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THE TREATMENT OF ESSENTIAL HYPERTENSION WITH PENTOLINIUM TARTRATE COMBINED WITH RAUWOLFIA ALKALOIDS

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The autonomic ganglion-blocking agent pentolinium tartrate (pentapyrrolidinium; "ansolysen") is acknowledged to be an effective agent in the control of hypertension (Smirk, 1953). Difficulties have been experienced in its continued use because of the unpleasant effects of its indiscriminate ganglion-blocking activity—for example, constipation, dry mouth, visual disturbances, etc.—which accompany the hypotensive activity. The rauwolfia alkaloids have been in extensive use in India for a variety of conditions for many years. Vakil (1949)

showed that the drug has hypotensive properties. It is a central sedative and also stimulates the smooth musculature of the intestinal tract. The combined use of a rauwolfia alkaloid (reserpine) with pentolinium tartrate was described by Smirk, Doyle, and McQueen (1954), who found that less of the latter was required and that the effect was more sustained. They recommend a method of control by these drugs.

We have used this method, and present a short series of cases in which stabilization had been achieved on pentolinium tartrate alone and which were later restabilized on that drug with the addition of rauwolfia alkaloids ("rauwiloid" 4 mg.), taken in a single dose each evening.

All the patients had essential hypertension. Their blood pressure before treatment varied from 300/160 to 240/130. None had evidence of renal involvement. The average dose of pentolinium tartrate when given alone was 840 mg. a day. The average daily dose of that drug when combined with rauwolfia alkaloids was 240 mg., a reduction of over two-thirds. One patient who required 440 mg. of pentolinium tartrate a day was restabilized on the combination with 60 mg. a day.

The corresponding decrease in the undesirable effects of the ganglion-blocking agent was very great, and some patients who had found it impossible to continue with pentolinium tartrate alone are now well stabilized and able to live active lives.

Discussion

The combined use of pentolinium tartrate and rauwolfia seems to offer a promising treatment of hypertension. In

Case No.	Sex and Age	B.P.	Clinical Features	Control by Pentolinium Tartrate Alone			Control by Pentolinium Tartrate and Rauwiloid		
				Daily Dose of P.T. (mg.)	B.P.	Results	Daily Dose of P.T. (mg.)	B.P.	Results
1	F 50	260/150	Dyspnoea	420	120/80	Tired and faint	120	140/80	Doing full-time work
2	F 50	280/150	Cerebral encephalopathy. Congestive failure	720	170/100	Intolerably dry mouth and constipation. Blurred vision	60	170/90	Dryness of mouth slight only. Regular bowel action
3	F 63	290/130	Dyspnoea. Headaches	540	240/120	Constipation	60	200/100	Normal bowel action
4	F 59	260/150	Dyspnoea. Retinal sclerosis	480	140/80	Postural hypotension. Constipation	120	150/110	Feeling well
5	F 62	260/135	Congestive failure. Gross cardiac enlargement	120	200/100	Blurred vision. Constipation	Rauwiloid alone	190/90	Symptom-free
6	M 48	260/150	Headaches. Visual failure. Gross retinal sclerosis	840	190/125	Refused further treatment. Dry mouth. Constipation. Postural hypotension	420	135/90	Bowels easily controlled. At work
7	F 56	280/170	Cardiac asthma	Hexamethonium bromide, oral 1,500 900	240/140	Dry mouth. Constipation. Postural hypotension	240	190/110	Mouth not dry. Constipation easily controlled. No faintness
8	F 66	250/140	Dyspnoea		150/100	Dry mouth. Postural hypotension	120	170/105	Mouth less dry. No postural hypotension
9	F 63	290/150	Dyspnoea, visual failure	240	220/140	Refused further treatment	120	190/110	Minimal side-effects
10	M 59	290/150	Angina. Heart grossly enlarged	600	200/115	" "	300	210/110	Less constipation
11	F 55	270/170	Subarachnoid haemorrhage. Encephalopathy. Gross cardiac enlargement	960	170/110	Postural hypotension. Dry mouth. Constipation. Blurred vision	720	190/110	Constipation easily controlled
12	F 40	225/140	Congestive failure	360	190/130	Intolerant of higher dosage	120	180/110	Tolerable side-effects. At work
13	F 60	230/140	Dyspnoea. Retinal sclerosis	360	180/120	Postural hypotension	240	200/110	Tolerable side-effects
14	F 39	300/160	Dyspnoea. Visual failure	720	220/120	Refused further treatment	240	160/90	Minimal side-effects. At work
15	F 49	270/150	Cardiac enlargement	1,020	190/110	Dry mouth. Blurred vision. Constipation	360	190/105	Less constipation. Feels very well
16	F 48	240/130	" "	720	170/110	Dry mouth. Constipation. Fainting	300	190/110	Less constipation. Mouth not dry. Feels well
17	F 48	250/140	Visual failure. Congestive heart failure	900	150/100	Dry mouth. Fainting	360	160/115	Mouth not dry. Less tendency to faint

P.T. = Pentolinium tartrate.

patients who are already stabilized on pentolinium tartrate alone, the dose on adding rauwolfia has usually been reduced to one-third and final adjustments made from that level.

