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The Histology of Chronic Candidal Infection of the Rat's Tongue and its Relevance to Human Oral Leukoplakia

J. H. JONES AND C. RUSSELL (*Department of Oral Medicine, University of Manchester*) Superficial candidal penetration occurs in some cases of human oral leukoplakia which may progress to carcinoma. The relationship of mycelial penetration to leukoplakic change is not clearly understood and this experiment was designed to test the hypothesis of a direct association. One of two groups each of 60 rats was inoculated orally with *Candida albicans* and given tetracycline. The second group received *C. albicans* and tetracycline only during the inoculation process. One of two control groups each of 10 rats received no inoculation or medication and the second group tetracycline only. This summary describes histological findings only.

Infection, usually on the dorsal surface of the tongue as mycelial penetration limited to the keratinized layer of the epithelium, was demonstrated in 12, eight, seven, seven, and two animals out of groups of 20 after five, nine, 13, 16, and 21 weeks respectively. Infection was associated with the loss of the normal lingual papillae and with flat-surfaced hyper- or parakeratotic stratified squamous epithelium in which basal layer mitotic activity was sometimes prominent. Beneath infected epithelium mononuclear cells were found in the corium and the superficial muscle cells often showed degenerative changes with giant cell reaction and sarcolemmal proliferation. Striking inflammatory cell accumulation was sometimes found deeply in muscle around blood vessels. The histology demonstrates that candidal infection *per se*, though limited to the cornified layer of the epithelium, produces marked change in it and in the corium and underlying muscle, presumably due to substances released from disintegrating mycelia. The findings support the suggestion that *C. albicans* sometimes has an aetiological relationship with human leukoplakia (Cawson and Lehner, 1968).

Reference

Cawson, R. A., and Lehner, T. (1968). *Brit. J. Derm.*, 80, 9-16.

'Sclerosing Haemangioma' of the Lung: An Alternative View of its Development

A. KENNEDY (*Department of Pathology, University of Sheffield*) 'Sclerosing haemangioma' is a name which has been applied to a group of uncommon benign pulmonary lesions characterized by their papillary nature, a sclerotic stroma containing lipid

and, in some cases, evidence of haemorrhage. There is little evidence that these lesions are really angiomatous. Studies of two examples removed surgically after being discovered as incidental radiographic findings show that the cells lining the papillae have large vacuoles which contain whorled electron-dense inclusions. These epithelial cells have the features of granular pneumonocytes, cells known to contain phospholipid. Both lipid and cholesterol are abundant in the stroma of both tumours and the lipid is distributed in a nodular fashion. Histologically the lipid gives a strong reaction to stains for phospholipid and it is suggested that the lipid is derived not from the haemorrhage but is produced by the epithelial element of the tumour.

A Fine-needle Aspiration Biopsy Service

J. V. LEVER (*Department of Pathology, University of Bristol*) Fine-needle aspiration biopsy can be done anywhere, needs simple equipment and little preparation, causes the patient only slight discomfort, and is practically free from complications. Most patients do not mind several biopsies and the procedure can be followed immediately by irradiation (in contrast to surgical biopsy).

In the service described cells are aspirated from subcutaneous masses through a no. 1 needle with a 20 ml disposable plastic syringe. The aspirate is spread on a slide, air-dried, and stained by Giemsa's stain. Examples of the cytology obtained will be shown and the results of 350 biopsies taken in the first two years given. One hundred and sixty-four aspirates were from breasts, 81 from lymph nodes, and 105 from other sites.

Results were classified as positive (malignant cells identified), negative (no malignant cells identified), and failed (insufficient material or don't know).

Ninety-three were reported positive (one falsely), 196 were reported negative (28 falsely), and 61 biopsies failed (25 from malignancies).

When one bears in mind that some of the negative results did give a diagnosis, eg, abscess or fat necrosis, and many of the patients with failed biopsies had a subsequent positive aspiration, there is no doubt that the service is a useful extension of physical examination in patients with a subcutaneous mass.

