Curing lupus—views from the foothills

The contemporary therapy of systemic lupus is framed by two very distinct, but quite separate, realities. The simple truth is that most lupus patients respond well to current treatments and many develop lasting remissions. The credit is equally shared between the availability of a number of drugs that effectively control manifestations of the disease and the apparent propensity of the natural disease course towards remission. In contrast, we continue to be confronted with occasional patients who present with severe, progressive illness, fail to respond to all available therapies, and either succumb to the disease or develop substantial morbidity. The practising clinician caring for lupus patients and investigators charged with developing better ways to treat the disease need to distinguish these groups as work towards curing the disease progresses.

Of the drugs commonly used in the treatment of lupus, corticosteroids continue to be the mainstay of therapy. However, corticosteroids have been implicated in most of the serious residual complications that plague the lupus patient in remission including osteonecrosis, osteoporosis, and coronary artery disease. In an effort to minimise these adverse effects, the standards for practice of corticosteroid usage in lupus have changed substantially over the past decade. Prolonged courses of high dose oral corticosteroids have been largely replaced by alternative strategies and aggressive attempts to reduce the dose of oral corticosteroids once the disease is under control. In many patients, however, oral corticosteroids are never completely discontinued, either because of the reappearance of lupus symptoms during the decrease towards discontinuation, or because of the belief on the part of the physician that low dose corticosteroids serve a preventative role and are not by themselves harmful. There are surprisingly few data bearing on these latter tenets. If we ever hope to reduce the large population of lupus patients who become chronically steroid dependent, better clinical studies of the benefits and toxicities of chronic ‘maintenance’ corticosteroids must be conducted.

For severe manifestations of lupus, bolus cyclophosphamide has clearly emerged as a drug of major therapeutic importance. Although it is most widely used in the setting of active nephritis, its therapeutic role extends to most other serious clinical features of the disease. The clinical improvements after bolus cyclophosphamide can often be surprisingly rapid, suggesting that mechanisms other than direct effects on the immune system must be operative. The potential for toxic effects from cyclophosphamide is substantial and has appropriately limited the use of the drug. The risks for most short term toxic effects including infection, bone marrow suppression, and amenorrhoea, have been reasonably well defined. Toxic effects on the bladder, a substantial concern with chronic oral therapy, are substantially reduced with intermittent bolus therapy. Moreover, use of mesna to bind the metabolite acrolein that is responsible for urototoxic effects has become an increasingly common practice that, in conjunction with bolus cyclophosphamide, should ease worries about the late bladder toxicity of carcinoma. Lupus patients, however, seem particularly prone to the development of mesna induced drug eruptions which can easily be mistaken for rashes caused by the lupus itself. The single very important complication for which there are insufficient data to judge risk is late malignancy; data from available studies seem to indicate that the risk is likely to be low.

Questions related to many of the important practical issues of bolus cyclophosphamide abound, with few clear answers. Therapy is generally initiated with monthly infusions of cyclophosphamide in a dose of about 1 g/m²—an empirical schedule used in randomised trials of lupus nephritis. How different drug doses or other intervals between infusions compare with regards to efficacy and toxicity is unknown and, moreover, unlikely ever to be rigorously studied. The high rate of disease relapse after discontinuation of cyclophosphamide after a six month course suggests that some form of maintenance drug therapy other than corticosteroids is required, at least in most patients with lupus nephritis. Most experts recommend lengthening the interval between infusions to every several months, although when one can feel safe in ultimately stopping the therapy altogether has never been satisfactorily defined. There is a general feeling that the risks of serious complications of cyclophosphamide, including malignancy and bone marrow aplasia, escalate with the duration of the drug therapy. This would seem to indicate a role for other strategies after an intensive induction course of cyclophosphamide—substitution of a ‘safer’ immunosuppressive drug (perhaps low dose azathioprine), or giving patients who relapse a repeat, brief, induction therapy are attractive options, but have not been carefully studied. Finally, what to do with the patient who fails to respond to cyclophosphamide presents a major problem, with no clear reason to believe that any modality is truly effective in these circumstances.

Several other chemotherapies thought to function via suppressive effects on the immune system are used in the
management of lupus. Although none of these drugs has been as thoroughly studied as cyclophosphamide, there is no evidence to suggest that any of them approaches the efficacy observed with cyclophosphamide. The anti-
malarial hydroxychloroquine has come to assume a prominent
role in the therapy of most lupus patients, albeit with some concern as to whether it can ever be safely discontinued.9 There is a large clinical experience with low
dose, daily azathioprine and, because of its more reassuring
record of safety, many physicians continue to use this drug
instead of cyclophosphamide. There is much less clinical
experience with drugs such as low dose, weekly metho-
trexate10 or cyclosporin,11 but available evidence would
seem to suggest a role for these drugs in moderately active
disease.

Improvements in the therapy of lupus will require
continued investments in clinical trials of the disease.
Among the more promising interventions in immediate
prospect are new nucleoside analogues that have a
prolonged effect on immune function,12 androgenic steroids,13 and biological products.14 It seems reasonable
to assume these may have a clinical impact in lupus therapy
in the very near future. However, perhaps of far greater
importance, are possible therapeutic approaches that
would correct the fundamental immune abnormalities
responsible for lupus. In particular, the induction of
immune tolerance to autoantigens, as has been attempted
in studies of patients with rheumatoid arthritis15 or
multiple sclerosis,16 would seem to be a highly worthy
subject for future clinical investigation. Moreover, it is not
too premature to begin consideration of reconstitution of
the immune system by bone marrow transplantation17 or,
ultimately, selective gene therapy. Basic and clinical
studies have begun the search for candidate genes
associated with autoimmunity,18-20 but considerably more
work will be required before clinical protocols for gene
therapy of the disease can be developed.

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Antoni Van LEUWENHOEK (1632–1723)

Antoni Van LEUWENHOEK, a draper and a lens
grinder in Holland, was one of the most remarkable
amateurs of science the world has ever known. He
described the fauna and flora of a world that was invisible
to all but a few and the science of microbiology was born.
He was not the first to refine the use of the magnifying glass
or to use a microscope, but he was the first to use it most
effectively. He was able to magnify up to 200
magnifications.

He had a half a century of correspondence with the
English Medical Society, all written in Dutch, but later
translated into Latin or into English. He was elected to the
Society of 1680. As new awards came to him he
acknowledged one from the University of Louvain: “My
work which I have done for many a long year was not
pursued in order to gain praise but chiefly from a craving
after knowledge.”

Among his studies he demonstrated striped voluntary
muscle and the crystals of uric acid and a variety of micro-
organisms. He made no effort to correlate disease with his
findings.

He is commemorated on stamps of the Netherlands and
Transkei.

Antoni van Leewenhoek (1632–1723)