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Correlation analysis of symptomatic and functional improvements of patients with predominant negative symptom of schizophrenia

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INTRODUCTION

Schizophrenia is a complex and life threatening disorder comprising positive, negative, and cognitive symptoms. Clinically relevant negative symptoms are observed in up to 60% of patients [1]. Currently, understanding is limited regarding the relationship of improvements in symptoms and functioning during treatment of patients with predominant negative symptoms of schizophrenia.

In a Phase III, double-blind, randomized, active-controlled clinical trial, cariprazine was proved to be superior to risperidone in the treatment of predominant negative symptoms of schizophrenia [2].

This adequately designed study provided the opportunity to analyze the correlation between improvement of negative symptoms measured by PANSS Factor Score for Negative Symptoms (PANSS-FSNS) and improvement of personal and social relationships of patients measured by Personal and Social Performance (PSP) scale.

STUDY OBJECTIVE

Analysis of association between simple PANSS items forming PANSS-FSNS and PSP total score as well as subdomains separately.

METHODS

Subjects with schizophrenia and a PANSS factor score for negative symptoms (PANSS-FSNS) ≥24 with no pseudo-specificity factors (e.g. positive, extrapyramidal and depressive symptoms) were randomized to cariprazine 4.5 mg/d (dose range: 3-6 mg/d) or risperidone 4 mg/d (dose range: 3-6 mg/d) for 26 weeks of double-blind treatment.

The primary efficacy parameter was change from baseline (CfB) to endpoint of PANSS-FSNS. The secondary efficacy parameter was CfB to endpoint of PSP. Cariprazine and risperidone data was pooled for the analyses (443 patients total). PANSS-FSNS individual items were compared to PSP total score as well as the three PSP subdomains separately reflecting changes of negative symptom patient functioning. The fourth PSP subdomain (disturbing and aggressive behaviours) was not evaluated due to the exclusion criteria of the study (patients with violent behaviour in the last 12 months were excluded).

Multiple regression with forward variable selection was used. Last observation carried forward method was applied to impute missing values.

RESULTS

Correlation of PANSS-FSNS and PSP total scores (Table 1)

PSP total score improvement showed significant relationship (R2=0.43) with the improvement of the following PANSS items:

- N1 (blunted affect; p=0.0016)
- N2 (emotional withdrawal; p=0.0113)
- N4 (passive/apathetic social withdrawal; p<0.0001)
- N6 (lack of spontaneity and flow of conversation; p=0.0004) and
- G16 (active social avoidance; p=0.0060).

Table 1 Correlation of PANSS-FSNS and PSP total score

	PANSS items	Definitions	Rank of R^2 improvement (p-value)
		R^2 for all items	0,4330
PANSS-FSNS	N1	Blunted affect / *flat affect*	**2 (0.0016)**
	N2	Emotional withdrawal	**4 (0.0113)**
	N3	Poor rapport	6 (0.1981)
	N4	Passive/apathetic social withdrawal	**1 (<0.0001)**
	N6	Lack of spontaneity and flow of conversation / *alogia*	**3 (0.0004)**
	G7	Motor retardation	7 (0.3506)
	G16	Active social avoidance	**5 (0.0060)**

Correlation of PANSS-FSNS and PSP subdomains scores (Table 2)

The PSP subdomain of **socially useful activities** (SOCACT) improvement showed significant relationship (R^2=0.36) with the improvement of PANSS items

- N4 (p=0.0001)
- N6 (p=0.0043) and
- G16 (p=0.0004).

CONCLUSIONS

- **Based on the presented regression analysis, the improvement of predominant negative symptoms was significantly associated with the improvement of personal and social performance.**
- **The improvement of the 3 subdomains of PSP scale, corresponding to socially useful activities, personal and social relationships and self-care were associated with the improvement of a different set of negative symptoms.**
- **Passive social withdrawal seems to be a common negative symptom most influencing patient's functioning.**

Correlation of PANSS-FSNS and PSP subdomains scores (cont., Table 2)

PSP subdomain of **personal and social relationship** (SOCREL) improvement also showed significant relationship (R^2=0.36) with improvement of PANSS items

- N4 (p<0.0001)
- N3 (p=0.0045) and
- N6 (p=0.0006).

Finally PSP subdomain of **self-care improvement** (SLFCAR) showed weak relationship (R^2=0.14) with improvement of PANSS items

- N4 (p=0.0002) and
- N1 (p=0.0271).

Table 2 Correlation of PANSS-FSNS and PSP subdomains

			PSP sub-domains		
	PANSS items	Definitions	SOCACT	SOCREL	SLFCAR
		R^2 for all items	0,3602	0,3559	0,1369
			Rank of R^2 improvement (p-value)		
PANSS-FSNS	N1	Blunted affect	5 (0.0600)	6 (0.3867)	**2 (0.0271)**
	N2	Emotional withdrawal	4 (0.0563)	4 (0.0637)	5 (0.3962)
	N3	Poor rapport	6 (0.1037)	**2 (0.0045)**	6 (0.5400)
	N4	Passive/apathetic social withdrawal	**1 (0.0001)**	**1 (<0.0001)**	**1 (0.0002)**
	N6	Lack of spontaneity and flow of conversation	**2 (0.0043)**	**3 (0.0006)**	3 (0.1457)
	G7	Motor retardation	7 (0.1583)	7 (0.9898)	4 (0.2746)
	G16	Active social avoidance	**3 (0.0004)**	5 (0.0933)	7 (0.9549)

Similarly to a recent finding [3] where greater improvement on PANSS-derived measures corresponded to clinical impressions (CGI-I) of greater improvement and less severe disease states (CGI-S), PSP total score as well as PSP subdomains improvement of negative symptoms also correlated with PANSS-derived measures.

Based on the data, passive apathetic social withdrawal (N4) followed by alogia (N6) seems to be the most influencing negative symptom on activities of daily living. These are also the negative symptoms (social amotivation and alogia along with diminished expression) which are most often seen in patients.

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