looking at the patient

In his follow-up to last month's article on Biological Terrain Analysis, chartered physiotherapist, acupuncturist and naturopath **Han van de Braak, BSc, LicAc, MCSP, MBAcC,** shows the practical relevance of these these techniques by following a patient through the process.

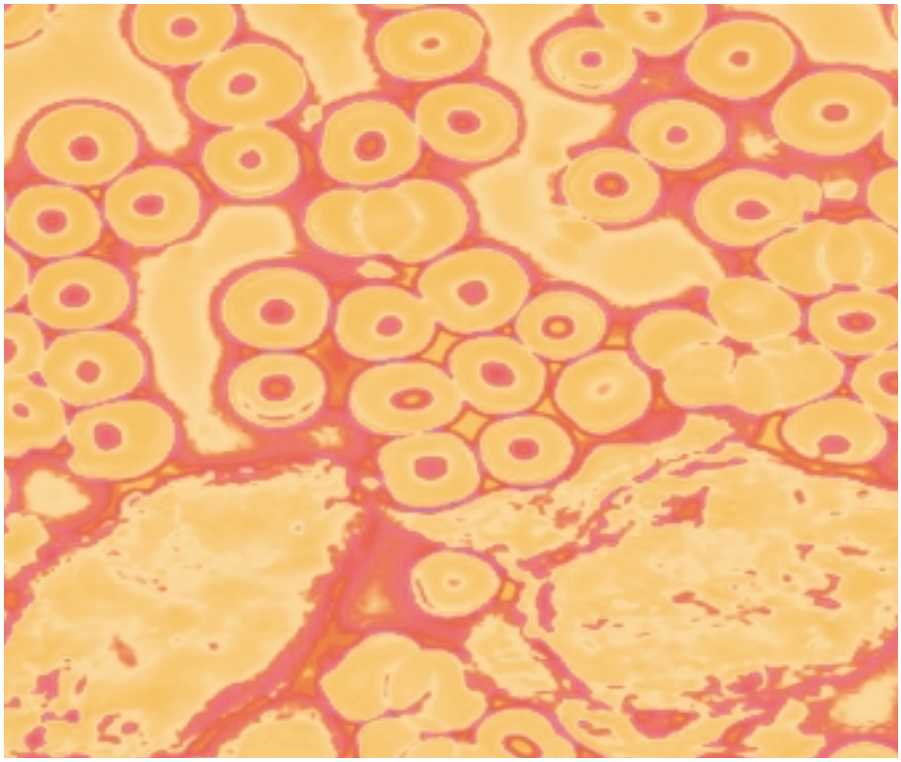
A 36-year-old female, vegetarian for 25 years, presented with a two-year history of polyarthritis in her wrists (distal radio-ulnar joint, os pisiformis, os scaphoideum) and ankles that bore all the hallmarks of inflammation related to an auto-immune disorder: symmetrical tumor, dolor, calor, rubor and functio laese.

Over a period of two years she consulted three consultant rheumatologists; her drug regime initially started with Ibuprofen and Naproxen, this was later changed to Arthrotec 50, to which was added Amitriptyline 20mg nocte and Hydroxychloroquine 400mg daily. It could not be decided whether she suffered from non-specific arthralgia (connective tissue disease) or inflammatory joint disease. By March 2001 her diagnosis was confirmed as inflammatory polyarthritis with antiphospholipid syndrome; her drug regime had altered to one week's course of Prednisolone 20mg/day, Hydroxychloroquine 400mg and aspirin 75mg daily. Laboratory results (see below) had shown lupus anticoagulant and low positive anticardiolipin antibodies. With migraine-like headaches in her history she was considered to have antiphospholipid syndrome. Both her lupus serology and rheumatoid factor, however, remained negative. Further medication with Mepacrine or Azathioprine was to be considered.

Scans

Her MRI (Figure 1, opposite, is one single image) report of the left wrist noted the following: lobulated mass (2.3 x 1.2cm) deep to pisiform bone extending upwards into the distal carpal row (was a ganglion). Diffuse high signal around the scaphoid bone. Effusion within MCP1. Synovial thickening around flexor carpi radialis and extensor carpi ulnaris; tendons and sheaths look intact. Bone signal from the carpus is preserved; triangular fibro-cartilage has normal insertion into the radius.

