VALIDATION OF WEINER'S COLOUR STRESS SIGN IN SCHIZOPHRENIA

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ABSTRACT

The Rorschach test by Klopfer's method was administered to 30 schizophrenia patients and an equal number of age and sex matched neurosis patients and normal subjects. Colour stress sign was present in 20 schizophrenics, 3 neurotics and 3 normal controls. The difference was statistically significant. Weiner's colour stress sign was found to be valid diagnostic aid for schizophrenia.

MJAFI 1998; 54 : 302-304

KEY WORDS: Rorschach test; Schizophrenia.

Introduction

The Rorschach test is the oldest and most widely used personality test in the clinical setting in India. The initial development of the Rorschach test had as one of its goals the identification of serious pathology, and a substantial portion of Hermann Rorschach's normative subject group consisted of schizophrenia patients. Over the years a number of signs have been described for the Rorschach diagnosis of schizophrenia. Weiner [1,2] developed the "colour stress" sign for the Rorschach diagnosis of schizophrenia. The "colour stress" sign represents a minimal use of chromatic colour without any use of a chromatic colour. Colour stress excludes those subjects who either use colour freely, thus presumably demonstrating primary reliance on repressive defences, or who avoid the use of colour, thereby indicating strong reliance on intellectual defences. although there are obvious exceptions, Weiner's reasoning is that subjects with colour stress are manifesting one of the characteristic features of schizophrenic disturbance, namely, unstable defences and inconsistent resources for integrating affective experience [1-3]. Weiner's colour stress signs have been validated for western subjects [3,4]. However, no validation studies have been carried out in India.

Material and Methods

The study was conducted at MH Meerut during the period Feb 95 to Jan 97. Thirty consecutive male in-patients with schizophrenia were the subjects of the study. An equal number of age sex matched inpatients with psychiatric disorders other than schizophrenia (other anxiety disorders, somatoform disorders, dysthymia and depressive episode unspecified) were included in the study as a neurosis control group. A second control group consisted of age and sex matched subjects without any physical illness. Psychiatric

diagnosis were made as per ICD 10 criteria [5].

The Rorschach test was administered individually to the subjects and scored by Klopfer's method by the second author (5). Weiners colour stress sign is scored when either two of the following four indicators appear in the record viz.

- (i) the presence of one or two CF responses,
- (ii) Sum C is between 1.5 and 3.0.
- (iii) the presence of atleast one CF or C response without any L response, or
- (iv) when one or more C responses are included in the record.

CF responses use colour with indefinite form. C responses indicate use of only colour, while in C' responses achromatic colour is used.

The Rorschach tests were administered while the patients were symptomatic but under appropriate medications. It was ensured that ECT was not given on the day of the test or the day prior to test.

After completion of the study the scorer went through the individual Rorschach protocols of the three groups and marked the presence or absence of each indicator and if the colour stress sign was present or not. Statistical comparisons were performed using the chi square test.

Results

The demographic characteristics of the three groups of subjects are shown in Table 1. There were no statistically significant differences among the subjects on these demographic variables. Colour stress sign was present in 20 schizophrenia patients, 3 other psychiatric patients and 3 normal controls (Table 2). The difference was statistically significant. Thus Weiners colour stress sign had a sensitivity of 66.67% and specificity of 90%. The false positive rate was only 10% though the false negative rate was rather high at 33.3%. The positive predictive power was 85.96%, the negative predictive power was 72.97% while overall diagnostic powers was 78.3%.

Discussion

The major finding of the study was that Weiner's colour stress sign had a sensitivity of 66.67% and a

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TABLE 1

Demographic characteristic of schizophrenia patients, neurosis patients and normal controls

Characteristic	Schizophrenia patients (n=30)	Neurosis patients (n=30)	Normal controls (n=30)	Chi-square value	Significance
Age (in years)					
Mean	29.23	25.5	29.27		
Range	19-56	19-42	19-51		
Distribution					
10-19	1	1	1	5.03	p > 0.70 NS
20-29	17	17	17		
30-39	11	10	11		
40-49	0	2	0		
50-59	1	0	1		
Rank					
Rect	1	1	1	7.49	p > 0.30 NS
Sep	17	12	12		
LNK	3	7	7		
NK	7	5	9		
Hav	2	5	1		
Education					
0-5 class	4	3	2	3.87	p > 0.30 NS
6-10 class	20	19	25		
> 10 class	6	8	3		
Marital status					
Married	20	22	24	1.36	p > 0.50 NS
Unmarried	10	8	6		
Domicile					
Rural	30	29	28	2.06	p > 0.30 NS
Urban	0	1	2		
Religion					
Hindu	29	28	29	2.04	p > 0.70 NS
Sikh	0	1	0		
Christian	1	1	1		

