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Student Research

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Abstract

- CLOSTRIDIUM OEDEMATIENS
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- VASCULAR DISEASE
- SGOT LEVELS IN TUBERCULOUS PATIENTS TREATED WITH PAS AND ISONIAZID

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STUDENT RESEARCH

CLOSTRIDIUM OEDEMATIENS

Certain types of *Clostridium oedematiens*, a demanding anaerobe, are difficult to subculture on to solid media. A recent significant advance has been made in the observations that development of colonies of *Cl. oedematiens* types B and D, on human blood agar media, is reliably enhanced by the presence of iron filings at the surface of the medium. The incorporation of metallic iron in laboratory cultures of anaerobes has been described by several workers, but its use has been limited to fluid or semi-solid media. It is suggested that iron filings make conditions suitable for proliferation of viable particles in the inoculum by lowering the oxidation-reduction potential at the surface of the medium.

G. G. Coleshill

N.H.S. WIGS

Normal male type baldness does not qualify for a wig under the N.H.S. and a patient must suffer total alopecia to justify prescription. No woman, however, can be expected to wait until her last hair disintegrates before qualifying, and thus the Consultant Dermatologist often provides a prescription before complete baldness occurs.

A survey to discover the reasons for the recent increase in the number of wigs issued, was carried out using the records of the R.I.E. Dermatology Department. Age, sex and cause of alopecia were noted for all cases in which wigs were prescribed from January 1962 to July 1968.

An increase due to increased numbers of patients was discounted for although patients rose in 1963-64 when one more Consultant was appointed, the number has since been constant. Analysis of specific causes of alopecias by age and sex showed no significant fluctuations for those due to myxoedema, trauma, drugs or other specific causes but senile and post-irradiational alopecias have shown an increase.

Post-irradiational alopecia is mostly the result of *Tinea capitis* therapy as a child but occasionally has followed irradiation of tumours. Close study of senile hair loss showed that while 52% of patients in 1962 were under 70 years, 63% fell into this category in 1966 and 68% in 1968.

A last fact to be considered is the abolition of the £2 10/- prescription charge per wig in February 1968 and it will be of interest to see if any decrease in the upward trend follows its reintroduction this year.

The conclusion is that the main reasons for the increase in wig prescription are increased frequency of diffuse alopecia in younger women with consequent increase in renewals.

Angela R. Miller

VASCULAR DISEASE

Investigations of factors controlling the blood lipids, and in particular, blood cholesterol, may have a bearing on theories pertaining to the aetiology of vascular disease, since elevations in blood lipoprotein levels appear to precede the development of atheromatous plaques and thrombi. Such investigations are

thus of prime importance in the development of drugs, both therapeutic and prophylactic, to minimise vascular lesions of this type.

It is known that the main quantitative reaction sequence for cholesterol catabolism is the hepatic production of bile acids. It is now established that the first step in this sequence is 7- α hydroxylation of the cholesterol molecule by a virtually irreversible "mixed function oxidase" occurring in the microsomal fraction of liver cells. This enzyme is thought to represent a central site, as 7- α -hydroxy-cholesterol has no other metabolic fate than further conversion to the primary bile acids — chenodeoxycholic and cholic acids.

This project under the supervision of Dr. G. S. Boyd consisted of the investigation of this oxidase in hepatic tissue. A series of rats was fed 1% cholesterol for five days, and then their livers were assayed for cholesterol-7 α -hydroxylase activity, and compared with those of a control group. The assay consisted of isolating the microsomal fraction from a known amount of liver by homogenisation in sucrose solution and centrifugation in two stages, i.e. an initial stage, to remove cell debris, and a later stage to isolate the microsomal fraction itself. Each fraction was incubated with C¹⁴ cholesterol, the products being estimated later by thin-layer chromatography and scintillation counting of each derivative.

The final results, after calculation of biological variation, tended to show an increase in cholesterol-7- α -hydroxylase activity in the best group, with a decrease in the amount of autoxidation products normally formed during *in vitro* incubations. It could therefore be tentatively concluded that increased cholesterol intake results in increased catabolism of the sterol to bile acids; this sequence of events would tend to control the net size of the cholesterol pool.