In February 2001 her full biochemistry report came back only with elevated C-reactive protein at 24.3 mg/L (normal range is 0-10). In June 2001 Labscreen returned only with low iron at 6.6mmol/L (normal range 10-30) but also Lupus anticoagulant was detected; the patient was advised to retest in 2 months to confirm this result (retest was negative).



Nutritional Cost

It is always useful to check the nutritional cost of long term administered prescription drugs. Amitriptyline causes nutrient depletion of B2 and CoQ10 whilst Arthrotec causes depletion of Folic Acid (2). Riboflavin is involved in the metabolism of carbohydrates, lipids and proteins into energy, also B2 combines with phosphoric acid to make FAD and FMN which catalyse oxidation-reduction reactions in cells. B2 has a critical role in carbohydrate conversion into ATP and has antioxidant properties both individually and as part of glutathione reductase.

CoQ10 is a key enzyme in oxidative phosphorylation (ATP production), it is a major lipid soluble antioxidant, hence resides in phospholipid membranes protecting them from lipid peroxidation. In the bloodstream it rides on LDL-

cholesterol, thereby preventing them turning into HDL-cholesterol. CoQ10 also normalises hypertension, has cardiac benefits and boosts the immune function. Folic Acid essential for brain and nerve function, utilisation of protein and erythrocyte formation. Folacin together with B12 is involved in the synthesis of DNA and RNA, it protects against cervical dysplasia, bronchial squamous dysplasia, dysplasia associated with ulcerative colitis and breast cancer. Folic Acid also is required for healthy maturation of erythrocytes and for the conversion of homocysteine into methionine. (2,3).

The problem is that she made no clinical improvement at all. So she tried and abandoned an "impossible" food intolerance diet. She tried the Margaret Hills apple cider vinegar/low acid diet. She tried classical homeopathy. Still she made no improvement at all. She started seeing a registered osteopath who advised her to come off allopathic medication and who started her on a naturopathic protocol with soft tissue work and raw vegetable juicing notably carrot/apple juicing. This ameliorated her symptoms, but both concluded that further investigations were required. Episodic flare-ups rendered her totally unable to walk or to grip anything. One curious fact she mentioned was that, after most infrequently drinking too much alcohol, all pain and soft tissue swelling would disappear for one day yet return with a vengeance the day after.

She was seen at the Integrated Medicine Practice for Biological Terrain Analysis, Live Blood and Coagulation Video Microscopy and Heart Rate Variability study. The results of these tests are discussed in this article as well as the rationale behind the advice given to her.

