Personality Disorders and Traits of ABC Clusters in Fibromyalgia

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Article

Personality Disorders and Traits of ABC Clusters in Fibromyalgia

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Abstract: Background: Evidence suggests that there is substantial comorbidity between fibromyalgia and Axis II pathology (i.e., personality disorders - PDs). The aim of the current study was to find out the exact cluster (A, B, C) PDs or traits that are more prominent in FM and may be predictors of FM diagnosis. Methods: Data from 86 subjects (53 with FM and 33 controls without FM) was analyzed in an observational, cross-sectional, comparative study. The assessment of categorical PDs and traits was performed independently with the Structured Clinical Interview for Personality Disorders (SCID-II). Binary logistic regression was used to determine FM predictors among PDs traits. Results. Compared with controls, FM patients had higher rate of PDs diagnoses (56.7 vs 18.2%, P<.001). However, the rate was significantly higher only for borderline PD diagnosis (28.3% vs 6.1% P<.05). The binary logistic regression analysis showed that schizotypal and schizoid (cluster A), borderline (cluster B), and dependent (cluster C) personality traits may be significant predictors of fibromyalgia (Nagelkerke $R^2 = 0.415$). Conclusions: Our results may reflect association of FM with personality traits of all three PD clusters: A (eccentric), B (dramatic), C (anxious). However, the most consistent evidence seems to be for borderline PD.

Keywords: fibromyalgia; personality disorders; Axis II; personality disorders clusters; personality traits; borderline; schizotypal; schizoid; avoidant

1. Introduction

Fibromyalgia (FM) is a chronic pain syndrome that is characterized by persistent musculoskeletal pain, fatigue, sleep disturbances and functional symptoms [1,2]. It is believed to be a dysfunction of the CNS, but no definite structural lesion has been identified so far [3].

FM is peculiar for high comorbidity with mental disorders [4]. Among the most frequent comorbidities are mood disorders, anxiety, somatoform, obsessive-compulsive and personality disorders (PDs). The later are of particular interest as remain underinvestigated in fibromyalgia.

Personality disorder (PD) is defined as an enduring pattern of inner experience and behavior that deviates markedly from the norms and expectations of the individual's culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress or impairment [5].

PDs are rather peculiar clinical entities and differ from other psychiatric conditions in a set of features. For instance, in DSM-IV PDs were placed among axis II disorders in contrast to axis I disorders (affective, anxious, obsessive-compulsive etc.). There is strong evidence of high axis I and axis II disorders comorbidity [6] as well as high comorbidity of PDs with other medical and biopsychosocial conditions [7,8] and comorbidity within subtypes of PDs and between PDs traits [9,10].

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PDs onset often precedes the onset of axis I disorders and PDs are considered by some authors as predisposing conditions and vulnerability factors or predictors for other psychopathology and even for some somatic or functional conditions [11]. Another important issue about PDs research is the existence of two basic approaches to PDs conceptualization: categorical (e.g. in DSM-III-R, DSM-IV, ICD-10 [12–14]) and dimensional (e.g. "Bif Five" model, ICD-11 [15,16]). This makes it difficult to compare the data of individual studies, although each of the approaches has its advantages. However, it should be noted that there is an approach that combines both categorical and dimensional paradigms (e.g. in DSM-5-TR categorical PDs coexist with alternative Model for Personality Disorders, i.e. "hybrid" model [17]). We believe that the latter is highly promising in a scientific perspective.

Most of existing studies show that the proportion of PDs diagnosed in patients with FM appears far greater than that found in the general population [18–20]. However, data about subtypes of PDs related to FM remain controversial. For instance, there is evidence of "dramatic" cluster B PDs predominance (e.g. borderline and histrionic) [4,19,21]. The contrasting data suggest that "anxious" cluster C PDs (e.g. avoidant and obsessive-compulsive) are the most common in FM [22–25]. As well, there are studies that report high rate of both cluster B and C PDs [21]. Yet no data exist about the impact of cluster A PDs, although there are some reports about FM co-occurrence with paranoid and schizoid PDs [22,24,26].

