ANDROGYNAE, 17 KETOSTEROID EXCRETION AND M-F PROFILE IN MENTAL ILLNESS

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SUMMARY

For centuries it has been a common belief that any abnormality of physique is an accompaniment of mental illness. Recently interest has been focussed on the degree of masculinity or conversely femininity in the constitution. An index of this parameter called 'androgyne' can be derived from Taner's formula. Physique acts as a manifestation of the gene complex mediated possibly through endocrines and hence should reflect on the excretion pattern of 17 ketosteroids. Personality being a constitutional variation, it ought to be related to physique and in turn to the androgenic activities. M-f profile of the MMPI should locate such variation in that case. Present work was planned to find out implication of each of these parameters and to see if there is any correlation between them. It was seen that the psychiatric patients had low androgynae scores than the normals but the 17 ketosteroid excretion was higher. This was unexpected. M-f profile of the patients did not show any significant difference from the control. Results are discussed in the light of available literature.

For centuries it has been thought that any abnormality of physique is a common accompaniment of mental illness. This belief can be traced to phythagoreans and beyond and its first codex was received in the hands of great Galen. Since then many workers have tried to boost this knowledge (Kretschmer, 1948, Rees, 1950, Sheldon et al., 1954 and Rees, 1960). Every text book of Psychiatry to date mentions of their contributions, particularly of Kretschmer and Sheldon in the exploration of the relationship of anthropometry to psychiatry. But fact is that very little is known about the subject (Taner, 1956). Recently interest has been focussed on the degree of masculinity or conversely femininity in the constitution. An index of this parameter can be derived from Taner's formula (Taner, 1951) where bi-acromial diameter is related positively with masculinity and bi-iliac negatively. Starting with Rey and Coppen (1959), at least two other works are available in the literature in this area, viz. Kelsey (1965) and Price (1969). Their findings were quite significant. Physique acts as a manifestation of the gene complex mediated possibly through endocrines. In fact there is an extensive literature on endocrine abnormalities in mental illness and there is evidence indicating that low secretion of androsteroids is not only secondary outcome of mental illness but is also constitutionally determined. Low urinary 17 keto-steroid excretion in certain types of mental patients have been reported by earlier workers (Brooksbank et al., 1964, 1970). Personality being a constitutional variation, it ought to be related to physique and in turn to the androgenic activities. Association of body build, steroid activity and personality was suggested by Segraves (1970). Peculiarly all studies on personality with the above aim had been done mostly on the extraversion/neuroticism profile (both pre and post development of Maudsley personality Inventory). Personality profile purely on the masculinity/feminity aspects, which should coincide more with the androgynae in the body build and the androgen excretion in urine, has not been studied so far. It was felt that M-f profile of the MMPI...
should fit best for this purpose. With the above considerations, this project was planned, to measure the androgynae, androgen (17 ketosteroids) excretion and the M-f profile and then to find out any correlation between them. A positive correlation would then point to the etiological aspects of mental illness.

MATERIAL AND METHOD

The work was carried out in two hospitals, viz. Command hospitals, Poona and Lucknow. Patients sample was drawn from the psychiatric patients of these hospitals and the control sample came from the healthy volunteers from the staff. Only male subjects were studied for two reasons, viz. female patients are not admitted to the psychiatric wards of military hospitals and secondly there were practical difficulties in doing the anthropometric measurements in the female subjects. Consecutive admissions to psychiatry wards fulfilling the criteria of selection, were taken up for study. The criteria were:
(a) Their education level must be at least of school leaving stage to enable the MMPI cards to be understood.
(b) They must be perfectly healthy and no evidence of physical illness which could affect the steroid excretion.
(c) Upper age limit up to 50 years for the sake of matching with the control sample.
(d) Belong to the plains of India to exclude the hill tribes where skeletal measurements may vary.
(e) Drug treatment not started to exclude any possible effect on the steroid excretion. Diagnosis was restricted to two heads only—Psychoses and Neuroses. This was done for the sake of easy availability of patients in these categories and to avoid any diagnostic puzzle in the minds of the para-medical workers. At the end of the study, further elaboration of diagnosis was available from the case documents. A total of one hundred patients, (fifty psychotics (A) and fifty neurotics (B) ) and an equal number of control (C) were studied. Mean age and height of the three groups are given in Table I.

| Sample       | Age (in yrs.) | Height (in cms.) |
|--------------|---------------|------------------|
| A. Psychotic | 31.32         | 5.08             |
| B. Neurotic  | 26.94         | 6.57             |
| C. Control   | 29.71         | 3.16             |

Differences in the samples are not significant (p>0.5).

Hence the samples are matching.

Anthropometry was carried out by a standard anthropometer. Measurements were taken bare bodied with the investigator standing at the back. Androgynae was worked out from Tanner's formula (1951) which is 3X (Biacromial—Biiiac diameters). Biacromial diameter is the distance between the outermost points of the acromial prominences of both sides. Biiiac diameter is the distance between the lateral most points of the iliac crests on both sides. For using the instrument and taking the measurements, guidance was taken from the department of Anthropology, Poona University.

For estimation of 17 ketosteroids (17 K. S.), twenty four hours collection of urine was insisted. If there was any doubt then the sample was rejected. 17 K. S. was estimated by the Callow's method as modified by Varley (1967). The principle is the Zimmermann reaction of active methylene group at 16 next to the 17 ketones, with m-dinitrobenzene in the presence of a strong alkali. The resulting colour is compared with standard pure crystalline androsterone colour.