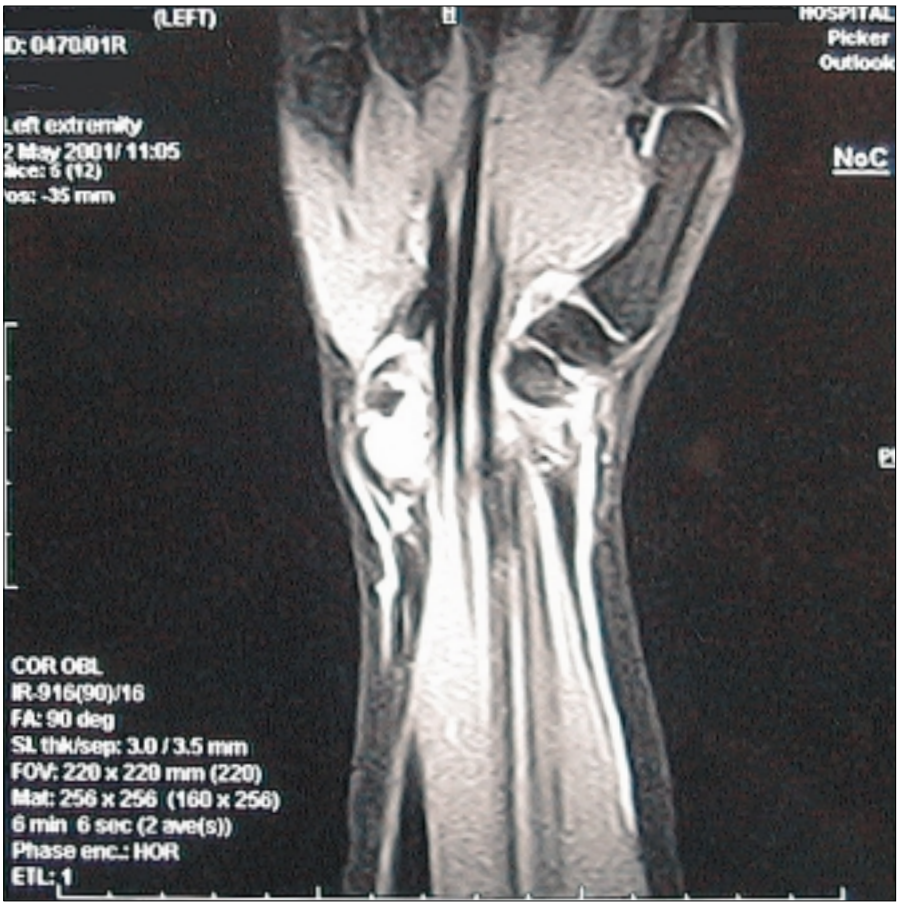


Figure 1: Single MRI scan of the left wrist.

Biological Terrain Analysis

Her Biological Terrain Analysis (Figure 2) was done following the standard Vincent protocol. In venous whole blood with a pH of 7.45 the Bohr curve shifts to the right, which means that oxyhaemoglobin does not release oxygen to the tissue as readily as it should do. This results in a functional hypoxia with tissue cells invariably shifting metabolism toward glycolysis and away from oxydative ATP production (see 26.2/26.9; note drug-induced loss of CoQ10). The saliva pH of 7.32 dramatically inhibits salivary Ptyalin function and empirically, according to Vincent, carbohydrate digestion via pancreatic alpha-amylases deteriorates too (note drug induced loss of B2). Glancing towards the right, there will be a marked co-factor deficiency (255/28.5), those fewer enzymes "manufactured" will be degraded by oxidative stress (28.5) so those fewer still amylases surviving are inhibited by a pH of 7.32. Given that she is a vegetarian and a very large proportion of her diet consists of carbohydrates (CHO or CCHO), this is a very serious issue. The second serious issue regarding pH is the static, alkaline urine1-2 pH (7.04/7.06) which, in the absence of a UTI indicates that her metabolic end result is too alkaline (low proton content) so her amino acid status is likely to be poor. It is common knowledge that although vegetarian proteins are higher in quality they are more difficult to assimilate; animal protein on the other hand does not have such comparative quality, but is more easily digestible. Certainly, after coagulated blood microscopy, it became clear that she might have to compromise on her vegetarianism.

All of her biological fluids tested were markedly oxidised fluids, as much as they were unable to donate electrons to the measuring electrode, they (blood/saliva) are unable to give off electrons to reactive oxygen species (ROS). Consequently ROS will damage other molecules and at 28.5 this will happen in abundance which will deteriorate lymph ▶

	pH	rH2	R	pH opt	rH2 opt	R opt
Blood	7.45	25.6	182	7.30 – 7.35	21.5 – 23.5	190 – **210**
Saliva	7.32	28.5	255	6.50 – 6.75	21.5 – 23.5	**180** – 220
Urine 1	7.04	26.2	80	moderately acid	22.5 – 24.5	**30** – 45
Urine 2	7.06	26.9	47	6.50 – 6.80	22.5 – 24.5	**30** – 35
Urine 3	…	…	…	6.50 – 6.80	22.5 – 24.5	**30** – 45

Figure 2.

fluidity. To some extent the elevated urine rH2s are resulting from the extracellular and sanguine oxidation but one must take into account the co-factor deficiency as well as the depletion of Coenzyme Q10 by Amitriptyline. This rH2 profile is totally compatible with her feeling exhausted.

The most aberrant value in the Ohms resistance row is 255 and this signals a mineral (electrolyte) deficiency, hence the comment about a lack of co-factors. At 182 there is excessive electrolyte presence in the blood indicating that hepatic filtration is less that optimal. The depletion in amino acids made visible on coagulated blood microscopy together with a mineral deficiency points at a "liver backlog" based at least on nutrient deficiency. Most commonly this results in a poor Phase I – Phase II ratio, the latter not keeping up with the former.

Live & Coagulated Blood Microscopy

Her Live Blood and Coagulation Morphology Analysis was done following my standard protocol as described in www.bioterrain.co.uk/BioTerrain/microscopy.html

Figure 3 shows the first of her phase contrast live blood analysis images with beautifully dispersed, pretty much isocytotic erythrocytes. Her B12 & Folic Acid levels must be fine to achieve isocytosis (note Arthrotec comment). With her being a vegetarian she is unlikely to have hyperproteinaemia related erythrocyte aggregation, so a good dispersion came as no surprise. After only a few minutes however the erythrocytes started to clump (see Figure 4) and this is likely attributable to a loss of dispersing Zeta potential due to the highly oxidised state of the blood. Another observation was an elevated thrombocyte count with thrombocyte aggregation, this relates well to the poor peripheral circulation she mentioned in the interview.

