



Functional somatic syndromes or dysfunctional somatic syndromes?

The various contributions in the December issue record dysfunctional states, so it is difficult to accept the rationale behind the title *Functional somatic syndromes*. Is it possible that a better understanding of the health problems discussed would emerge from an attempt to explain the basis of the dysfunctional situation?

A basic premise for normal functionality is that all tissues receive normal rates of delivery of their metabolic needs – mainly oxygen and nutrient substrates. As the delivery of the essential needs of tissues occurs by passage out through the walls of capillaries, then the rate of blood flow in the microcirculation is a crucial element in maintaining normal tissue function.

In his 1892 textbook,¹ Ernest Starling stated that capillaries should be regarded as the chief part of the circulation. Arteries and veins were merely the conduits which took blood to and from the pump (the heart). However, as mean capillary diameter is considered to be between 3.5 and 5 microns, many capillaries are much smaller than the 7–8 micron diameter of red cells. A study of plastic-injected capillary beds showed very clearly the range of capillary sizes which occur in a muscle.²

According to the Poiseuille formula, the rate of flow through narrow tubes is related directly to the

fourth power of tube radius, so that even small differences in capillary dimensions can greatly alter the flow potential.³ Flow rate is inversely related to the viscosity of the fluid.

As blood viscosity is a major factor in blood rheology, and as red cell deformability, together with capillary diameter are the major determinants of blood flow in capillaries, it is clear that blood flow in the microcirculation is influenced to a major extent by the rheological nature of the blood. Furthermore, blood is a thixotropic system in which viscosity is related inversely to the rate of flow. In large vessels where flow rate is rapid, blood viscosity is minimal, but as the rate of flow declines in the branches of the vascular tree, the resistance to flow is increased by the thixotropic amplification of blood viscosity.

The following discussion explores the possibility that according to published reports, the various functional somatic syndromes are explicable in terms of altered blood rheology and for that reason potentially treatable by haemorheologic agents.

Dr Swadi⁴ mentioned '*Somatic complaints without an apparent physical cause*', which were manifested as multisystem symptoms. Is it possible that complaints of dysfunction in different systems at the same time could be linked by the common factor of impaired blood flow? Dr Swadi stated that '*Somatisation is...an unconscious process in which physical symptoms become symbolic for psychological problems. They are the means of communicating worry, anxiety and distress*'. It should be noted that episodes of stress alter red cell shape and adversely influence capillary blood flow.⁵ In the section on '*Headache*' it was noted that tension

headache '*...usually has a temporal relationship to stress factors*'.

In the same section it was noted '*Headache is sometimes associated with psychiatric disorders such as depression and*

anxiety'. Baxter et al.⁶ used PET scanning to assess cerebral glucose metabolism in three types of depression. Having noted that in normal subjects, cerebral blood flow is highly correlated with glucose metabolic rates, they considered their results '*...pro-*

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vide compelling evidence that abnormal glucose metabolic function in the anterolateral prefrontal cortex, is common to the expression of major depression'. Using xenon washout to assess regional cerebral blood flow, Sackeim et al.⁷ found that major depression was associated with 'a marked reduction in global cortical blood flow'. Another study involving PET scanning⁸ led to similar findings and a general discussion of the implications of decreased regional cerebral blood flow in major depression and other disorders. The possible cause or causes of the observed reductions in regional cerebral blood flow was not discussed. However it has been reported that manic depressives treated with fish oil had marked stabilisation of mood, although it was specifically stated that the basis of the improvement was not understood.⁹ Because there is a significant literature which shows that omega-3 fatty acids improve blood rheology, this finding suggested that patients with manic depression had altered blood rheology. Through the good offices of the local Manic Depressive Trust, five drop blood samples obtained from local patients were assessed by red cell shape analysis and revealed high values for flat cells.

The implications of the reported findings are that depressive illness could be associated with altered blood rheology. For that reason the use of fish or other haemorheologic agents could be beneficial in depressive illnesses in general.

