DEXAMETHASONE SUPPRESSION TEST AND SCHIZOPHRENIA

W F Tsoi
J K Candlish
K H Tan

Department of Psychological Medicine
National University of Singapore
Singapore

W F Tsoi, MBBS, MRCPsych, FRANZCP, FRCPG
Associate Professor & Head

Department of Biochemistry
National University of Singapore
Singapore

J K Candlish, B Sc, PhD
Associate Professor

View Road Hospital
Singapore

K H Tan, MBBS, DPM
Medical Director

SYNOPSIS

As the prevalence of schizophrenia is very high compared with affective psychosis in Asian countries, dexamethasone suppression test (DST), was carried out on 61 chronic schizophrenic patients to find out whether there was a bias towards the diagnosis of schizophrenia against affective psychosis. The DST non-suppression rate was 11.5% (7 out of 61 cases), which was not high enough to indicate that schizophrenia was diagnosed instead of affective psychosis. It was not possible to differentiate the DST positive from the DST negative schizophrenic patients from clinical examination.

INTRODUCTION

Compared to the West, the psychiatric in-patient population of Singapore, which are of mainly Southern Chinese and Malay origin, comprises mostly of schizophrenia. During the year 1975, the percentage of patients admitted to Woodbridge Hospital, the only mental hospital in Singapore, were schizophrenia 62% and affective psychosis 2.5% as shown in Table I below. (1)

TABLE I
DIAGNOSTIC CATEGORIES IN WOODBRIDGE HOSPITAL, SINGAPORE

Diagnostic Categories	First admissions %	Residual population %
Schizophrenia	61.8	75.2
Affective psychosis	2.5	4.2
Others	35.7	20.6
Total	100.0	100.0

*adapted from Tsoi and Chen (1)

This preponderance of schizophrenia over affective illness was also reported in a Malaysian mental hospital, (2) and an East Pakistan mental hospital. (3) These percentages are closer to those reported from the New York hospital, in the US-UK project in which schizophrenia accounted for 61.5% and depressive psychoses, only 4.7% in New York, compared to 33.9% for schizophrenia and 24.1% for depressive psychosis in London. (4) The reasons for the discrepancy are partly due to difference in prevalence and partly due to difference in the method of psychiatric assessment and diagnostic criteria used. By adopting standard diagnostic and assessment methods, the discrepancy could be narrowed. (4)

The dexamethasone depression test (DST) has been reported to be a specific test for depression with a sensitivity of 43%, and a specificity of 96%. (5)

The purpose of this study is to find out the prevalence of dexamethasone non-suppression in a group of patient suffering from established schizophrenia. A high DST non-suppression rate may indicate that some of the schizophrenic patients could be suffering from affective psychosis.

MATERIALS AND METHOD

The subjects consisted of 61 patients who satisfied the DSM III criteria for schizophrenia. Their mean age and duration of illness are 41.4 years and 16.0 years respectively. The pateints were evaluated blindly by the first author using a psychiatric scale (6) in which the following symptoms were rated:- somatic symptoms, insomnia, anxiety, depression, positive psychotic symptoms (thought disorder, delusions, hallucinations), and negative symptoms (emotional withdrawal and psychomotor retardation). The standard dexamethasone suppression test (DST) was carried out consisting of administering 1 mg of dexamethasone at 11.00 pm and taking a sample of blood at 4.00 pm the next day for plasma cortisol determination. This was performed by radioimmumoassay kit provided by Amersham International (Amertex Cortisol RIA Kit) which employs a specific antiserum immobilised on polymer beads. Total cortisol in the test serum competes with $_{125}$I-labelled cortisol for antibody binding sites, and the amount of the latter remaining bound after incubation is inversely proportional to the former. The cortisol estimation was carried out blindly by the second author.

RESULTS

Out of the 61 schizophrenic patients, 7 (11.5%) were positive (plasma cortisol level above 5 μg/dl). However, there was no significant difference between the DST positive and DST negative cases in relation to their psychiatric symptoms as shown in Table 2 below.

Positive DST (non-suppression) was not related to the presence of depression as shown in table 3 below.

