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Correlation between Stature, Character Disorder and Criminality

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The present study of a correlation between stature of male psychiatric patients and character disorder as well as criminality has been made on the background of the findings of such a correlation in persons with the XYY syndrome by Jacobs *et al.* (1965), Casey *et al.* (1966), Price *et al.* (1966 and 1967), Welch *et al.* (1967), Bartlett *et al.* (1968), Court Brown *et al.* (1968), Hunter (1968), Nielsen (1968) and Wiener *et al.* (1968), and to a certain extent also in persons with a large Y chromosome (Nielsen, 1968). These findings indicate that males with two Y chromosomes, and probably also males with a large Y chromosome, have a higher disposition to tall stature, character disorder and criminality than is found in the general male population. There might be a Y-linked inheritance of tall stature, character disorder and criminality irrespective of the size of the Y chromosome. If these hypotheses are true, one would expect to find a higher frequency of patients with character disorder and criminality among males with a stature above 181 cm. compared with males below 181 cm., and the present study has been made in order to compare the frequency of character disorder and criminality in psychiatric patients in these two stature groups.

Material and Method

The material comprises all 771 male patients admitted to a psychiatric hospital, the Aarhus State Hospital, from the 1st March 1967 to the 29th February 1968.

All psychiatric patients from the catchment area who require hospitalization are admitted to this hospital, as there are no private psychiatric hospitals or other types of psychiatric facility in the area. There is, therefore, no selection of patients other than the requirements of hospitalization.

The following items were registered: number of admissions in the investigation period, civil state, age at admission, criminality, type of criminality, age at first criminality, alcohol abuse, drug abuse, diagnosis and stature. Criminality was only registered if the case had been brought to court. Alcohol abuse and drug abuse were only registered if these were the main diagnoses at the psychiatric hospital.

The stature of the patients was measured on a fixed scale on the wall with a board from the scale to the top of the patient's head. The distribution of the patients by diagnosis and stature (less or more than 181 cm.) is shown in Table I. Diagnoses were the official hospital diagnoses; in this hospital and other hospitals in Denmark they follow the WHO International Classification of Diseases, Eighth Revision, 1967.

Results

In Table I the most outstanding feature is the very low proportion of patients in the three diagnostic classes of senile, presenile and arteriosclerotic dementia who achieved a stature of 181 cm. or more. The finding, however, is probably not interesting psychiatrically. These were mainly old men, belonging to a generation in which stature was generally less than standards for adults of today; and their height may also have suffered a cm. or more shrinkage owing to the regressive changes due to ageing. Apart from this, the most striking observation is the high proportion of patients with character disorder who equalled or exceeded a stature of 181 cm. (nearly 25 per cent). It was the patients with character disorder who constituted a focal interest of our enquiry.

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TABLE I

Male patients admitted to a psychiatric hospital during a one-year period; distribution by diagnoses and stature above and below 181 cm.

Diagnoses	Patients Total	Patients with stature <181 cm. Total	Patients with stature 181 cm+ Total	Patients with stature 181 cm+ %
Schizophrenia	82	66	16	19·5
Manic-depressive psychosis	142	120	22	15·5
Psychogenic psychosis	38	35	3	7·9
Psychosis of uncertain type	44	35	9	20·5
Senile dementia	19	19	0	
Presenile dementia	3	3	0	2·4
Arteriosclerotic dementia	62	60	2	
Epilepsy	0	0	0	—
Neurosis	65	54	11	16·9
Affective reaction	53	45	8	15·1
Character disorder	101	76	25	24·8
Alcohol abuse	95	82	13	13·7
Drug abuse	15	13	2	13·4
Oligophrenia	12	11	1	8·3
Other diagnoses	40	39	1	2·5
Total	771	658	113	14·7

The distribution by age and stature of the 101 patients with character disorder found among the total of 771 patients is shown in Table II. The frequency of patients with character disorder was higher in patients with a stature of 181 cm.+ than in patients with a stature below 181 cm. in each 10-year age group up to the age of 49, as seen in Table II, but the groups were small and the differences were not statistically significant for any of these 10-year age groups singly. The frequency of patients with the diagnosis of character disorder was, however, significantly higher among patients 181 cm.+ than among patients below 181 cm. in the age group 10–49 ($\chi^2 = 4 \cdot 92$, $p < 0 \cdot 05$), and in all age groups together ($\chi^2 = 9 \cdot 47$, $p < 0 \cdot 005$) as seen in Table II.