A patient who has had no previous treatment is given rauwolfia for some weeks, as suggested by Smirk *et al.* (1954). Then pentolinium tartrate is added, starting with 20-mg. doses and increasing by increments of 20 mg. until satisfactory levels are obtained. We have found that a better control is achieved when the drug is given three times rather than twice daily.

The reduction in dosage reduces or abolishes the undesirable effects of the ganglionic blockade. Where formerly postural hypotension was a problem, this has been less evident on the combination. Rauwolfia has been shown to stimulate the intestine, and this, in addition to the smaller dose of pentolinium tartrate required, makes the control of the bowels easier. There is therefore less risk of cumulative effect through retention and subsequent absorption of pentolinium tartrate in the bowel.

Patients have been definite in expressing their views that they are much more comfortable, and have been willing to continue treatment, whereas formerly on pentolinium tartrate alone they were incapacitated by weakness, dry mouth, visual disturbances, constipation, and the variability of effect on the degree of hypotension this produced.

In most cases there is no urgency in the control of the hypertension, and gradual reductions of the blood pressure are better tolerated. The aim should be the maximum reduction which keeps the patient comfortable, since the symptoms and signs of hypertension will regress when the pressures have been reduced to levels which are still above the accepted normal.

It would seem also that, once the diagnosis of essential hypertension has been established, cases are better controlled with the patient living his normal life.

Summary

The use of pentolinium tartrate in combination with rauwolfia alkaloids in the control of essential hypertension is compared with the use of the former drug alone.

The dosage necessary with the combined drugs is greatly reduced.

The undesirable effects of the ganglionic blockade have been much lessened and patients have found the treatment more acceptable.

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The Medical Section of the Library Association held a week-end conference in Birmingham on March 25–28. Members were the guests at dinner of the Vice-chancellor (Professor ROBERT AITKEN), in whose absence Professor H. A. CRONNE presided, supported by Professor J. F. D. SHREWSBURY. In a symposium on medical libraries and literature in 1984 the chief topics discussed were the establishment of national editorial assessment boards and a consequent reduction in the number of medical periodicals, academic courses in medical librarianship, changes in the medical profession itself and their effect on library provision, national economic changes and their effects on medical libraries, and the potentialities of new technical methods in documentation. A visit was paid to the Birmingham Medical School, where the sub-dean, Professor C. F. V. SMOUT, announced plans for a new medical library building on a scale commensurate with the other splendidly equipped departments. Special exhibitions of rare medical books were on view, both at the School and at the Birmingham Medical Institute.

INEFFECTIVENESS OF CHICKEN ANTI-ULCER FACTORS IN TREATMENT OF GASTRIC AND DUODENAL ULCER IN MAN

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The present study, carried out in collaboration with Professor H. Dam, is aimed at deciding whether materials acting prophylactically against gizzard ulcer in chicks have any curative effect in gastric and duodenal ulcer in man. Dam (1954) has set out the reason for undertaking this work.

The development and prevention of ulcers in the muscular stomach (gizzard) of the chick have been described by Dam (1934, 1946, 1951), Dam and Schønheyder (1934), Dam and Segal (1945), Dam, Noer, and Søndergaard (1950), Cheney (1938, 1940, 1942), and others. According to Dam and his associates young chicks reared on an artificial diet containing cod-liver oil develop ulcers which are often severe and may perforate. The disease may be prevented by including in the diet hog liver, calf's brain, or certain extracts therefrom. The prophylactic effect is associated with the lipid fraction as well as with the residue that remains after these organs have undergone extraction with fat solvents. A marked prophylactic effect is obtained by a combination of the lipid extract and an aqueous extract of calf's brain. The aqueous extract contains vitamin B₁₂ and may be replaced by this vitamin. In the lipid extract it is the highly unsaturated fraction of the fatty acids that carries protective activity. Arachidonic acid has shown such effect, while fatty acids from fish oils aggravated the symptom.

Material

We studied 152 patients with gastric or duodenal ulcer. They were admitted to the medical departments B and C of Bispebjerg Hospital and the medical department A of the University Hospital of Copenhagen during the period July 1 to December 1, 1954. Of these patients, 82 were treated with anti-gizzard-ulcer factors and 70 were given placebos. Diagnosis was based on anamnesis, x-ray examination (niche deformation), and, if present, demonstrable haemorrhage. All patients showed typical ulcer symptoms.

The patients in the two groups were chosen at random. Each of the three hospital departments was divided into two halves. All patients with gastric or duodenal ulcer admitted to one half formed the experimental group; those with the same diseases admitted to the other half formed the control group. The groups did not differ significantly in sex, age, location of the ulcer, symptoms, or duration of the disease before admission to hospital (Table I).

Treatment

Patients in the experimental group were given daily for four weeks 80 g. of "preparation A," a granulate consisting of ether extract of calf's brain mixed with three parts of