Currently known FM predictors include female sex, impaired sleep, few years of education, sleeping problems, overweight (IBS), rheumatoid and osteo-arthritis, other pain conditions (e.g. frequent headache, persistent back and neck pain, migraine), psychological factors (i.e., alexithymia and psychological distress) [27–29]. But very little is known about personality predictors of FM. Among later are neuroticism and extraversion [30–32]. However, categorically based PDs traits are still underinvested in this regard.

Thus, the aim of the current study was two-fold: 1) to find out the exact PDs and traits among A,B,C clusters that are more frequent and/or severe in FM and 2) to establish PDs traits that may be predictors of FM diagnosis.

2. Materials and Methods

An observational, cross-sectional, comparative study was conducted at Kozhevnikov Neurology Clinic of Sechenov University in Moscow, Russia, between January 2020 and December 2022.

The study sample consisted of a main and a control group. The main group included 53 patients with FM (47 female, mean age 46.8±14.6 years). The control group comprised 33 subjects without FM (24 female, mean age 43.6±12.4 years). The study groups did not differ significantly in mean age, gender distribution and marital status. The frequency of unemployed was significantly higher in FM patients (<.001) as a sign of professional disability due to pour health status. A comparison of the sociodemographic characteristics of the main and control groups of the study is given in Table 1.

Table 1. Demographic characteristics of main (FM patients) and control (Non-FM subjects) groups of the study.

Variables	FM (n=53)	Non-FM (n=33)	P
Mean age, years (SD)	46.8 (14.6)	43.6 (12.4)	.313*
Female, n (%)	47 (88.7)	24 (72.7)	.058**
Male, n (%)	6 (11.3)	9 (27.3)	
Married or with partner, n (%)	29 (54.7)	14 (42.4)	.268**
Unmarried or no partner, n (%)	24 (45.3)	19 (57.6)	
Employed, n (%)	26 (49.1)	31 (93.9)	**<.001****
Unemployed, n (%)	27 (50.9)	2 (6.1)	

* Mann-Whitney U—test, ** Pearson's $\chi 2$ test.

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Organic (non-functional) causes of pain were excluded due to extensive somatic and neurological examination (consultation of rheumatologists and neurologists). In cases where we doubted the nature of any presented pain symptoms, additional medical examinations were performed: laboratory examinations, magnetic resonance imaging (MRI), X-ray computed tomography of the spine, electroneuromyography (ENMG). The examination was available due to the study site location at the large University Medical Centre hosting multi-field hospitals. In addition, the patients with underlying medical conditions that could explain their complaints were excluded from this study.

The diagnosis of FM was based on the criteria of the American College of Rheumatology (ACR, 2016). The mean number of tender points in patients with FM was 11.3±3.3. The mean duration of FM was 7 years and ranged from 2 to 15 years. The mean intensity of pain syndrome (Numeral Rating Scale, NRS) was 7.1 ± 1.9 points.

To classify the severity of fibromyalgia, the Fibromyalgia Impact Questionnaire (FIQR) was used, which is a Likert-type scale containing 21 items divided into three components (function, widespread impact, and severity of symptoms) and which considers a maximum of 100 points, classifying it as mild (0–42 points), moderate (43–59 points), severe (60–74 points) and extreme (75–100 points) [33,34]. The mean FIQR score for FM subjects in our study was 54.1±18.8 and within a range for moderate FM severity. However, 22 (40.0%) FM patients had FIQR score > 59 points (severe FM).