There were 144 patients with criminality

TABLE II

Male patients admitted to a psychiatric hospital during a one-year-period distribution by age, stature and character disorder

Age	Stature below 181 cm. Patients Total	Stature below 181 cm. Patients with character disorder Total	Stature below 181 cm. Patients with character disorder %	Stature 181 cm.+ Patients Total	Stature 181 cm.+ Patients with character disorder Total	Stature 181 cm.+ Patients with character disorder %	Statistically significant difference
10–19	42	10	23·8	12	6	50·0	
20–29	113	22	19·5	42	10	23·8	$p < 0 \cdot 05$
30–39	120	21	17·5	22	6	27·3	
40–49	144	14	9·7	22	3	13·6	
50–59	101	6	5·9	10	0	0	
60–69	57	1	1·8	3	0	0	
70–79	59	1	1·7	2	0	0	
80+	22	1	4·5	0	0	0	
Totals	658	76	11·6	113	25	22·1	$p < 0 \cdot 005$

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among the total 771 patients (19 per cent); 83 of those were admitted to the forensic psychiatric department of the hospital. Table III shows that the frequency of criminality was as high as 43 per cent in the age group 10–19, falling gradually to 3 per cent in the age group 70–79 and zero in patients aged 80+.

TABLE III

Male patients admitted to a psychiatric hospital during a one-year-period; distribution by age and criminality

Age	Patients Total	Patients with criminality Total	%
10–19	54	23	42·6
20–29	155	40	25·8
30–39	142	33	23·2
40–49	166	31	18·7
50–59	111	11	9·9
60–69	60	4	6·7
70–79	61	2	3·3
80+	22	0	0
Total	771	144	18·7

The distribution by stature, age and criminality is shown in Table IV. The frequency of 83 per cent with criminality among the 12 patients in the age group 10–19 with a stature of 181 cm.+ was significantly higher than the 31 per cent among the 42 patients in the same age group below 181 cm. ($\chi^2 = 8 \cdot 44, p < 0 \cdot 005$).

The frequency of criminality in patients aged 20–29, 30–39 and 40–49 was also higher in patients with a stature 181 cm.+ than in patients with a stature below 181 cm., but not to a statistically significant level. There was, however, a significantly higher frequency of criminality in patients aged 10–49 with a stature of 181 cm.+ (35 per cent), compared with patients in the same age group below 181 cm. (22 per cent), ($\chi^2 = 6 \cdot 7$, $p < 0 \cdot 01$) and in all age groups together ($\chi^2 = 11 \cdot 37, p < 0 \cdot 001$).

The distribution by age at first criminality of the 144 patients with a record of criminality is shown in Table V. There was a significantly higher frequency of first criminality at the age of 10–14 in patients with a stature of 181 cm.+ than in patients with a stature below 181 cm. (P(Fisher) = 0·002). There was a significantly higher frequency of first criminality before the age of 25 in the patients with a stature of 181 cm.+ (88 per cent), compared with patients below 181 cm. (69 per cent), (χ^2 (Yates) $= 3 \cdot 96, p < 0 \cdot 05$).

The distribution by type of criminality is shown in Table VI; it is seen that there was a high frequency of sexual criminality, but there was no statistically significant difference between the frequency of this type of criminality or any other type of criminality in patients with a stature below 181 cm. and in patients with a stature of 181 cm.+.

TABLE IV

Male patients admitted to a psychiatric hospital during a one-year-period; distribution by age, stature and criminality

Age	Stature below 181 cm. Patients Total	Stature below 181 cm. Patients with criminality Total	Stature below 181 cm. Patients with criminality %	Stature 181 cm.+ Patients Total	Stature 181 cm.+ Patients with criminality Total	Stature 181 cm.+ Patients with criminality %	Statistically significant difference
10–19	42	13	31·0	12	10	83·3	p<0·005
20–29	113	29	25·7	42	11	26·1	p<0·01
30–39	120	26	21·7	22	7	31·8	
40–49	144	25	17·4	22	6	27·2	
50–59	101	11	10·9	10	0	0	
60–69	57	4	7·5	3	0	0	
70–79	59	2	3·4	2	0	0	
80+	22	0	0	0	0	0	
Totals	658	110	16·7	113	34	30·1	p<0·001

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TABLE V

Male patients admitted to a psychiatric hospital during a one-year-period; distribution by age at first criminality and stature

