Propranolol and radioactive iodine in the treatment of thyrotoxicosis

D. R. HADDEN, D. C. LOWE*, D. A. D. MONTGOMERY, R. G. SHANKS and J. A. WEAVER, *Department of Therapeutics and Pharmacology, The Queen's University, and the Sir George E. Clark Metabolic Unit, Royal Victoria Hospital, Belfast*

Radioactive iodine (RAI) has been used for the treatment of thyrotoxicosis for more than 25 years. As it does not affect thyroid function for about 3–4 weeks, carbimazole has often been used with RAI, but this masks the effects of RAI on thyroid function. Propranolol controls many of the features of thyrotoxicosis (Shanks, Lowe, Hadden, McDevitt & Montgomery, 1969) and makes many patients clinically euthyroid after 1–2 days of treatment (40–60 mg four times daily by mouth). As propranolol does not influence thyroid function (Hadden, Bell, McDevitt, Shanks, Montgomery & Weaver, 1969) it can be given in combination with RAI for the treatment of thyrotoxicosis without interfering with the normal indices for estimating thyroid function. In this way propranolol controls the clinical features of the disease while RAI is having its effect, and the precise effects of RAI on thyroid function can be followed.

One hundred and thirty-five patients with thyrotoxicosis have now been treated with propranolol and RAI. The first 60 were given 3·5–5·0 mCi (group 1) and the remainder 2·5 mCi (group 2) RAI. At the end of 6 months concentration of protein-bound iodine in the serum had returned to normal in 65% of patients in both groups. The incidence of hypothyroidism was similar in the two groups. Heart rate was reduced in all patients, but the increase in weight was significantly greater in those in which there was a reduction in concentration of serum protein-bound iodine. This suggests that patients with thyrotoxicosis may be divided into two groups, those who respond to radioactive iodine and those who do not. The response rate did not appear to depend on the dose used.

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The effect of the acute intravenous administration of clonidine (St 155) on cerebral blood flow in man

I. M. JAMES*, E. LARBI and ELEANOR ZAIMIS, *Departments of Pharmacology and Medicine, Royal Free Hospital School of Medicine, London W.C.*1

Cerebral blood flow was measured before and after the acute intravenous administration of clonidine in seven healthy, normotensive volunteers. This was effected by inhalation and extracranial monitoring of ^{133}Xe, according to the technique described by Veall & Mallett (1966), with correction for arterial recirculation and deconvolution of the decay curve into three components. This latter procedure was done with a small analogue computer, after the method of Crawley (1968). The first and second components were translated into flow, through grey and white matter respectively, in the conventional manner; and the last component was

considered to represent decay of xenon from extracerebral structures. The tension of CO_2 in the end tidal air was monitored continuously, by means of a Beckmann infrared analyser.

The subjects were allowed to rest on a couch for between 10 and 15 min before baseline readings were obtained. The procedure was explained to them in detail, and every attempt was made to allay anxiety. During the cerebral blood flow measurement, which takes some 50 min, frequent recordings of heart rate and blood pressure (obtained with a sphygmomanometer) were made.

A dose of clonidine (2 μg/kg body weight) was then administered intravenously over a period of 2 min. Ten min later a further cerebral blood flow study was performed. This dose of clonidine caused an initial bradycardia and a significant fall in mean arterial blood pressure, the fall in systolic blood pressure being the most marked. The majority of subjects complained of drowsiness and a dry mouth, and initially appeared very pale. There was a mean fall in cerebral blood flow of 30% ($P<0.001$) and also a highly significant increase in calculated cerebrovascular resistance. There was also a small but significant reduction in the CO_2 tension of end tidal air. It is unlikely, however, that the fall in cerebral blood flow can be ascribed to this; or indeed to the fall in arterial blood pressure. The acute intravenous administration of clonidine in man would appear to cause cerebral vasoconstriction.

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Interaction between intravenous alcohol and some sedatives and tranquillizers

J. W. DUNDEE* and M. ISAAC (introduced by P. C. ELMES), *Department of Anaesthetics, The Queen's University of Belfast*

Interactions between alcohol and various soporific agents are assuming greater importance in our present social climate. It is agreed that these potentiate the effect of alcohol, but it is not clear whether the potentiation is an intensification or prolongation of its action. Chlordiazepoxide appears to be the exception since it is reported to have no such effect on the action of alcohol (Goldberg, 1964; Kissan, 1967).

Most data have been obtained from animal experiments or following ingestion of alcohol in man (Benor & Ditman, 1967; Forney & Hughes, 1968). A re-evaluation of alcohol as an intravenous anaesthetic (Dundee & Isaac, 1969) provided an opportunity to study some interactions under controlled conditions. Drugs were given intramuscularly, with 0·6 mg atropine as premedication, and alcohol was infused as 8% w/v solution at 80–150 ml/min as required to a maximum of 700 ml. This study was based on patients anaesthetized with ethanol alone, without a barbiturate supplementation.

Previous studies (Dundee, 1970) showed that it is more meaningful to express average dose as mg/kg per $\sqrt{\text{min}}$ and demonstrated that arterio-venous equilibrium is completed 3–4 min after rapid infusion. Blood samples taken at this time are