Figure 4 shows one of her later phase contrast live blood analysis images and two things have changed: the RBCs are aggregating and everywhere in the serum were fibrin spiculae. This unequivocally means that the liver-controlled balance between prothrombin and thrombin vs. Heparin and other anticoagulant factors is lost. Her blood leans towards a coagulated state; this too contributes to poor peripheral circulation. Darkfield microscopy of live blood (no image in this article) showed leucocytosis with seemingly normal differentiation which indicates an aroused (auto)immune response.

Figure 5 is a bright field, timed image of coagulated blood and shows very clearly that the interconnecting fibrin network is developing too slowly and incompletely. This is indicative of a poor amino-acid status and ratifies what was concluded via the urine 1-2 pH values.

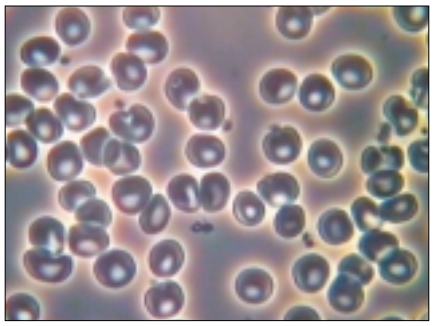


Figure 3.

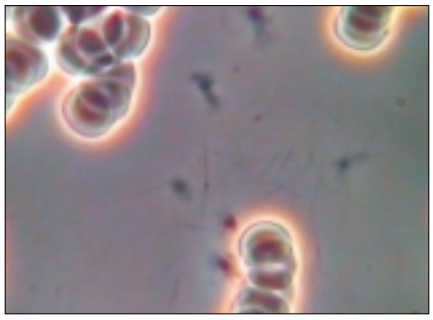


Figure 4.

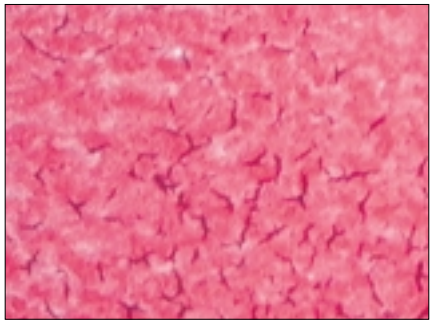


Figure 5.

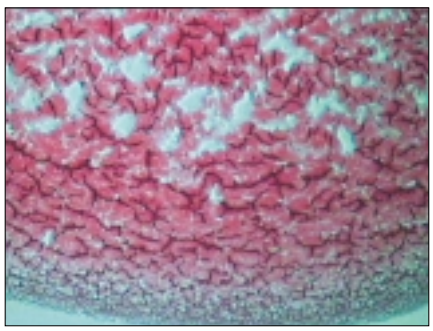


Figure 6.

Figure 6 is again a bright field image of coagulated blood and shows the deposit of serum heavy metals. Oral examination showed 9 large mercury amalgam fillings, (video microscopy however never specifies which heavy metals are involved). This peripheral darkening is due solely to serum heavy metals; one can only hazard a guess with regards to membrane bound heavy metals. The other thing this image shows is the characteristic "lymph ring" of soluble fibrin complexes which, at a saliva rH2 of 28.5, again does not come as a surprise. Like the 28.5 in Biological Terrain Analysis, this image is a marker to compare future review images against in respect of managing her oxidative stress.

Heart Rate Variability

Heart rate variability (HRV) monitors the interaction of the heart rate and the breathing rhythm (respiratory sinus arrhythmia or RSA) which balances the orthosympathetic and parasympathetic nerve traffic to the sinoauricular node. In this patient's case it was used to find out something very specific. Her registered osteopath had mentioned that (some of) her symptoms originated from mental-emotional stress; the patient herself did not agree. So it was worth testing this with an Orthostatic HRV test.

