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Depression in Mentally Handicapped Patients: Diagnostic and Neuroendocrine Evaluation

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The dexamethasone suppression test was administered to 12 mentally handicapped depressed patients. One of the four patients with major depressive disorder, but none of those with other diagnoses, failed to suppress cortisol production. The International Classification of Diseases and the Newcastle Diagnostic Index were found to be unreliable for use with severely mentally handicapped patients. Modifications are proposed which would allow the Research Diagnostic Criteria and Hamilton Rating Scale for Depression to be applied to patients with any degree of mental handicap.

The simultaneous presence of mental handicap and depression is a great challenge to diagnostic skills, particularly when communication is exclusively non-verbal (Reid, 1972; Wright, 1982). A specific laboratory marker for depression would therefore be particularly welcome to psychiatrists working in the field of mental handicap. Evidence has steadily been accumulating of a disturbance of the hypothalamic-pituitary-adrenal axis in depressive illness (Schlesser *et al*, 1980): many depressed patients do not suppress cortisol production following the administration of a synthetic glucocorticoid, and the dexamethasone suppression test (DST) has been proposed for the diagnosis of endogenous depression (Carroll *et al*, 1981). The diagnostic problems of mentally handicapped patients are somewhat analogous to those of pre-pubertal children, in whom the DST has proved a useful diagnostic aid (Poznanski *et al*, 1982). This paper is the first report of the use of the DST in mentally handicapped patients.

Laboratory tests must be validated against clinical criteria, but the research instruments widely used for this purpose in affective disorders research—such as the Hamilton Rating Scale for Depression (HAMD) (Hamilton, 1967) and the Newcastle Diagnostic Index (NDI) (Carney *et al*, 1965)—have themselves rarely, if ever, been applied to mentally handicapped subjects (Matson, 1982; Kazdin *et al*, 1983; Russell & Tanguay, 1981; Ballinger *et al*, 1975). The same is true of the more recently introduced operationalised diagnostic criteria, notably the Research Diagnostic Criteria (RDC) (Spitzer *et al*, 1978): a recent literature review (Sovner & Hurley, 1983) could find no reports of the RDC being applied to mentally handicapped depressives. Thus idiosyncratic methodology may help to account for the disparate results of psychiatric surveys in this field (Wright, 1982). The applicability of these research instruments and of the widely used International Classification of Diseases (ICD) (World Health Organisation, 1978) is also evaluated in this paper.

Method

The group studied was a consecutive series of patients referred for assessment of possible depression to psychiatrists attached to the Section of Psychiatry of Mental Handicap, St George's Hospital Medical School, which serves four Health Districts. Referrals were mostly from nursing and adult training centre staff: none were from general practitioners. There were 12 patients eligible for the DST, nine males and three females; eight were resident in hospital and the rest in the community. None required psychiatric admission as a result of the depression.

The DST was administered as part of the standard psychiatric assessment of depression. Informed consent was obtained from the patient where possible; otherwise, it was obtained from the next-of-kin, or from the care-giver when the next-of-kin was not in contact with the patient.

Exclusion criteria were as set out by Carroll *et al* (1981, 1982); temporal lobe epilepsy, hepatic enzyme induction by phenytoin and barbiturates, and high doses of benzodiazepines were of particular importance in mentally handicapped patients. Following a report of the induction of hepatic enzymes by carbamazepine (Privitera *et al*, 1982), patients on this drug were also excluded.

The dosage and timing of the test were in accordance with the procedure described by Coppen *et al* (1983); dexamethasone (1 mg) was given orally to the patient at 2000 hours, the author telephoning to confirm this before 2030 hours. A blood sample was obtained by 1530 hours the following day, and plasma cortisol estimated by radioimmunoassay. Laboratory staff were blind to the clinical ratings. A cortisol lever of greater than 5 μg/dl was taken as an abnormal result.