NS = Not significant

specificity of 90% for the diagnosis of schizophrenia. The utility of a diagnostic test or evaluation can be determined by using the concepts of sensitivity and specificity. If the total for both is 100% this is a chance result and the test is virtually worthless, while if the sum total is 200 it is perfect. No available test or evaluation is perfect, but using this concept it is seen that Weiner's colour stress sign compares favourably with other diagnostic tests used in clinical medicine (Table 3).

TABLE 2

Frequencies of different groups positive for various colour stress indicators

Group	N	Colour stress indicators			Sign positive
		CF	Sum C 1.5 - 3	CF/C without C'	
Schizophrenia patients	30	17	13	16	20*
Neurosis patients	30	3	3	2	3
Normal subjects	30	2	7	—	3

*Chi square = 31.27; df = 2; p < 0.01

TABLE 3

Sensitivity and specificity of various diagnostic tests*

Test or evaluation	Sensitivity	Specificity	Total
Physical exam for hepatomegaly	50	47	97
Blood alcohol level for alcoholic liver disease	40	59	99
History, blood pressure, ECG and X-rays for heart disease or hypertension	97	32	129
Clinical exam and wieners colour stress sign for schizophrenia	66.67	90	156.67
CPK, SGOT and LDH for myocardial infarction in cardiac care unit	78	95	173

*Galan RS. Application of the predictive value model in the analysis of test of effectiveness. Clin Lab Med 1982; 4 : 685.

In Weiner's original cross validating samples [1], which included 49 schizophrenia patients and 92 non-schizophrenia psychiatric patients, the colour stress sign without the C criterion yielded a percentage of accurate diagnosis ranging from 65% to 81%. However, although false negatives in these samples were 13% to 18% the false positive rates ranged from 30% to 50%. Subsequently, when C was added as a separate colour stress criterion, the accuracy achieved in additional cross validating samples ranged from 60% to 76%. The false positive rates remained high at 32% to 42%, while false negatives ranged from 11% to 41% [2-4,7,8]. The findings of the present study are broadly in agreement with the foregoing with sensitivity of 66.67%. However, the false positive rate was low at 10% though the false negative rate was rather high at 33.3%.

The implications of research findings for clinical application of the Rorschach are often debated. It must be strongly emphasised that there is no single definite Rorschach or personality picture typical of schizophrenia as a whole: variability being one of the characteristics of the disorder. Therefore, the Rorschach picture of a group of patients all labelled schizophrenia may be tremendously varied. It is too much to expect that any known method of investigation, if ap-

plied indiscriminately to all members of this group will ever show any definite results. No one case will present all of the signs and many will present only a few. In addition, it is also clear that statistical significance does not automatically indicate clinical utility. Studies with the colour stress signs have yielded replicable differentiation between diagnostic groups [1-4], but often without sufficiently precise discrimination to justify its application to a single patient in a diagnostic situation [7,8]. On the other hand it should be noted that a lack of statistical significance does not necessarily preclude clinical utility. A system based on relatively infrequent signs may occur too infrequently in usually appropriate samples to allow any possibility of statistically significant differences. Yet such a rare sign may be pathognomonic and thus of considerable diagnostic utility should it happen to appear. This type of utility can be identified by examining the false positive and the false negative rates. A sign that produces a great many false negatives but virtually no false positive is likely to be one of the rare but pathognomonic indicators. It is obvious that by this criteria also the colour stress sign are found to be clinically useful.

In conclusion we may state that in the present study Weiner's colour stress signs showed a fair degree of accuracy. Yielding a low incidence of false

positives but a moderate number of false negative results. The colour stress sign was found to be a valid aid for the Rorschach diagnosis of schizophrenia among Indian subjects. Further study of the test in various subtypes of schizophrenia would be of interest.

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