II Symposium on renal transplantation

The Clinical Biochemistry of Transplants

D. EVANS (*Addenbrooke's Hospital, Cambridge*) The

management of patients with terminal renal failure now that methods for supporting life are available is greatly facilitated by the support of the clinical biochemistry department.

Whether it is decided to treat an individual patient with long-term intermittent dialysis or renal transplantation, it is generally important to be able to define fairly accurately the aetiology of the renal disease for it may well have an important bearing on the long-term prognosis. A comprehensive assessment of the patient therefore invariably includes biochemical tests of renal function, so that response to treatment can subsequently be monitored.

Renal transplantation is not performed nowadays until the patient has been adequately prepared by dialysis, sources of infection eradicated, and hypertension controlled.

After cadaveric renal transplantation most of our patients enter a dangerous phase of oliguric renal failure—this is usually due to ischaemic tubular necrosis (ATN). During this period the patient continues on dialysis but we have no certain way of differentiating between ATN, infarction, ureteric obstruction or rejection, short of taking a biopsy.

After two to three weeks the patient enters a diuretic phase, and care needs to be taken to avoid excessive fluid and electrolyte losses. It is here that biochemical help becomes important. Once renal function stabilizes, long-term follow up is necessary in order to identify deterioration in function from whatever cause. Late rejection is notoriously unresponsive to conventional treatment regimes but if patients are to survive to receive further grafts, long-term surveillance is obligatory.

Microbiological Aspects of Transplantation: Viruses

J. NAGINGTON (*Public Health Laboratory, Cambridge*) The virus infections associated with transplantation are important for the patient and have provided information, through immunosuppression, on some aspects of the host-parasite relationship.

Virological surveillance at the Cambridge Renal Unit was begun with the first transplant in 1966 and the number of patients transplanted by the end of 1972 was 181. The observations made are in agreement with those made elsewhere and have provided illustrations of some of the problems.

Over 90% of the viruses isolated have been of the *Herpesvirus* group, ie, herpes simplex, varicella-zoster, and cytomegalovirus. The type of infection has varied from cold sores to fatal haemorrhagic chickenpox.

No increased infection rate of common respiratory virus infections was seen and antibody production against these and rubella was normal, which supports

the contention that present immunosuppressive therapy does not reduce this immune response. Because immunosuppression is directed against the cell-mediated or delayed hypersensitivity response it is likely that the infections seen were related to this.

The *Herpesvirus* group is associated with persistent latent infection which makes reactivation an important possibility and this is supported by the occurrence of 60% of all herpes simplex infections within two months of transplantation. At least 64% of patients were considered to have been infected with cytomegalovirus at some time before admission and 86% showed active infection afterwards. However, the part played by increased susceptibility and cross-infection cannot so far be determined.

The severity of serum hepatitis infections has also been related to the cell-mediated immune response in the hypothesis of Dudley, Fox, and Sherlock (1972) and although our experience has fortunately been limited, the observations made are consistent with this hypothesis.

Reference

Dudley, F. J., Fox, R. A., and Sherlock, S. (1972). *Lancet*, 1, 723.

Experience of Processing Results for Quality Control Off Line

P. C. TAYLOR AND A. B. CARTER (*Middlesex Hospital, London*) The concept of quality control using analysis of results from patients' blood counts is dependent upon day-to-day consistency in the type of patients whose blood samples are counted. Only when this is true can calibration changes be accurately shown by parallel changes in the analysed test results.

We have found detectable variations from day to day in average, median, or modal values of the leucocyte count, haemoglobin, red cell count, and the calculated haematocrit obtained from the patients' blood samples, and at our hospital have been unable to find any method for analysing patients' data usefully to detect small changes in the haemoglobin. However, small changes in the calibration of MCV, MCH, and MCHC are detectable and can be measured by examining patients' data. Each day approximately half of the 200 or so samples we receive have normal haemoglobin—13–16 g% and leucocyte counts less than 10 000/cmm; the mean values of the MCV, MCH, and MCHC of these 'normal' samples have remained constant over many years. Two per cent changes in calibration of Coulter S in respect of the red cell indices when they occur can be confidently detected and measured by examining patients' data.

Since 1969 we have used data processing of patients' results from the Coulter S for quality control