Age at first criminality	Stature below 181 cm.		Stature 181 cm.+		Statistically significant difference
	Total	%	Total	%	
10–14	3	2·7	7	20·6	p<0·002
15–19	46	41·8	14	41·2	p<0·05
20–24	27	24·6	9	26·5	
25–29	13	11·8	3	8·8	
29–34	9	8·2	0	0	
35+	12	10·9	1	2·9	
Total	110	100·0	34	100·0	

TABLE VI

Male patients admitted to a psychiatric hospital during a one-year-period; distribution by type of criminality and stature

Type of criminality	Stature below 181 cm. (N = 110)		Stature 181 cm.+ (N = 34)	
	Total	%	Total	%
Violence	28	25·5	5	14·7
Sexual criminality	93	84·5	27	79·4
Criminality against property	17	15·5	4	11·8
Arson	6	5·5	1	2·9
Other types of criminality ..	4	3·6	0	0

The only diagnostic group, other than character disorder, in which there was a statistically significant difference in the distribution by stature, was that of patients with schizophrenia, and here the only difference was found in the age group 10–19 in which 9 of the 12 patients with a stature of 181 cm.+ had a diagnosis of schizophrenia (75 per cent), compared with 4 of the 42 patients below 181 cm. (10 per cent), (χ^2(Yates) = 18·46, p<0·001). There was, however, no such difference in any other age group in patients with schizophrenia, as seen in Table VII.

DISCUSSION

The finding of a significantly higher frequency of character disorder and criminality in patients with a stature of 181 cm.+ than in patients below 181 cm. indicates that patients with tall stature have a comparatively pronounced disposition to character disorder and criminality, which might be expected if the disposition to tall stature were genetically connected with character disorder and criminality and located on the Y chromosome, as is indicated by the finding of a very high frequency of patients with tall stature, criminality and character disorder among patients with the XYY syndrome. Eight of the nine patients with this syndrome studied in our laboratory suffered from character disorder and had a record of criminality. All nine patients were above 182 cm. tall.

The frequency of criminality was especially high in patients above 181 cm. in the age group 10–19, which correlates with the frequency of a first criminality at a comparatively early age in patients with the XYY syndrome as found by Price *et al.* (1967).

We also found that criminality started at a significantly earlier age in patients with a

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TABLE VII

Male patients admitted to a psychiatric hospital during a one-year-period; distribution by age, stature and schizophrenia

Age	Stature below 181 cm.			Stature 181 cm.+			Statistically significant difference
	Patients Total	Patients with schizophrenia		Patients Total	Patients with schizophrenia		
		Total	%		Total	%	
10–19	42	4	9·5	12	9	75·0	$p<0.001$
20–29	113	20	17·7	42	4	9·5	
30–39	120	19	15·8	22	2	9·1	
40–49	144	11	7·6	22	1	4·5	
50–59	101	8	7·9	10	0	0	
60–69	57	4	7·0	3	0	0	
70–79	59	0	0	2	0	0	
80+	22	0	0	0	0	0	
Total	658	66	10·0	113	16	14·2	

stature of 181 cm.+ than in patients below 181 cm. These findings might indicate that criminality in such patients is partly due to a disposition to criminality connected with tall stature. Theoretically, this disposition might be inherited through the Y chromosome, as patients with two Y chromosomes and probably also those with a large Y chromosome (Nielsen (1968)) have a pronounced disposition to tall stature and criminality.

The finding of a high frequency of schizophrenia in the age group 10–19 among patients above 181 cm., but not in any other age group, might be fortuitous. However, if it could be substantiated it would suggest some interesting speculations. It might be that such patients are liable to be given an initial diagnosis of schizophrenia which is later changed. This would fall in with our finding that patients with the XYY syndrome have often been suspected of suffering from schizophrenia before the age of 20 on account of contact difficulties and strange behaviour. Or it might be that boys who shoot up in height in adolescence faster than others of their age suffer an enhanced risk of schizophrenia, perhaps because of becoming more than usually leptosomatic. Alternatively, such rapid growth might advance the age of manifestation of an existing risk of schizophrenia without adding to the total lifetime liability. There can, however, be no answer to these questions in the present state of our knowledge.

SUMMARY

A study of all 771 male patients admitted to a psychiatric hospital during a one-year period has been made with the aim of looking for a correlation between stature and character disorder as well as criminality.

We found a higher frequency of patients with character disorder and criminality in patients with a stature of 181 cm.+ than in patients with a stature below 181 cm. This is a finding which indicates that patients with tall stature have a comparatively pronounced disposition to character disorder and criminality.

Such a finding might be expected on the background of the finding of such a correlation in patients with the XYY syndrome and to a certain extent also in persons with a large Y chromosome.

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