Figure 7 shows one of her HRV print-outs; the blue bar graph at the top consist of 448 vertical lines (0 – 192 = patient supine, 192 – 256 = transitional, 256 – 448 = patient erect) each of which denote the time distance between a successive R-R interval in a standard ECG. There is a high correlation between the power of high-frequency band of the spectrum function and the tone of the parasympathetic nervous system (PSNS), and between the power of low-frequency band and the tone of the orthosympathetic nervous system (OSNS). How does this link in with stress? Heart Rate Variability can detect two types of stress: positive stress which shows as fig 8. and negative stress or distress which shows as fig 9 (4). This patient's OSNS and PSNS were balanced and this showed as fig 10. Conclusion is that the patient was right; this is not a distress problem.

"Patients present with their own mix of dysfunctions. Vincent makes 3 objective measurements – together with live blood and coagulation video microscopy this provides a snapshot of how you are right now, irrespective of how you arrived there. Appropriate clinical and lifestyle approaches result in a better snapshot on review."

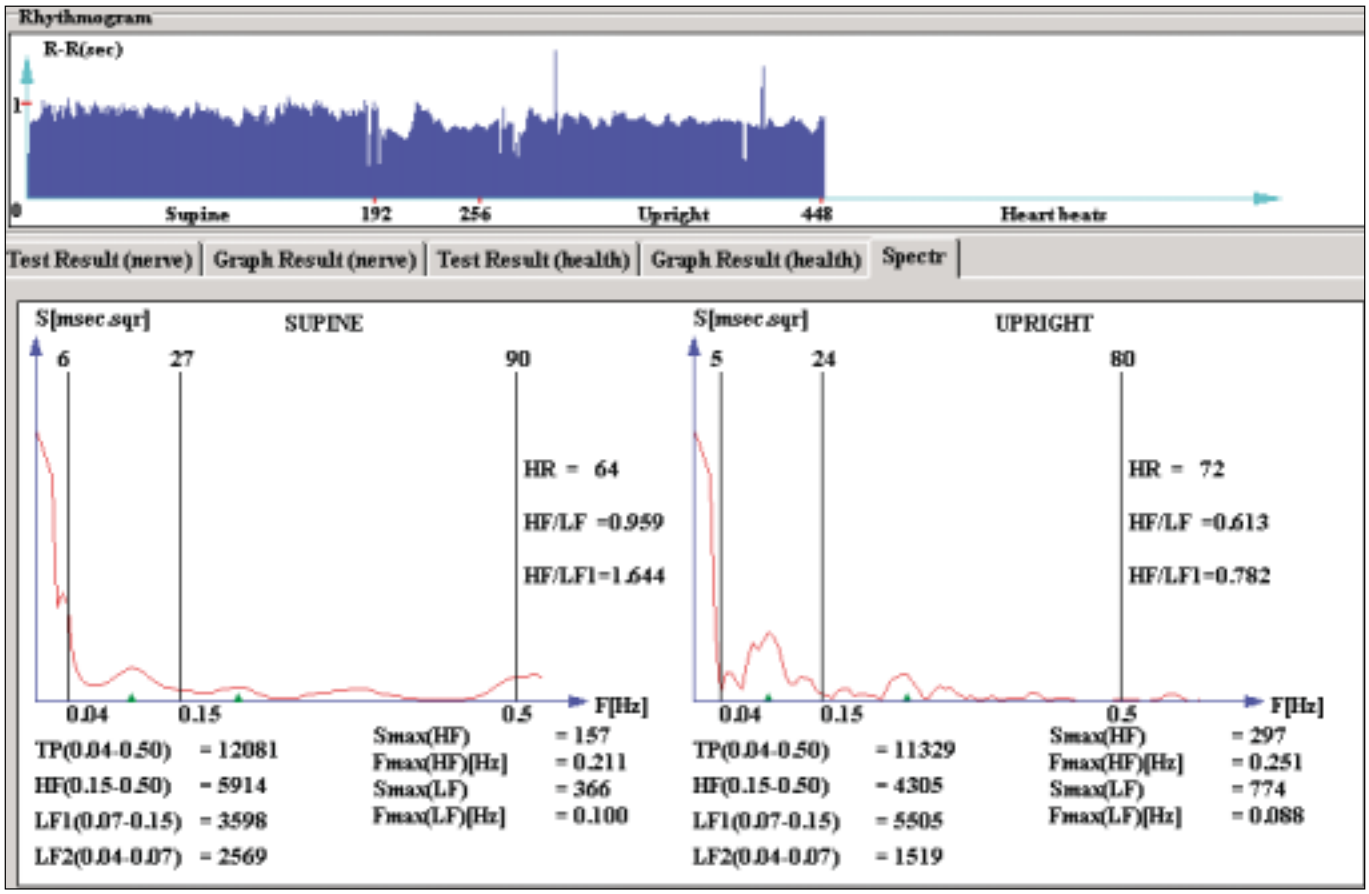


Figure 7.