To identify PDs in both the main group and the control group, all study participants were consulted by psychiatrists (D.V.R., O.V.F.). Written consent to the consultation of a psychiatrist was obtained from all participants of the study. The assessment of categorical personality disorders (Axis II) was performed with the Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II) (SCID-II/PQ) [35]. Administration of the SCID-II requires two step approach [36]. First, subjects completed the 119-item SCID-II Personality Questionnaire (SCID-II/PQ), which uses a Yes/No response. Each of the questions corresponds to a diagnostic criterion (DP trait) for either one of the main text PDs or the two additional PDs listed in Appendix B of DSM–IV (i.e., Passive-Aggressive and Depressive PD). After the questionnaire completion, the interviewer identifies those PDs for which respondents endorsed sufficient criteria for PD diagnoses (threshold point scores/traits sufficient for a particular PD). Persons meeting self-report criteria for any given PD were then administered the corresponding portions of the SCID-II interview to assign a formal diagnosis. As there is strong evidence of high overlap between PDs traits and a lack of pure prototypical cases, we used “hybrid” approach. First, we diagnosed PDs according to the categorical paradigm (“one patient may have only one PD”) based on the most prominent personality pattern for each patient. Then we analyzed PDs traits sets peculiar for particular PDs as an overlapping or comorbid entities (dimensions). Mean numbers of particular PDs traits per study group and traits severity (number of traits) in individual patients were assessed. Certain PDs traits were considered as significant when PDs traits sets exceeded the thresholds for SCID-II PDs: avoidant (AVPD ≥4 of 7 points), dependent (DPD ≥5 of 8 points), obsessive-compulsive (OCPD ≥4 of 9 points), passive-aggressive (PAPD ≥4 of 8 points), depressive (DRPD ≥5 of 8 points), paranoid (PRPD≥4 of 8 points), schizotypal (STPD ≥5 of 11 points), schizoid (SCPD≥4 of 6 points), histrionic (HIPD ≥5 of 7 points), narcissistic (≥5 of 17 points), borderline (BPD≥5 of 15 points), antisocial (ASPD≥3 of 15 points).

Statistical analysis. The Mann-Whitney U—test was used to compare groups by quantitative variables with abnormal distribution. Pearson's criterion $\chi 2$ was used to compare groups by qualitative variables. Binary logistic regression analysis was performed to elucidate FM predictors among SCID-II derived personality traits. FM diagnosis was used as a dependent binary variable: positive diagnosis in the main group vs negative diagnosis in the control group. As independent continuous quantitative variables, twelve SCID-II derived PDs traits mean numbers were used. Statistical analysis was carried out using the IBM SPSS Statistics v. 27.

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3. Results

The comparison between main and control group revealed that 56.7% of patients with FM fulfilled criteria for a single PD (n=30) and only 18.2% of control subjects had a PD diagnosis (n=6) while most of controls (n=27, 81.8%) did not reach diagnostic threshold for any PD (p<.001). A half of PD-positive FM subjects were diagnosed with BPD (n=15), followed by OCPD (n=6), STPD (n=3), AVPD and NRPD (n=2 each), PRPD and HIPD (n=1 each). Controls were diagnosed with BPD and OCPD (n=2 each), PAPD and NRPD (n=1 each). See groups comparison by a PD diagnosis in Table 2.

Table 2. Personality disorders SCID-II diagnoses in the main (FM patients) and control (Non-FM subjects) groups of the study.

PDs*	FM (n,%), n=53	Non-FM (n,%), n=33	P**
AVPD	2 (3.8)	0 (0)	0.259
DPD	0 (0)	0 (0)	NA
OCPD	6 (11.3)	2 (6.1)	0.415
PAPD	0 (0)	1(3.0)	0.203
DRPD	0 (0)	0 (0)	NA
PRPD	1 (1.9)	0 (0)	0.428
STPD	3 (5.7)	0 (0)	0.165
SCPD	0 (0)	0 (0)	NA
HIPD	1 (1.9)	0 (0)	0.428
NRPD	2 (3.8)	1 (3.0)	0.856
BPD	15 (**28.3**)	2 (6.1)	**0.012**
ASPD	0 (0)	0 (0)	NA
Any PD	30 (**56.7**)	6 (18.2)	**<.001**
No PD	23 (43.3)	27 (81.8)	

* PD types: AVPD – avoidant, DPD – dependent, OCPD – obsessive-compulsive, PAPD – passive-aggressive, DRPD – depressive, PRPD – paranoid, STPD – schizotypal, SCPD – schizoid, HIPD – histrionic, NRPD – narcissistic, BPD – borderline, ASPD – antisocial., ** Pearson's $\chi 2$ test, NA- not applicable.

