Yellow Nails and Oedema

It is nearly 10 years since P. D. Samman and W. F. White\(^1\) first described the combination of yellow nails and lymphoedema. Soon afterwards the association of these with pleural effusions was reported.\(^2\) Various combinations of these three abnormalities have recently been described by E. Hiller and colleagues in 12 patients at the Mayo Clinic,\(^3\) and the syndrome seems to be more common than was thought.

The nail changes are usually distinctive and allow the diagnosis to be made even in the absence of other changes. The finger nails are thick, yellowish or greenish in colour, shiny, unduly curved, and grow very slowly. They may show separation from the nail bed, but are usually hard and rather crumbly. When the toe nails are affected the changes may be similar or more nondescript. The nail changes of fungus infections, psoriasis, or other causes of green nails such as pseudomonas or candida infections are clinically different.\(^4\)

The lymphoedema usually affects the lower limb and is often mild. In fact yellow nails are not usually seen with more gross lymphoedema, and swelling of the upper limbs in patients with affected finger nails is exceptional. Since the original report of Samman and White the nail changes have been presumed to be due to defective lymphatic drainage of the nail matrix, but the exact mechanism of this is not yet established. In several of these patients lymphangiography has shown hypoplastic lymphatics, presumably congenital, in affected limbs and even in unaffected regions. This accords with the usually accepted pathogenesis of many cases of lymphoedema—namely, that it is due to a congenital defect of lymph vessels. They can remove extravasated proteins under normal conditions but not when some other pathological process, such as venous stasis, infection, or eczema, increases their load too much.

If lymphatics are defective in fingers and legs it is a short step to postulate that they could be abnormal also in other organs and give rise to pleural effusions. The proof that such effusions are caused in this way is still circumstantial, but some of the Mayo Clinic cases\(^3\) had been diagnosed as idiopathic after full investigation even for many years. In this series five patients had the full triad of nail, leg, and pleural lesions and three had leg and pleural lesions. Two patients had nail changes and two more nail changes with oedema. These figures, coming from a medical clinic, may give an unduly high incidence of systemic changes in patients presenting with nail changes, and none of Samman and White's cases were noted as having any pulmonary lesions.

Hiller and colleagues point out that all their patients also had pulmonary symptoms such as those of bronchiectasis or a persistent cough. There is no evidence that failure of lymphatics predisposes to lung changes, and it seems plausible that these are the inflammatory stimuli which unmask a latent lymphatic defect, just as in the subcutaneous tissues. The simple message from these studies is that patients with unexplained pleural effusions should have their nails and legs inspected, and patients with the yellow nail syndrome should be questioned for respiratory symptoms.

Nobel Prize for Medicine

Present-day knowledge of the structure of human antibodies is derived from fundamental discoveries made in the late 1950s and early 1960s. The importance of this work has been recognized by the award last week of the 1971 Nobel prize for physiology or medicine to Professor R. R. Porter, F.R.S., professor of biochemistry at Oxford University, and Dr. Gerald Edelman of the Rockefeller University, New York.

Professor Porter was on the staff of the National Institute for Medical Research when he showed that the immunoglobulin molecule of the rabbit could be split by the enzyme papain. Using advanced biochemical and biophysical methods he succeeded in further subdividing the molecule and was thus able to define its biochemical activity in relation to its structure. His results form the basis of the now famous Porter model of the immunoglobulin.

This model shows that a molecule of immunoglobulin has a basic structure of two "heavy" polypeptide chains joined by disulphide bonds, and that in turn these are joined to two "light" polypeptide chains, which are shorter. Porter showed that the fragments of linked light and heavy chains obtained after treatment with papain were the immunologically active end of the molecule, whereas in this respect the heavy chain fragment was inert.

In recent years six basic classes of immunoglobulins have been discovered—namely, IgG, A, M, D, E, and F—usually at first in patients with specific myelomas. The basic structure of these classes can be related to the original Porter model—for example, IgM is composed of roughly 5 units of IgG. Two major classes of light chains are known, and 6 of heavy chains, and subclasses of both. The Bence Jones protein found in some patients with IgG type of myeloma is related to a production of an excess of light chains by the malignant plasma cells.

Much of our modern knowledge of immunology is related to these discoveries on the components of various immunoglobulins. Future progress in research into antibody production and the vast array of immunological disorders, especially the autoimmune diseases, may come from a more precise understanding of the specific antigen-combining site of the immunoglobulins. Certainly it is difficult to envisage how any progress in recent years would have been made without these fundamental findings and ideas.