All patients were classified according to the RDC and the glossary of mental disorders in the ninth revision of the ICD. Ratings were also made on the HAMD and the NDI. The ratings were made exclusively on data obtained directly from the patient and from a close informant; this was sometimes a parent and sometimes nursing or hostel staff. Historical data were obtained from clinical records.

Results

Patients

Some characteristics of the subjects are shown in Table I. The degree of handicap varied, from five patients at one extreme (cases 1, 7, 8, 9 and 11) who had not acquired verbal communication to three at the other (cases 5, 6 and 12) whose IQs were within the normal range, but who were included as they had been referred to psychiatrists in the mental handicap services, were resident in a mental handicap hospital (case 6) or hostel (cases 5 and 12), and had always functioned at levels much lower than might have been suggested by their IQs. Cases 3 and 11 had Down's syndrome, and birth trauma was probably responsible for the mental handicap of case 4, who had been born after a long labour and forceps delivery and also suffered from athetoid cerebral palsy. Only one patient (case 9) showed autistic features.

DST

Eleven of the twelve patients were effective suppressors of cortisol production, with post-dexamethasone cortisol levels below 5 μg/dl. One of the four major depressives (case 4) was the only non-suppressor, with a level of 13.5 μg/dl (Table I). There was no correlation of cortisol levels with severity of depression or endogenicity, as measured by the HAMD and NDI respectively.

The importance of the exclusion criteria was highlighted by one patient on carbamazepine, who was given the DST but was withdrawn from the study when a paper appeared demonstrating that carbamazepine produces false positive DST results (Privitera *et al*, 1982): he had a plasma cortisol of 15.1 μg/dl.

RDC

Four of the twelve patients had major depressive disorder, one of these carrying a 'definite' diagnosis. Seven further patients had minor depressive disorder, six of these being 'definite' and one 'probable'. The remaining patient fulfilled the criteria for 'probably currently not mentally ill'.

Two of the symptoms in the checklist for major depressive disorder occurred in only one patient (case 2); these were 'feelings of self-reproach or excessive or inappropriate guilt' and 'recurrent thoughts of death or suicide or any suicidal behaviour'. Apart from suicidal behaviour, these symptoms were found impossible to rate with any degree of conviction in the non-verbal patients. Four symptoms from the checklist are required for the diagnosis of 'probable' major depressive disorder and five for 'definite'; as it was feasible to rate only six out of the eight possible symptoms in the non-verbal patients, their diagnoses were reviewed using the more lenient criteria allowed by the RDC for past episodes, with only three and four symptoms required to achieve probable and definite diagnoses respectively. The consequence was to convert cases 7 and 9 from definite minor to probable major depressive disorder, bringing the total of major depressives to six—a number which might have been expected to yield several positive DSTs if results in non-handicapped depressives had been applicable.

The RDC allows distinction between various subtypes of major depressive disorder: all four major depressives had primary rather than secondary disorder, three of them having had no signs of other psychiatric disturbance in the past year ('simple' subtype) as far as could be ascertained from the case notes: two were classified as probably endogenous and one as retarded. None of the depressions were secondary, recurrent, incapacitating, agitated, or situational.

ICD

Eight patients were classified as having a manic depressive psychosis category (296), two had adjustment reactions (309) to bereavement, and one could only be classified as 'depressive disorder not elsewhere coded' (311). The remaining patient had no affective disorder, but on the basis of the case history was thought to have an explosive personality disorder (301.3). No cases of neurotic depression (300.4) were found.

NDI

The mean diagnostic index was 5.3, and three out of the twelve scored above the 'endogenous' threshold of 5. The items of the index were then analysed individually. No patients scored positively on the items 'nihilistic delusions' or 'blames others'.