In his section on 'Fatigue', Dr Swadi considered that the nature of CFS was a topic for debate without apparent recognition of the problems relating to the term 'fatigue'. At the end of a two-year study, Muscio¹⁰ recommended that the term fatigue be banished absolutely from the scientific literature. Fifty years later, in an article on fatigue,¹¹ it was noted that most workers in the field either had not read Muscio's paper or had

ignored his findings. Kennedy, a psychiatrist,¹² defined fatigue in dictionary terms (the consequence of exertion) and raised the question of the status of fatigue. He was unsure if the term applied to a physiological condition, or a psychological perception or a symptom of physical or psychiatric disorders. The problem seems to be compounded by an apparent confusion between the poorly definable state of 'fatigue' and the well-defined condition 'muscle fatigue'. It should be noted that

physiology textbooks consider that impaired blood flow and a lack of oxygen are causal factors in muscle fatigue.^{13,14} It should be noted that children as early as four years of age with ME/CFS and 75 Americans with CFS¹⁵ had altered red cell shape populations.

Professor Malterud's preference for the term 'medically unexplained disorders' gives rise to the question 'How many medically unexplained disorders involve altered blood rheology?'

With a good deal of percipience she wrote 'Could the medical gaze possibly be looking in the wrong direction or have an unclear focus?' Professor Malterud wrote 'several of the functional disorders overlap, indicating potentially common underlying mechanisms of disease'. If the common factor was abnormal blood rheology, then this would explain why chronic disorders, shown to have reduced cerebral blood flow by xenon washout or SPECT scans, also have altered red cell shape populations. Huntington's Disease was shown to be associated with cup-transformed red cells.¹⁶ Some years later, when it was reported that the condition was associated with reduced cerebral blood flow,¹⁷ no mention was made of the earlier finding.

Since 1986¹⁸ it has been known that ME has abnormal blood rheology associated with changed red cell shape populations.¹⁹ Such changes would contribute to the SPECT-demonstrated reductions in cerebral blood

flow in ME people.²⁰

Similar associations occur in fibromyalgia²¹ and in multiple sclerosis.^{22,23} Altered blood rheology has pathologic potential which would be most serious for individuals who have the anatomical feature of smaller than usual capillaries. In 1992⁵ it was proposed

that '...subjects with the symptom of tiredness and high percentages of non-discocytic cells in their blood, would have smaller-than-usual capillaries, i.e. those with mean capillary diameters falling in the first quartile of a size distribution'. Because it is not possible to alter capillary size and changed red cell shape populations, it may be imprudent to consider 'cure' for people with small capillaries. For this reason, it is considered very significant that Professor Malterud should consider 'Care is often more important than cure when it comes to chronic disorders'.

A strange aspect of the article on fibromyalgia is the lack of any reference to the published information which records problems of blood flow in people diagnosed with fibromyalgia. By disregarding reports which indicate that the essential feature of normal blood flow for homeostasis is lacking in those with fibromyalgia, the significance of this discussion is greatly diminished. For example SPECT scans in fibromyalgia have shown reduced rates of cerebral blood flow^{24,25} and low levels of tissue oxygen have been reported.²⁶ In an important study, Jeschonnek et al.²⁷ stated 'Our hypothesis is that FM originates in muscular and microcir-

Very few physicians believe in the pathophysiological significance of blood rheology, despite the existence of an extensive body of published material

culatory disturbances'. They used Laser Doppler Flowmetry to show slow passage of erythrocytes through capillaries and noted '*This may result in an imbalance between oxygen supply and demand*'. It is pertinent to this observation to point out that people suffering from fibromyalgia, and living in four countries, had high values for flat cells when assessed by red cell shape analysis.²¹

Professor Murdoch drew attention to the problems which can arise when authorities '*...do not be-*

lieve in CFS'. Unfortunately, a similar concern arises from the fact that very few physicians believe in the pathophysiological significance of blood rheology, despite the existence of an extensive body of published material. There is good reason to believe that these '*fruits of unbelief*' are having an adverse impact in several important areas of morbidity and mortality. To some extent this is reflected in Dr Snow's comments concerning giardiasis in CFS. The existence of a parasitic in-

fection will alter the internal environment and unpublished observations show that there are marked changes in red cell morphology in bilharziasis and murine cerebral malaria. Dr Snow's observations show that giardiasis is another of the many agents which can induce a chronic disorder with symptoms of CFS through their effects on the shape populations of red cells which alter blood rheology.

