

Modulating autoimmunity via photosensitization and controlled illumination

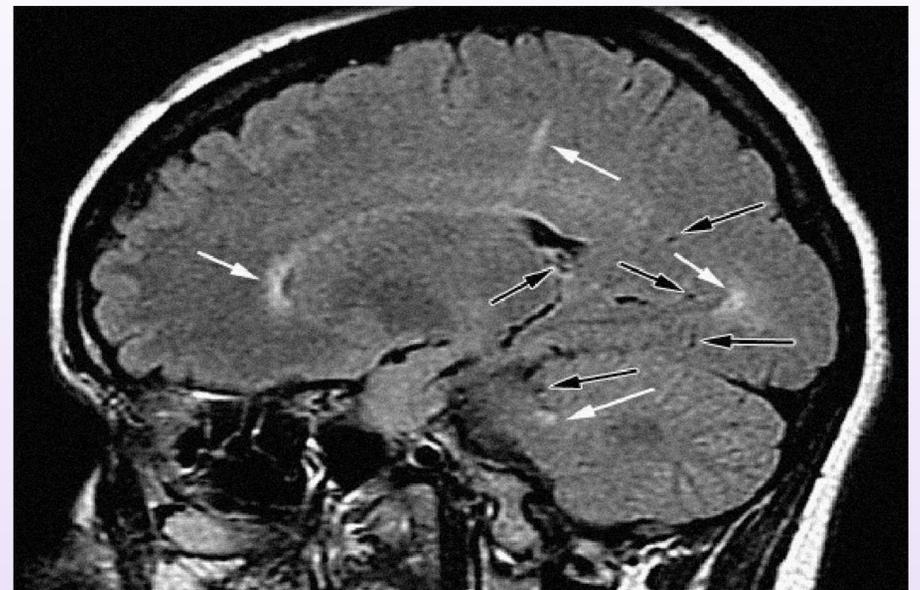
Terry Wright and Darren Freeman

Worldwide research is increasing on the use of photosensitizers to modulate the immune system. The FDA approved this technology eight years ago in the form of UVADEX, a psoralen activated by ultraviolet. Unfortunately this process has known carcinogenic potential and requires *ex vivo* treatment of isolated leukocytes.

There are newer techniques which overcome these shortcomings, making it possible to directly modulate the immune system *in vivo* with no apparent negative side effects.

Three case histories presenting with Psoriasis, Scleroderma and Multiple Sclerosis were treated with a photosensitizer and laser. In all three cases there was a reversal of symptoms. This technology has been used for Rheumatoid Arthritis and may be useful for Diabetes and other autoimmune disorders.

The latest research indicates that the effect of using this technique can be limited to suppression of the specific autoimmune activity, with no effect on the overall immune system behaviour.



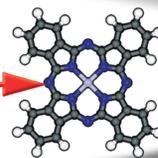
MRI T2 scans of MS patient before treatment

At the time of treatment patient was about 6.5 on the Kurtzke EDDS. Her neurologist rated her at 3 several months later. She is currently quite active.

The response to treatment was remarkable in the speed of recovery of functions, including control of an eye which had lost control previously.

Neurologist comment
“her neurological condition seemed to improve quite dramatically” after the treatment

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Psoriasis often requires two or more treatments with PDT, but it can be eliminated and not return.



This patient had been treated for scleroderma for 15 years with no signs of improvement. With a photosensitizer and light the tissue returned to normal with three treatments. There has been no sign of relapse after nearly two years. Affected muscles also returned to normal. Normal pores appeared immediately and hair regrew in 8 weeks.

After treatment MRI report: “On the diffusion weighted sequence I cannot see any definite area of restricted diffusion to suggest any ischaemic lesion or a highly active plaque”, “No definite brain stem or cranial nerve lesion is evident”.

The neurologist comments about the MRI include: “the diffusion weighted image showed no evidence of any major recent activity in any of the visible plaques.”

There may be continuing autoimmune activity, but given that she had only one short treatment it would be overly optimistic to hope for a complete remission.

Nonetheless at this time she has maintained the improvement for ten months. She is able to handle all of the physical activities of an active life style and her husband reports that he can't keep up with her. A huge improvement from before treatment, when she needed his assistance to walk from a car into a house.

D A Musser and A R Oseroff, *Characteristics of the immunosuppression induced by cutaneous photodynamic therapy: Persistence, antigen specificity and cell type involved*, Photochem Photobiol **73** (5), 518-524 (2001).