The dance of mind over matter

After testing, one of the last questions (psycho-emotional issues) in my medical interview was revisited. There had been indications of functional liver anomaly: her blood R value was 182, there was acute as well as chronic reactive oxygen species burdening, hepatic control over the coagulation cascade (live blood fibrin spiculae) was less than optimal. Yet if according to HRV this was not caused by stress, then what was it? A key relationship had not been tracking well, far more than stress this seemed a problem of grieving. From a metaphysical point of view one might argue that "crying inside" might relate to rheumatoid symptoms on the outside (from Middle English reume; from Greek rheum, all meaning thin mucous fluid). The control of dampness within Traditional Chinese Medicine (TCM) resides in "Spleen-Stomach (Sp/St) energy" and this, from a mental-emotional point of view, is associated with the Centre or the Self. Since in TCM's Five Transformations all is interconnected, if that Self is damaged by a Tender Loving Care deficiency and grieving, then it could follow that a control of dampness (rheum) might be impaired too. One manifestation of this Sp/St energy is "Transformation and Transportation" and it is not difficult to relate this to her very evident enzyme disruption (transformation). If aforementioned conjecture is true then it is obvious that only prescribing diet modification, food supplements or homeopathics will never stop this problem 100%. The patient was informed about this conjecture and she was willing to explore practical possibilities for dealing with any "crying inside".

Never mind without matter

Whereas the dance of the mind over the matter is perhaps the dominant direction in a two-way street, Prof Linus Pauling demonstrated with his orthomolecular psychiatry that altering the balance between the different molecules has an effect on the psychological state (5). In this case there were clearly physical matters lacking: a marked digestive enzyme (food conversion) problem; a deficiency of amino acids and minerals; a possible gut absorption / nutrient uptake problem; very marked oxidative stress. It is extremely difficult to say whether mind or matter is either chicken or egg. I look at both and if psycho-emotional coaching is required to come to a positive clinical outcome, then I advise patients to see someone who can show them the appropriate (coping) techniques.

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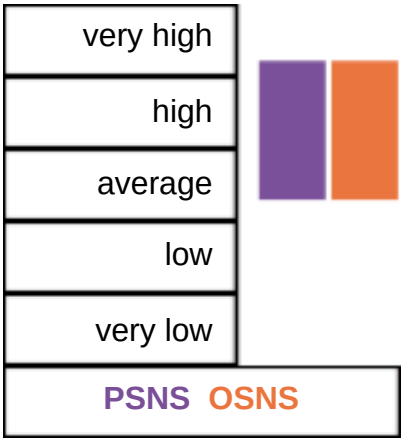

Figure 8.

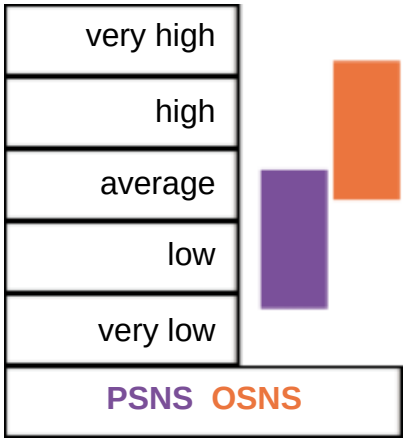

Figure 9.

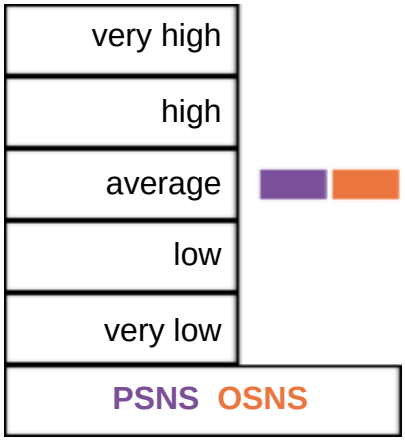

Figure 10.

Conclusion

Within a period of one year this patient found herself prescribed some potent allopathic medication to which she failed to respond. It was her GP's advice and her choice to explore that path and after 2 years it was her choice to abandon it.

