily benefits of meditation; they think it is only for spiritual growth.

How Can Meditation Help M.E. Sufferers?

The effects of meditation have been extensively studied on subjects during transcendental meditation. There are different techniques of meditating, as well as other ways of learning deep relaxation e.g. self-hypnosis, or listening to relaxation tapes.

The physiological changes during meditation indicate a state of quietness of the sympathetic nervous system, i.e. the opposite of the 'fight or flight' arousal state:

- The heart rate is decreased, the blood-pressure lowered, and breathing is slower.
- Oxygen consumption by the whole body is reduced.
- Blood flow to tissues increases, leading to better removal of the metabolism's waste products and a lower level of lactic acid in the blood.

- Long-term meditation is found to decrease a person's resting cortisol levels, even when he or she is not meditating. This reduction of adrenal gland activity is the opposite of Selye's stress response, and must be beneficial for *M.E.*
- Regular practice of TM increases stability of the autonomic nervous system.
- There are demonstrated electro-encephalo-gram (EEG) changes during TM, indicating more ordered brain function.
- Sensitivity to noise is reduced, and there is improved temperature control.
- Gum inflammation was found to improve after TM this may indicate a beneficial effect on the immune system, although this has not been researched.

Relaxation Techniques

There are classes for learning relaxation, and there are a great many relaxation tapes available. They range from simple instructions for physical relaxation to guided imagery (also known as 'visualization'). The patient who is too ill (or poor) to attend classes will gain a lot of benefit from obtaining a relaxation tape and listening to it regularly at home.

Suggested Further Reading

O.Carl and Stephanie Simonton and James L. Creighton, *Getting Well Again* (Bantam Books, 1986).

(This book is written mainly for cancer patients, but is valid for everyone suffering from a chronic illness.)

Leon Chaitow, *Your Complete Stress-proofing Programme* (Thorsons, 1985).