HAMD

Scores were calculated for the sum of the first 17 items of the scale, producing a mean score of 11.3 (Table I). The individual items with the lowest scores were psychic and somatic anxiety, gastrointestinal and genital symptoms, and hypochondriasis. It is possible that the lower scores were due to a genuinely lower level of symptomatology, but positive scores on these particular symptoms rely heavily on verbal report, and it seems more likely that the low verbal ability of this groups of patients has artificially depressed the scores. Elimination of these symptoms (items 10, 11, 12, 14 and 15), together with two wholly verbal symptoms, 'guilt' and 'insight' (items 2 and 17), leaves ten items applicable to patients with any degree of mental handicap. It should be noted, however, that low scores on two of the remaining items ('suicide' and 'work and activities') also rely on verbal report and cannot be elicited by observation. Doubts must also exist as to the inclusion in the full rating scale of 'depersonalisation and derealisation', on which no mentally handicapped patient scored positively; this item is not required for the 17 item total.

TABLE
Clinical assessments and cortisol concentrations

Case No.	*Age: years*	*Sex*	*Intelligence (most recent test): IQ*	*RDC*[2]	*Diagnosis of affective disorder ICD–9*	*HAMD Raw*	*HAMD Adjusted*	*NDI*	*Plasma cortisol: μg/dl*
1	17	M	40	Major (D)	Manic-depressive psychosis, depressed type (296.1)	13	19	8	1.5
2	19	M	58	Major (P)	Manic-depressive psychosis, depressed type (296.1)	15	17	5	0.9
3	30	M	49	Major (P)	Manic-depressive psychosis, depressed type (296.1)	8	14	5	<0.4
4	37	M	65	Major (P)	Manic-depressive psychosis, depressed type (296.1)	12	19	5	13.5
5	24	M	79	Minor (P)	Manic-depressive psychosis, circular type but currently depressed (296.3)	9	12	7	<0.4
6	26	M	78	Minor (D)	Manic-depressive psychosis, depressed type (296.1)	10	16	5	1.5
7	30	F	(MA < 1 year)[1]	Minor (D)	Depressive disorder, not elsewhere coded (311)	17	26	8	2.5
8	30	F	(MA = 2½ years)	Minor (D)	Adjustment reaction with mixed disturbance of emotion and conduct (309.4)	12	21	5	<0.4
9	35	M	(MA = 1½ years)	Minor (D)	Manic-depressive psychosis, depressed type (296.1)	8	12	5	1.3
10	37	F	43	Minor (D)	Manic-depressive psychosis, depressed type (296.1)	12	14	5	3.8
11	49	M	(MA = 3 years)	Minor (D)	Brief adjustment reaction (309.0)	10	12	4	0.9
12	20	M	84	CNMI (P)	Explosive personality disorder (301.3)	9	10	1	0.8

1. MA = Mental age
2. Major = Major depressive disorder; minor = minor depressive disorder; D = definite; P = probable; CNMI = currently not mentally ill

To obtain a Hamilton total comparable to that using the standard 17 items, the sum of the scores on the ten remaining items (items 1, 3–9, 13 and 16) must be scaled up by a factor of 1.73. The adjusted total scores are given in Table I: the corrected mean total is 16.0, nearly 5 points higher than the raw mean total. Correlation of the corrected totals with plasma cortisol levels was poor ($r=0.26$, $P=0.4$), but correlation with the NDI was high ($r=0.62$, $P<0.05$).

Discussion

As the patterns of care of mentally handicapped people change, more referrals to psychiatrists now originate from community nurses and other paramedical personnel on community mental handicap teams; without the general practitioner 'filter' between the community and the out-patient psychiatric clinic it would seem likely that milder and less intractable cases will be seen by the psychiatrist. This is confirmed by the present data, which reveal a generally mild level of depression, comparable with that treated in general practice (Sireling *et al*, 1985).

The only positive DST was found in one of the patients with major depression. The sample size was small, but more non-suppressors might have been expected: giving the DST to patients with senile dementia, Spar & Gerner (1982) found that nearly half of those without major depression were non-suppressors. Although there were no false positives and the test was acceptable to patients, families, and care-givers, the DST seems to have little to offer in the differential diagnosis of depression in mentally handicapped patients. The reasons for this finding are not clear, and replication on a larger sample is required.