Subsequently she embarked on the complementary/alternative route. She was prescribed an "impossible" food exclusion diet as well as the low acid diet which both bypassed her combined need for amino acid, mineral and enzyme supplementation. Her classical homeopath, like the Consultant Rheumatologists, never considered nutrition. The most encouraging results have been obtained by a registered (classical) osteopath who worked on her circulation and her "liver" function.

What Biological Terrain Analysis, Live Blood Analysis and Heart Rate Variability showed is that a whole province of likely aetiological factors has been either overlooked or not been addressed in an orchestrated fashion. One core statement by this patient was "there must be a reason for this happening", and in the coined phrase of Dr Sherry Rogers MD, one can ask oneself if her symptoms are based on an Amitriptyline or 4-Aminoquinoline deficiency or perhaps on a mineral and amino acid deficiency and an enzyme related food intolerance. I recall an example of a dramatic and sustained drop in ESR (from 55 to <10; normal range 4 – 11) in a patient with Morbus Bechterew (spondylitis ankylopoetica) merely by keeping to a low starch diet (6). It very much looks as if a similar route ought to be taken here but what does one offer a vegetarian as an alternative to her starches?

Proposed Approach

Antioxidation: very high antioxidant protocol; to include Zn which, taken some 30 minutes before meals together with Aloe Vera 10K, will enhance absorption over the intestinal membrane.

Nutrition:

- Aloe Vera 10K prior to food – aloë vera has immune-modulatory properties, anti-inflammatory properties and enhances gastro-intestinal function.
- Adhering to good food combining – in compromised digestive systems the very least one should do is present combinations of foods compatible with enzymatic function; also standard advice like chewing better and longer; eat biggest meal when digestive enzymes are still active; minimum fluid intake at meal time, etc.
- High dosage broad-spectrum digestive enzymes with every meal – not only does this help with digestion, digestive (pancreatic) enzymes are recycled (7) and the route back is of course via the bloodstream which ensures that serum C-reactive proteins may meet their proteases. If within 2 weeks (patient monitored by email), the inflammation has not abated, then enteric-coated proteolytic enzymes should be considered.
- Highly absorbable amino-acid and natural vitamin/mineral supplement as well as essential fatty acid supplementation if only as a source of prostaglandins (8).

Detoxification: drink 2L of reverse osmosis water daily, Lymphomyosot®, humifulvates for the oral chelation of heavy metals.

Diet: an ELISA test will be done after an initial 8 weeks on this treatment regime during which food tolerances are bound to alter due to nutrient (protein and co-factor) supplementation and improved antioxidant status.

Psychological: explore practical avenues to stop "crying inside".

Exercise: on those days when she is not in pain, recreational swimming using breast stroke or back stroke to stimulate the circulation – for what do wrists and ankles have in common, they both reside in the peripheral vascular beds and even her Consultant Rheumatologist commented in his letter on quite how cold her extremities were. Notably antioxidants like vitamins C + vitamin E will benefit her circulation and future prescriptions, if still necessary could include Aesculus-Heel® + Arnica-Heel® + Arteria-Heel® (9) or indeed Padma-28.

"What Biological Terrain Analysis, Live Blood Analysis and Heart Rate Variability showed is that a whole province of likely aetiological factors has been either overlooked or not been addressed in an orchestrated fashion."

The typical comment that classical homeopaths make to users of complex homeopathy is that they throw the entire remedy cabinet at a patient and thus surely something is bound to work. There may be clinicians looking at the above list thinking the same. Deficiencies and toxic loads interact as a still poorly-understood complex biochemical-physiological ensemble to ultimately produce a set of symptoms. The reverse route of natural healing therefore should have no less such an interlinked biochemical-physiological tenor, it cannot possibly be merely a matter of finding the right miasm or only eliminating a food substance. To conclude this article we can ask ourselves "has the use of Biological Terrain Analysis, Live Blood Analysis and Heart Rate Variability been helpful"? It gives the clinician objective footage to make decisions, BTA quantifies a broad spectrum of relevant issues, LBA shows issues one would not have been able to evaluate otherwise and HRV solved an issue that otherwise would have remained a matter of opinion.

Surely I am not the only practitioner who at times has felt "where do I start" with patients? Departing from a thorough medical interview these techniques help to plot the landscape, the Biological Terrain and this is useful for the journey.