M. Braithwaite

SGOT LEVELS IN TUBERCULOUS PATIENTS TREATED WITH PAS AND ISONIAZID

Hepatic toxicity in patients receiving anti-tuberculosis chemotherapy may be due to a direct toxic effect of the drug employed or to drug hypersensitivity. Certain drugs are notorious for their potential hepato-toxicity

(e.g. pyrazinamide, ethionamide, etc.) and regular monitoring of hepatic function is necessary to detect and avoid serious liver damage. All of the increasing number of antituberculous drugs are capable of causing hypersensitivity and in this context hepatic dysfunction may be only one of the features of systemic upset. Experience has shown that the most subtle of the hepatic function tests are the transaminases (SGOT and SGPT) and estimation of one or other of these is the standard test when drugs such as pyrazinamide or ethionamide are used.

The present pilot study undertaken in Yale-New Haven Medical Center under the aegis of the Connecticut Thoracic Society and supervised by Professor Nicholas D'Esopo is concerned with SGOT levels in tuberculous patients treated with PAS in combination with isoniazid.

One hundred and seven patients receiving treatment for the first time for pulmonary tuberculosis were given PAS (12 G. daily) and isoniazid (200 mg. daily). Thirty three of these (30.8%) had significant elevations of SGOT (greater than 50 Reitman-Frankel units) during the first three weeks of treatment when hypersensitivity is most likely to occur. Of these 9 (<10%) had clinical evidence of hypersensitivity but only 5 had proven hypersensitivity to PAS. It is, of course, feasible that isoniazid was the offender in the 4 cases without PAS hypersensitivity but it is common experience that isoniazid hypersensitivity is relatively rare and scarcely ever occurs singly, i.e. it is usual to find associated hypersensitivity to the companion drug. The problem of isoniazid hypersensitivity was not studied in the present series.

The elevated SGOT values unrelated to drug hypersensitivity might be explained by a toxic effect on an already damaged liver. For example 26 of the 107 patients were alcoholics and may have been predisposed to drug toxicity which might not have occurred in normal subjects. Nevertheless, only 11 of the 26 alcoholics had raised values for SGOT and 9 of these had continued treatment with PAS and isoniazid without ill effect. Of all the cases with raised SGOT one quarter showed other biochemical indications of hepatic dysfunction (Bromsulphthalein Excretion, Serum Bilirubin, Thymol Turbidity, etc.). In 4 patients liver biopsy was performed and showed the features of drug toxicity in two, viral hepatitis in one and no abnormality in the fourth.

Hyposensitisation to PAS was successfully

achieved in 5 patients with proven hypersensitivity. A lower (but still effective) dosage of PAS was tolerated in 6 others.

It was concluded that a more extensive study of SCOT values in patients having standard antituberculous chemotherapy might indicate minor and clinically undetectable hepatic dysfunction not attributable to PAS hypersensi-

tivity. This is especially likely as pulmonary tuberculosis in developed countries now has its highest incidence in the older age groups (particularly in the male), in which hepatic function may, for several reasons, be already impaired.

C. F. J. Grindle

THE CONTRIBUTORS

DR. HENRY WALTON is the consultant in administrative charge and director of the University Department of Psychiatry at the Western General Hospital. His article, of which the first part appears in this issue of RES MEDICA, gives us a great deal of insight into the way in which the Psychiatrist obtains his information from the patient.

DR. JOHN CLARK is a Senior Registrar in the Department of Surgery at the Royal Infirmary, and an ex-president of the Royal Medical Society. His research in tissue transplantation and antilymphocytic globulin makes him well qualified for his excellent article on this subject.

DR. JOHN DAWSON is an ex-president of the Oxford University Medical Society and gained his early clinical training at St. Bartholomew's Hospital, London. He also worked under Sir Stanley Davidson and is a member of the R.C.P.E. He is conversant with medicine in Australia and the U.S.A., and we welcome his contribution to the Journal.

MALCOLM MACNICOL is an honours graduate in pharmacology and is now in his final year at Edinburgh. His interests are spread widely, both inside and outside medicine, and he has first hand experience of medical services in both Russia and America.

GORDON LEITCH graduated in honours physiology and is now in fifth year. His article on Cardiogenic Shock is based upon the prize winning essay which he submitted to the essay competition organized by the Scottish branch of the Chest and Heart Association.

Cure of Epilepsy

In the case accompanied by the Aura Epileptica, the fit may be prevented by compression of the part; or when we perceive the sensation proceeding from the extremity of any particular nerve, dividing (if possible) that nerve in its course. Amputation is the most effectual mode of putting a stop to it. Blistering and keeping up a discharge on the part by means of Issues, has been recommended.

—from Society case records, 1798.