The demonstration of anti-hypertensive substances in the urine

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Introduction

Medical research constantly gives Man new medicaments which have the capacity to influence anatomical functions and controls in a way previously unsuspected.

We know of certain important groups of agents which are capable of suppressing all symptoms of disease to such an extent that physical examination of the patient simulates a normal picture. However, the basic affliction need be influenced only to an insignificant degree if at all. Consequently the "normal condition" only persists whilst the agent is regularly administered. It is quite feasible that the actual disease which is concealed may even become worse whereas the psychovisual image, that is the result of medical examination, gives no ground for suspicion. Such substances thus result not only in normalization of the symptomatology but also in a form of camouflage. This masking effect is of very special interest to us as insurance medical advisers.

From this viewpoint particular importance is attached, in an insurance medical examination, to two groups of medicaments: the modern antidiabetic drugs (sulphonyl-ureas and biguanides) and anti-hypertensive substances. Anticonvulsant and psychotherapeutic drugs may also be included in this category but are of less importance. In insurance medicine anti-hypertensive substances are of outstanding interest.

For these there are two principal considerations:

a) What are the effects of anti-hypertensive substances on long-term prognosis of sufferers from high blood pressure?

and

b) How can we recognize hypertension which has been normalized by the use of medicaments?

The very important prognostic problems will not be considered here, but only the indirectly connected second question as to how the examining doctor can ascertain whether an insurance candidate has been taking anti-hypertensive drugs.

Without doubt, there is a very great temptation for insurance candidates with high blood pressure to take anti-hypertensive substances before medical examination, with the intention of producing a blood pressure indication lower than their actual blood pressure. Every insurance medical adviser to-day knows that it does not stop at being a temptation but that in fact anti-hypertensive substances are used ever more frequently with intent to mislead.
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What opportunities does the insurer have of ascertaining whether a candidate has used anti-hypertensive drugs?

1. The application form can include the question: "Have you ever taken, or are you at present taking, any medicaments which will reduce blood pressure?"
   Whoever intends to mislead the insurer will, of course, be undeterred by this harmless question.

2. Clinical examination.
   The examining doctor must look for the typical side-effects and signs associated with the use of anti-hypertensive drugs.

A strong suspicion of a drug-induced reduction in blood pressure arises when the blood pressure is normal but the heart shows left preponderance or the ECG indicates left ventricular hypertrophy or even left heart strain. Marked postural changes in blood pressure are even more suspect. It should therefore be a principle to measure the blood pressure in both the upright and the recumbent position.

In the case of the ganglion-blocking agents (Ecolid etc.) and Guanethidine (Ismelin) the blood pressure often falls in the upright position only. If there is a tendency to an orthostatic collapsing pulse, accompanied by bradycardia, Guanethidine (Ismelin), may well be the cause. Orthostasis with side-effects akin to those of atropine, suggests ganglion-blocking agents.

Single doses of Reserpine produce only slight side-effects, such as a swelling of the nasal mucous membrane. Extrapyramidal disturbances are not an early symptom.

Hydrazinophthalazine can produce nausea, giddiness, vomiting, headaches and tachycardia.

Saliuretics are also of practical importance. However, apart from a striking diuresis, their clinical side-effects are of little significance.

Unfortunately all clinical side-effects represent, at most, circumstantial evidence. Conclusive indication, however, requires unequivocal proof. We are helped here by the observation that anti-hypertensive substances principally leave the body through the kidneys. It is therefore necessary to prove the use of such substances by demonstrating their presence in the urine.

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We have set ourselves a twofold task:

1. The method should be technically simple.

2. The indication must be unequivocal and characteristic of the substance concerned.

These requirements are not easily satisfied, since the quantity of the substances necessary to reduce hypertension is very small and consequently the urine concentration of these substances must be very weak.