As for the PDs traits assessed in comorbidity with each other, FM patients also differed significantly from non-FM subjects in number of traits of particular PDs reaching diagnostical thresholds. AVPD, OCPD, PAPD and BPD traits showed significantly higher frequency in FM patients (p<.05). HIPD and NRPD traits were of borderline significance (p=.05). DRPD, PRPD, STPD, SCPD ASPD traits frequencies did not differ significantly between groups (see Table 3).

Table 3. Personality disorders SCID-II traits in the main (FM patients) and control (Non-FM subjects) groups of the study.

PDs*	FM (n,%), n=53***	Non-FM (n,%), n=33***	P**
AVPD	19 (35.8)	5 (15.2)	**.037**
DPD	10 (18.9)	0 (0)	.08
OCPD	31 (58.5)	11 (33.3)	**.023**
PAPD	16 (30.2)	2 (6.1)	**.007**
DRPD	11 (20.8)	2 (6.1)	.064
PRPD	15 (28.3)	4 (12.2)	.079
STPD	10 (18.9)	3 (9.1)	.218
SCPD	10 (18.9)	2 (6.1)	.096
HIPD	9 (17.0)	1 (3.0)	.05

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NRPD	20 (37.8)	6 (18.2)	.05
BPD	26 (49.1)	5 (15.1)	**.001**
ASPD	4 (7.5)	2 (6.1)	.792

* PD types: AVPD – avoidant, DPD – dependent, OCPD – obsessive-compulsive, PAPD – passive-aggressive, DRPD – depressive, PRPD – paranoid, STPD – schizotypal, SCPD – schizoid, HIPD – histrionic, NRPD – narcissistic, BPD – borderline, ASPD – antisocial., ** Pearson's $\chi 2$ test, *** Total PD traits numbers exceed the number of patients in a group due to comorbidity between PDs traits reaching diagnostical thresholds in individual patients.

The comparison between mean scores of SCID-II-PD traits counted as numbers of identified traits per patient showed significant differences between study groups for DPD, PAPD, PRPD, NCPD and BPD traits (Table 4).

Table 4. Personality disorders SCID-II mean scores comparison for traits in the main (FM patients) and control (Non-FM subjects) groups of the study.

PDs*	FM, mean (SD) n=53	Non-FM, mean (SD) n=33	P**
AVPD	1.92 (2.083)	1.58 (1.821)	.644
DPD	2.40 (2.051)	1.06 (1.298)	**.002**
OCPD	3.79 (1.945)	3.03 (1.591)	.052
PAPD	2.21 (2.231)	1.06 (1.435)	**.030**
DRPD	2.30 (2.145)	1.27 (1.506)	**.031**
PRPD	2.30 (1.967)	1.39 (1.478)	**.043**
STPD	2.30 (2.044)	1.76 (1.521)	.326
SCPD	1.83 (1.503)	1.24 (1.347)	.064
HIPD	1.81 (2.020)	1.18 (1.334)	.263
NRPD	3.83 (2.701)	2.27 (2.066)	**.007**
BPD	4.68 (3.167)	2.27 (2.295)	**> .001**
ASPD	0.51 (1.049)	0.48 (1.064)	.815

* PD types: AVPD – avoidant, DPD – dependent, OCPD – obsessive-compulsive, PAPD – passive-aggressive, DRPD – depressive, PRPD – paranoid, STPD – schizotypal, SCPD – schizoid, HIPD – histrionic, NRPD – narcissistic, BPD – borderline, ASPD – antisocial., **Mann-Whitney U—test.