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Rustic narcissism and the apotheosis of urbanity

I was delivered by a midwife on the floor of a farm cottage between Thames and Paeroa; my first primary school had fifteen pupils; later I milked cows before school every morning in bare feet before eventually leaving for the city at age twelve. My father always wanted me to come home and be a country doctor.

I have an empathy with country people and country values from my roots, but I would not claim to know what being a country doctor is like. Nor should country doctors claim to know what being a Newtown doctor is like. Because they would have to know that in order to claim the special status and separate skills they have been claiming for rural practice. Theirs is not a special case. Their calling is no nobler than mine, their work no harder. Urban practice is not effete, is no easier and no less worthy.

It's the egocentrism of the rural apologists that irks me. It's the same nonsense Macintosh devotees used to trot out when Macs and PCs were compared. Or Word and WordPerfect. The reality is, you have to spend so long at one of them to become intimate with it you can never really become adept enough at the other to know what it is like. So the comparisons are always biased.

There's another dimension too. There's a monoculturalism in the concept that only country people can know country people well enough to be effective general practitioners there. The idea that we should go into country high schools and persuade kids that rural general practice is a good career, when all they want to do is escape, strikes me as fundamentally not person-centred.

Our children are arrows, Khalil Gibran wrote, and we are the bows from which they are sprung: they do not belong to us. We would be possessive and narrow-minded if we placed some ob-

ligation, some emotional blackmail, on rural students to return to the country. Better let them be highfliers, take pride in their breaking free into new adventures; for the aim of education, Jean Piaget said, is to create people capable of doing *new* things. A Pacific Island superspecialist working in a big city hospital told us at the recent Pasifika Medical Association conference in Auckland that he can be more influential on Pacific youth as a fulfilled role model achieving his highest ambition, than as an unhappy generalist working among his own people.

Anyway, why are country children, graduating from New Zealand medical schools, the right people for country practice? This desire to re-create oneself is narcissistic, and to re-create some kind of medieval village where the old country doctor spent a life of service, illusory. That kind of golden weather ended long ago. When Neddy Seagoon asked *'What happened to the crispy bacon we had before the war?'* he was suggesting pre-war bacon was crisp only in the romantic imagination. The white country boy who graduates from a NZ medical school and spends his life in one country village is almost extinct. We move on.

The statistical reality is this: the biggest medical school serving New Zealand's needs is called 'overseas': the output of each NZ medical school is rather less than the number of overseas-trained doctors entering New Zealand every year. And it is those overseas-trained doctors who are going into the country. The solution to the rural doctor shortage is not finding a way to force country kids to go home after graduation, but to make rural practice attractive enough and risk-free enough for overseas-trained doctors to want to spend some time there.

I didn't attend to my father's dream, and have never spent more than the duration of a locum or a holiday in

the country since, and intellectually and in every other way I have never regretted it. Here is the reason: city practice is fulfilling and gratifying. I greet longterm patients in the supermarket and they ask about my family. At the after-hours clinic where I do a shift once a fortnight or so I see the odd patient of my own and they and I embrace as old friends. *'Hi, George,'* said one when she saw me out in Courtenay Place the other night, *'how's your grandchildren?...Er listen Doc, we're havin' a party later, maybe you and the Missis would like to come?'* They bring me groper steaks, Greek brandy, smoked eel and home-made grappa at Christmas.

Better still, city life is fulfilling and gratifying; there is good food at a range of eating places, excellent art, music, theatre, libraries, a wide choice of films, video shops where you can rent really old movies, long blacks better than in Italy, festivals, conferences, and opportunities for education in anything you might ever dream you wanted.

There is also the ready and available contact with a colleague if I have a clinical question – *'Hey Wal, what would you do for a case of supraspinatus tendonitis in a diabetic whose control went haywire last time I injected Kenacort A?'* There is the moderating influence of colleagues if my ideas are off beam. And there is the sense that I can, without having to leave home for hours, meet and discuss with a group of like-minded individuals the way forward for practices like ours in a time that seems hostile and rejecting of the values we cherish.

I suspect (though of course I can never know) that my kind of medicine is just as interesting as that in the county, and as challenging. So let's work together toward a better form of general practice for everybody.

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