M-f profile was obtained from the administration of 55 cards earmarked for this purpose in MMPI Scoring was
done according to the key provided in the test. The raw scores were converted into 'T' scores according to the Table provided in the booklet. Lie scores were also taken into account for testing the validity.

OBSERVATIONS

The findings of the three parameters, viz. Androgynae score, 17 K.S. excretion and M-f scores are tabulated in Tables 2, 3 and 4 below.

| Table 2—Androgynae scores |
|---------------------------|
| Sample | Mean | S.D. | Significance |
|--------|------|------|--------------|
| A. Psychotics | 22.9 | 13.1 | AV<sub>S</sub>B : N.S. |
| B. Neurotics | 23.4 | 12.3 | AV<sub>S</sub>C : (p<0.02) |
| C. Control | 35.9 | 21.6 | BV<sub>S</sub>C : (p<0.02) |

| Table 3—17 K. S. excretion |
|-----------------------------|
| Sample | Mean | S.D. | Significance |
|-------|------|------|--------------|
| A. Psychotics | 11.76 mg. | 6.7 | AV<sub>S</sub>B : N.S. |
| B. Neurotics | 10.74 mg. | 7.3 | AV<sub>S</sub>C : p<0.01 |
| C. Control | 8.08 mg. | 2.8 | BV<sub>S</sub>C : p<0.02 |

| Differences between A and B not significant (p>0.05) |
| Differences between A and C significant (P<0.01) |
| Differences between B and C significant (P<0.02) |

| Table 4—M-f Score |
|-------------------|
| Sample | Mean | S.D. | Significance |
|--------|------|------|--------------|
| A. Psychotic | 58.66 | 5.71 | AV<sub>S</sub>B : p<0.01 |
| B. Neurotic | 54.92 | 7.22 | AV<sub>S</sub>C : N.S. |
| C. Control | 57.98 | 5.31 | BV<sub>S</sub>C : N.S. |

Summary of findings: (a) Androgynae scores of both psychotics and neurotics were significantly different from control, but between them the difference was not significant. (b) 17 K.S. excretion of both the psychotics and the neurotics also were significantly different from control but between them the difference was not significant. (c) M-f scores between the psychotic and the neurotic were significantly different, but their differences from control were not significant.

DISCUSSION

The findings of significantly different androgynae scores of both psychotics and the neurotics is in agreement with other workers, viz. Rey and Coopen (1959) and Segraves (1970) but differs from Price (1969). The last named author did not find any difference in the constitution and androgynae scores amongst mental patients and their siblings. Lower androgynae score in the patient samples in this work indicate less masculinity in the body structure of these patients. The reason for this abnormality could be poor sex differentiation rate of the skeleton during development period, either at the foetal stage or during puberty. An endocrine hypothesis is quite tempting to postulate for this skeletal anomaly but if we look at the excretion rates of 17 K.S., this hypothesis is not tenable, since both psychotics as well as neurotics show greater excretion of androgens than the control, and that too to a significant degree. However, their present positive androgen balance does not rule out a deficient male hormone production in the past. In any case it is known that there are complex differences in the endocrinological pattern between extroverts and introverts (Segraves 1970). In the present study no such differentiation was made in this particular personality profile, hence such unexpected results are not too surprising. Brookesbank and Prysephillips (1964), Coppen et al. (1967) and Brookesbank et al. (1970) also did not find low androgen excretion in their patients. Only in some specific groups like immature persons or in female patients with menstrual disorders a low 17 K.S. level is reported. Such finding is sometimes attributable to inactivity and malnutrition (Geller 1962). Our patients being fresh cases and nutrition being adequate, such
possibility was not there.

M-f profile of the three samples make an interesting study. The patient samples do not differ from control sample, but amongst the patients, the neurotics differ significantly from the psychotics. They were found less masculine than the psychotics. This again is puzzling. Since study of this parameter has not been reported so far, it is not possible to compare our results with others. Only reason which seems plausible is that the psychotic sample being a mixture of different diseases, including a considerable number of affective psychosis patients, the feminity which would otherwise be shown by the schizophrenics had been neutralised by the masculine preponderance of the affective psychosis patients. In an effort to find out the solution of this puzzling result case records of the psychotic and neurotic patients were probed retrospectively to check the diagnoses of individual cases. The diagnoses of the psychotics were: Affective psychoses=II, Schizophrenias=37, Paranoid psychoses=1 and Toxic psychosis=1. Thus it was confirmed that with eleven patients of affective psychoses, in the psychotic sample, it was possible for the masculine profile to be more than the neurotics. Diagnostic categories of the neurotics were: Anxiety Neurosis=25, Hysteria=13, Obsession=1, Phobia=1 and Neurotic depression=10. The finding of feminity in the neurotics agrees with Rees (1960), and Segraves (1970), Eysenck's hypothesis (1960) that females consistently show more anxiety proneness than males lend support to this finding also.

The results of the present project showing no correlation between androgynae, excretion of 17 K. S. and M-f profile would only suggest that the relationship amongst these parameters is quite complex than a simple relationship of personality with individual hormone level. A study of wide range of hormones is necessary rather than a single one. Chromatographic separation of all sex hormones and their metabolites will be necessary to know the over-all hormone balance in relation to personality. This fact has also been brought out by Mason (1968). Similarly only M-f profile is not sufficient yardstick alone for studying the personality. A couple of more profiles will be necessary to be able to correlate with the low androgynae score, which is more or less established. Psychocodocrine and biochemical researches in mental illness are full of failures to replicate. Possibly such research would be more rewarding if these are directed on the normal population of larger magnitude to find out the correlation of these parameters in normal, then find their application in mental illness.

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