The binary logistic regression analyses showed that DPD, STPD, SCPD and BPD traits could be significant predictors of FM diagnosis (Cox and Shell $R^2 = 0.305$, Nagelkerke $R^2 = 0.415$). See Table 5.

Table 5. Personality traits as independent variables predicting FM diagnosis in binary logistic regression.

PDs*	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	95% C.I.for EXP(B) Upper
AVPD	-.210	.196	1.148	1	.284	.811	.552	1.190
DPD	.652	.242	7.226	1	**.007***	1.919	1.193	3.086
OCPD	.012	.181	.004	1	.947	1.012	.710	1.442
PAPD	.305	.275	1.231	1	.267	1.356	.792	2.324
DRPD	-.392	.285	1.895	1	.169	.676	.387	1.181
PRPD	-.038	.221	.030	1	.862	.962	.624	1.485
STPD	-.470	.233	4.045	1	**.044***	.625	.396	.988
SCPD	.584	.255	5.231	1	**.022***	1.793	1.087	2.959

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HIPD	.101	.194	.271	1	.603	1.106	.757	1.618
NRPD	.146	.160	.826	1	.363	1.157	.845	1.584
BPD	.336	.164	4.176	1	**.041***	1.399	1.014	1.930
ASPD	-.460	.342	1.810	1	.179	.631	.323	1.234
Constant	-1.443	.725	**3.956**	1	**.047**	.236		

* PD types: AVPD – avoidant, DPD – dependent, OCPD – obsessive-compulsive, PAPD – passive-aggressive, DRPD – depressive, PRPD – paranoid, STPD – schizotypal, SCPD – schizoid, HIPD – histrionic, NRPD – narcissistic, BPD – borderline, ASPD – antisocial. *p<.05.

4. Discussion

In our study, the proportion of PDs diagnosed in patients with FM was greater than that found in non-FM controls (56.7% vs 18.2%) and it is in consistency with other studies showing higher PDs prevalence in FM compared to non-FM controls [18,25].

The PDs frequency in our FM patients (56.7%) is in the middle of the interval for PDs rates provided by other studies: the range from 8.7%-13.5% [19; 37] to 63.8%- 94.2% [18,21,24]. Our rate is quite the same as in the study of Fu et al. (56%) [22] and relatively close to numbers provided by Sadr et al. (40.25%) [4] and Rose et al. (46.7%) [38].

As for particular PDs, our study identified that patients differed significantly from controls only in frequency of BPD diagnosis that was more prevalent in FM (28.3% vs 6.1%). This result is in consistency with some studies that revealed BPD predominance over other PDs in FM [4,21,24,37]. In our study, BPD was followed by OCPD (11.3%) and STPD (5.7%) but the latter two PDs did not differ significantly from controls in frequency.

However, when we compared not only PDs diagnoses but PDs traits as well, it was revealed that FM patients were characteristic by significantly higher frequency and/or severity of traits other than BPD derived. Along with BPD, there was significant difference for other cluster B PDs traits: higher frequency and severity of PAPD traits and higher severity of NCPD traits.

As well, our FM patients differed from controls in cluster C PDs traits: higher frequency of AVPD, OCPD traits and higher severity of DPD traits. High frequency of both AVPD and OCPD in FM was also found in several studies: 10.7%-61.9% and 23.3%-71.1% respectively [21,24–26]. The AVPD alone was found as the most frequent PD in the study of Fu et al [22] and OCPD in the study of Rose et al [38]. The DPD was also found to be among most frequent PDs in FM in the study of Thieme et al., 2004 [37].