So far as the RDC are concerned, the excess of minor depression compared with major depression in this cohort is probably an artefact, resulting from the nature of several of the symptoms in the checklist for major depressive disorder. The requirements appear particularly stringent for non-verbal patients, and application of the 'past episode' criteria may give diagnoses more equivalent to those in non-handicapped subjects.

Rating the subtypes of major depressive disorder also presents difficulties in the mentally handicapped patient: in the present study, neither the memories of the patients nor the case notes were adequate to make decisions about the primary, secondary, or recurrent nature of the disorder. The criterion for a rating of 'incapacitated' is "inability to carry out any relatively complex goal-directed activity, because of severity of depressive symptoms", and this clearly is inapplicable to the more handicapped patient. Similarly, the subtype 'psychotic' requires the presence of delusions or hallucinations—both hard to elicit in non-verbal patients—and four of the five manifestations of 'retarded' major depression depend on the presence of speech: this accounts for the discrepancy between the rarity of this subtype in the present cohort and the significantly greater degree of retardation, rated on the HAMD, and of depressive psychomotor activity rated on the NDI. Similar criticisms apply to the other subtypes of major depressive disorder, so that in general it is not feasible to rate any subtype except 'situational' in the non-verbal mentally handicapped patient.

The ICD glossary defining the rubric 'manic depressive psychosis, depressed type' (296.1) can be applied to patients with any level of mental handicap, as almost all the features described can be observed rather than elicited verbally. In contrast, the glossary for 'neurotic depression' (300.4), which was not identified in this cohort, is more difficult to apply, as it relies on terms such as 'disproportionate depression' and 'preoccupation with the psychic trauma', which are difficult enough to assess even in the absence of mental handicap.

The high proportion of 'endogenous' patients on the NDI could be due to selective bias on the part of those referring mentally handicapped patients to psychiatrists: such patients rarely present with complaints of dysphoria, and suspicion of a depressive condition may only be aroused when symptoms such as depressive psychomotor activity occur. Certain items of the NDI present problems of scoring in mentally handicapped patients, e.g. 'nihilistic delusions', 'guilt', and 'blames others for illness'; its validity must be doubted under these circumstances.

The more objective items of the HAMD such as sleep, weight loss, and effect on work and activities were readily rated, as was depressed mood, and this supports the clinical relevance of the adjusted Hamilton total score with the items dependent on verbal ability omitted. However, the raw score may be preferable for mentally handicapped patients with adequate communication skills, because items such as 'guilt' which are excluded from the adjusted form may be found frequently among mentally handicapped patients who are able to report such feelings (Heaton-Ward, 1977). The problems relating to individual items have been discussed, and the probable effect of selective referral bias can be seen here, as in the NDI, in the excess of retardation and the relatively low level of reported anxiety, somatic, and genital symptoms. Kazdin *et al* (1983), who asked informants to complete the HAMD on 110 mentally handicapped adults (almost all mildly or moderately handicapped), also found it a satisfactory measure, correlating well with self-report measures.

Adequate tests of the validity of the adjusted score must await the collection of a further sample.

It is therefore suggested that widely used research tools such as the RDC and HAMD can, with modifications, be applied to the entire range of mental handicap in the diagnosis of affective disorder and the measurement of its severity. However, the modifications must be specified and preferably standardised, so that studies will be comparable: this paper proposes certain modifications. Particular problems with the ICD–9 and the NDI render these instruments unreliable for use with mentally handicapped patients.

The possibility of applying such sensitive instruments to mentally handicapped patients would aid the evaluation of new psychiatric techniques such as the DST, and would facilitate the evaluation of treatment methods in mentally handicapped patients with affective disorders.

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