

A NOTE ON URINARY COPPER-REDUCING STEROID EXCRETION IN PATIENTS WITH PSYCHIATRIC DISORDERS

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INTRODUCTION

ALTERED adrenocortical activity has been reported in patients suffering from primarily psychiatric disorders by Hemphill and Reiss (1947), Reiss, Hemphill, Gordon and Cook (1949a and b) and others. The chance finding of a high urinary copper-reducing steroid (CRS) excretion in a man suffering from recurrent depressive illnesses who was suspected of having Addison's Disease, prompted us to investigate the excretion of these steroids in a group of unselected psychiatric patients. We report here the results of 23 estimations on 21 patients.

METHODS

Twenty-four hour urine collections were made. The CRS content was estimated after benzene-water partition by the method of Talbot, Saltzman, Wixom and Wolfe (1945), within 2 hours of the completion of the collection. Normal results by this method are 0.1 to 0.4 mgm. per 24 hours (Talbot *et al.*, 1945).

RESULTS

The results of the estimations are shown in the Table. In 8 of the 21 patients the CRS excretion was abnormally high. Follow-up of these patients revealed that at one year Case 14 had committed suicide; Case 15 was not well, and Case 16 could not be traced. Five years later Cases 17 and 18 were well; Case 19 was suffering from Paget's Disease; Case 20 was improved but not well, and Case 21 was a certified schizophrenic in a mental hospital.

DISCUSSION

The technique of Talbot *et al.* (1945) estimates at least some of the unconjugated metabolites of the adrenocortical hormones which are excreted in the urine. The method was criticized by Marrian (1951) on the grounds that it was not specific for this group of steroids. More recently, however, de Courcy and Gray (1953) examined the method and concluded that it gives results "which although high, approximate more closely to the probable amount of adrenocortical hormones present". Brooksbank, Owen and Prunty (1950) showed that the urinary CRS measured by this method increased after stimulation of the adrenal cortex by A.C.T.H.

TABLE

No.	Sex	Age	Presenting Symptom	Urinary Reducing Steroid Excretion in mg. per 24 hours	Clinical Follow-up
1	M	43	Depression	0.25	Improved at 1 year
2	F	52	Depression	0.22	Relapsed at 1 year
3	F	28	Anorexia	0.18	Well at 1 year
4	F	51	Headache	0.27	Not followed up
5	M	60	Generalized prurigo with lichenification	0.23	Unchanged at 1 year
6	F	61	Recurrent depression	0.23	Not followed up
7	M	63	Noises in head	0.06 0.32	after 8 E.C.T. Worse at 1 year
8	M	60	Depression	0.15	Died 2 years later
9	F	50	Depression	0.13	Unchanged at 1 year
10	M	60	Depression	0.17	Worse at 1 year
11	M	41	Alcoholism	0.23	Unchanged at 1 year
12	F	17	Urticaria, angio-neurotic oedema	0.12	Well 5 years later
13	F	31	Anxiety	0.23	Not improved at 1 year
14	F	50	Hypochondriasis	0.91	Suicide 9 months later
15	M	26	Abdominal pain	0.79	Subsequently developed duodenal ulcer; not well at 1 year
16	M	25	Depression	0.52	Not followed up
17	M	54	Recurrent depression	2.43 1.53	after 2 weeks in hospital
18	M	54	Suicidal depression	0.74	Well 5 years later
19	F	46	Headache	0.66	Well 5 years later
20	F	51	Anxiety	1.02	Not well 5 years later: Paget's disease of spine and femur
21	F	23	Drug addiction	2.35	Improved 5 years later Certified mental hospital patient 5 years later

There have been many reports of psychiatric disorders in patients suffering from adrenal virilism with increased urinary 17-ketosteroid excretion (Broster, Allen, Vines, Patterson, Greenwood, Marrian and Butler, 1938; Allen, Broster, Vines, Patterson, Greenwood, Marrian and Butler, 1939; Allen and Broster, 1945; Greene, Paterson and Pile, 1945). The mental condition of these patients improved after successful treatment of the virilism. However, this need not imply, as has been sometimes assumed, that the mental state is organically related to the physical condition. None of the female patients in our series had physical signs of virilism.

Seeking for an explanation of the increased CRS excretion in 8 of our patients, the only feature of the psychiatric condition common to them was the greater degree of anxiety which they exhibited compared with those patients in whom the CRS excretion was normal. The most severely disturbed patient, Case 21, showed the second highest CRS excretion. Five years later she is still in a mental hospital. This is of interest in view of the subjective sensation of intense anxiety reported by Bray, Merivale and Willcox (1952) during ephedrine medication, which in their subjects was accompanied by a marked increase in CRS excretion.

SUMMARY

Increased urinary copper-reducing steroid excretion was observed in 8 out of 21 patients suffering from a variety of psychiatric disorders. These 8 patients evidenced greater anxiety than those in whom the CRS excretion was normal. This finding suggests that emotional factors can alter the values obtained in such estimations, and this must be borne in mind when the test is used for the evaluation of organic disease.

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