Surprisingly, in our study FM patients also had higher severity of PRPD traits that belong to cluster A. PRPD found to be of high frequency only in the study of Fu et al. [22]

In our study, the only PDs traits that did not differ significantly in frequency and/or severity were HIPD, ASPD, STPD, SCPD, DRPD. Regarding HIPD traits, our data conflicted with some research that showed high rates of HIPD in FM [19,21]). This may be due to an overlap of HIPD traits with other cluster B PDs or due to some researchers' preferences to overdiagnose HIPD when prominent dramatic traits are evident.

Similarly, ASPD has not been detected as frequent in any of PDs-in-FM studies that we analyzed. SCPD had been identified with relatively low frequency in FM (13.3%- 15.3%) [24,26]. STPD has not been reported yet as a frequent PD in FM either: Fu et al [22] reported STPD rate of only 12.5%. In our study, STPD rate was also low (5.7 % of STPD in our FM group) but STPD traits were relatively frequent (18.9%).

The inconsistencies regarding particular PDs traits frequencies and severity in our study and in other studies may be addressed due to different PD evaluation approaches (e.g. assessment of PD diagnosis vs PD traits, PDs traits frequency vs severity etc). Thus, results of binary regression analysis that we performed to build a model of PDs traits that may show the most impact in FM may address the issue. Traits that were found as predictors of FM diagnosis in our analysis (STPD, SCPD, BPD, DPD) belong to all three PD clusters: cluster A (STPD, SCPD), cluster B (BPD), cluster C (DPD). It may reflect influence of eccentric, dramatic and anxious PDs clusters as in combination, as in FM subgroups. However, this hypothesis requires further research.

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It is noteworthy that two of PDs (BPD and STPD) found to be FM predictors in our study belong to "severe personality syndromes" by Millon as compared to other PDs [39,40]. DPD is also considered by some authors as a severe subtype of cluster C PDs [41]. These "severe" PDs may by hypnotized to be a reason of extremely high FM comorbidity with other Axis I psychiatric disorders (affective, anxious, obsessive-compulsive etc.). Although this hypothesis also requires confirmation in further research.

There are some limitations in our study. The frequency of some PDs was law due to little sample size. Our results require replication in samples of a larger size. But we believe that approach based on PDs traits analysis may be of value.

The study was held in the tertiary neurological setting, and this may mean some selection bias of more severe FM and PDs cases than in general population, primary medical care or rheumatological settings. There may be also a selection bias as all patients gave their consent for psychiatric consultation. This may partially explain a higher influence of severe PDs (BPD and STPD). But we believe that our findings could be of value for consultation-liaison psychiatric services located in neurological settings.

5. Conclusions

Our results may reflect association between FM and personality traits of all three clusters (A,B,C) in FM patients, possibly with predominance of severe PDs traits, particularly, borderline, schizotypal and dependent. However, the most consistent evidence seems to be for borderline PD.

Author Contributions: Conceptualization, Dmitry Romanov and Vladimir Parfenov; Data curation, Dmitry Romanov, Tatiana Nasonova, Polina Iuzbashian, Evgenia Voronova and Vladimir Parfenov; Formal analysis, Dmitry Romanov, Tatiana Nasonova, Olga Filileeva and Andrey Sheyanov; Investigation, Dmitry Romanov, Tatiana Nasonova, Aleksey Isaikin and Olga Filileeva; Methodology, Dmitry Romanov, Tatiana Nasonova, Aleksey Isaikin and Evgenia Voronova; Project administration, Polina Iuzbashian and Evgenia Voronova; Resources, Aleksey Isaikin, Olga Filileeva and Evgenia Voronova; Software, Andrey Sheyanov and Evgenia Voronova; Supervision, Vladimir Parfenov; Validation, Tatiana Nasonova; Writing – original draft, Dmitry Romanov, Tatiana Nasonova, Andrey Sheyanov and Polina Iuzbashian; Writing – review & editing, Aleksey Isaikin, Olga Filileeva, Evgenia Voronova and Vladimir Parfenov.

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Data Availability Statement: The data presented in this study are available from the corresponding author on request.

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