DISCUSSION

Dexamethasone suppression test (DST) was introduced to study Cushing's syndrome by Liddle (1960). (7) As Cushing's syndrome was also known to be associated with depression, DST was recommended as a biological marker for depressive illness. (5) DST carried out on schizophrenic patients was found to have a non-suppression rate of 11 to 30%. (8, 9) The high non-suppression rate in schizophrenia was believed to be due to the presence of depressive affect that was not apparent enough to the clinician to be diagnosed, (10) or that these patients may be suffering from major depressive or schizo-affective disorder. (11) DST non-

TABLE 2
CORTISOL LEVEL AFTER DEXAMETHASONE AND SYMPTOMS SCORES

Plasma Cortisol Level	< 5 μg/dl	> 5 μg/dl	Significance
Somatic symptoms	0.556	0.857	NS
Insomnia	0.241	0.286	NS
Anxiety	0.167	0.287	NS
Depression	0.130	0.286	NS
Positive symptoms*	1.889	1.429	NS
Negative symptoms*	2.463	3.826	NS

* positive symptoms (though disorder, delusion, hallucination)
** negative symptoms (emotional withdrawal, psychomotor retardation)

TABLE 3
DEPRESSION AND CORTISOL LEVEL IN DST

Plasma Cortisol Level	$<5\mu g$	$>5\mu g$	Total
No depression	58	6	54
Depression	6	1	7
Total	54	7	61

$X^2 = 3.577$ $P = 0.167$

suppression was also found to be useful in the detection of latent depression in paranoia as Ward et al (1982) (12) reported a case of acute paranoia who had abnormal DST and as a result was treated successfully with ECT. DST was also found to have a high positive rate in catatonic schizophrenia. (13, 14) Of the subtypes of schizophrenia, catatonia was most likely to be associated with affective illness, as Abrams and Taylor (1976) (15) found that of 123 biopolar affective illness, 22% exhibited clinical catatonia, and of 55 catatonic patients 39% were diagnostable as affective disorder, usually mania. Mania was reported by Arana et al (1983) (8) to have a 87% DST non-suppression rate.

The DST non-suppression rate of 11.4% (7 out of 61) in this series is consistent with the results reported for schizophrenia by Arana et al (1983). (8) The DST positive rate is not high enough to indicate a diagnostic bias towards schizophrenia in Singapore. It is probable that affective psychosis is uncommon in Asians. It is not possible in this series to differentiate the 11 DST positive patients from 54 DST negative ones by clinical examination. Neither is it possible to relate DST results to the symptomatology of schizophrenia. As in the case of affective psychosis, DST may have a place as an investigative tool in sorting out schizophrenic patients for subclassification or treatment.

ACKNOWLEDGEMENT

This study is supported by a research grant from the National University of Singapore. The authors also like to thank the Staff of View Road Hospital for their assistance in carrying out this study.

REFERENCES

1. Tsoi WF, Chen AJ: New admission to Woodbridge Hospital with special reference to schizophrenia. Ann Acad Med, Singapore 1979; 8: 275-9.
2. Tan ES: Characteristics of patients and illness seen at Tampoi Mental Hospital. Med J Malaya 1964; 19: 3-7.
3. Chowdhury AKMN: Admission to an East Pakistan mental hospital. Br J Psychiat 1966; 112: 65-8.
4. Cooper J: Psychiatric diagnosis in New York and London. London, Oxford 1972.
5. Carrol BJ, Feinberg M, Greden JF et al: Agspecific laboratory test for the diagnosis of melancholia. Arch Gen Psychiat, 1981; 38: 15-22.
6. Tsoi WF, Kua EH: A psychiatric rating scale for schizophrenia in Singapore. Med J Malaya 1982; 37: 300-5.
7. Liddle GW: Tests of pituitary-adrenal suppressibility in the diagnosis of Cushing's syndrome. J Clin Endocrinol Metab 1960; 20: 1539-60.
8. Arana GW, Barriera PJ, Cohen BM et al: The dexamethasone suppression test in psychotic disorders. Am J Psychiat 1983; 140: 1521-3.
9. Dewan MJ, Pandurangi AK, Boucher ML et al. Abnormal dexamethasone suppression test results in chronic schizophrenic patients. Am J Psychiat 1982; 139: 1501-3.
10. Bacher NM, Lewis HA: Abnormal dexasmethasone suppression test results in chizophrenia (letter). Am J Psychiat 1983; 140: 1100-1.
11. Malek-Ahmadi P: Dexamethasone suppression test in schizophrenia (letter). Am J Psychiat 1983; 140: 817-8.
12. Ward NG, Strauss MM, Ries R et al: The dexamathasone suppression test as a diagnostic aid in late onset paranoia. J Nervous Mental Dis 1982; 160: 248-50.
13. Bloodworth RC: The use of the dexamethasone suppression test in the differentia diagnosis of catatonic stupor. Intern J Psychiat 1982; 12: 93-101.
14. Greden JF, Carrol BJ: The dexamethasone suppression test as a diagnostic aid in catatonia. Am J Psychiat 1979; 136: 1199-200.
15. Abrams R, Taylor MA: Catatonia: a prospective clinical study. Arch Gen Psychiat 1976; 33: 577-81.