Correlation between BDNF serum levels and basal clinical characteristics in first episode psychosis

A. Toll Privat[1,2], A. Mané Santacana[1,2,3], D. Bergé Baquero[1,2,3], V. Pérez Solà[1,2,3]

[1]Institut de Neuropsiquiatria I Addiccions, Hospital del Mar, PSMar
[2]Institut Hospital del Mar d'Investigacions Mèdiques (IMIM), Barcelona, Spain
[3]Centro de Investigación Biomédica en Red de Salud Mental

BACKGROUND

Brain-derived neurotrophic factor (BDNF) is the most widely distributed neurotrophin in the central nervous system and is highly expressed in the hippocampus and the prefrontal cortex, areas implicated in schizophrenia symptoms [1].
Recent studies have found that BDNF levels were moderately reduced in schizophrenia samples, including drug naïve and medicated patients, when compared with age-matched healthy controls. They also found an accelerated decrease with age, although they observed a high heterogeneity in BDNF levels between the different studies [2]. Furthermore, their results could not support the greater decrease in men than in women that had previously been observed. The reasons for the heterogeneity in BDNF levels between different studies could be due in part by the fact that some patients were evaluated while on antipsychotic treatment. Atypical antipsychotics may increase, whereas treatment with conventional antipsychotics may decrease, peripheral BDNF levels [3]. Moreover, they did not take into account illness characteristics, such as illness stage.
Therefore, the aim of the present study is identify which factors may affect BDNF levels heterogeneity. We will study the relationship between clinical characteristic at baseline and BDNF serum levels at baseline in a sample of drug - naive first episode psychosis.

METHODS

- 45 drug – naive first episode psychosis patients were consecutively admitted to Hospital del Mar since January 2013 to April 2015 and entered the first episode programme of the institution. The included evaluation were, among others: sociodemographic data, duration of untreated psychosis (DUP), diagnosis, substance use, the Positive and Negative Symptoms Scale (PANSS), Calgary Depression Scale for Schizophrenia and the global assessment functioning scale (GAF).
- Moreover we did fasting blood analysis to measure BDNF serum levels before the administration of antipsychotic treatment.
  We did a T student test to compare BDNF serum levels in relation to gender, cannabis use, tobacco use and diagnosis of affective psychosis. Furthermore we studied the correlation between BDNF serum levels and clinical variables at baseline using Pearson Correlation.

RESULTS

The mean age at onset of illness was 24.71 years (ds=5.758) and most of the subjects were male (64.3%). The mean DUP was 124.74 days and the most frequent diagnosis was Psychosis NOS (57.1%).
The BDNF serum levels at baseline did not show any correlation with clinical characteristics at baseline (age of onset, tobacco use and PANSS subscales). Moreover, we did not find any differences in BDNF serum levels at baseline in relation to gender (56.75 ± 26.17 vs 57.11 ± 36.07, t = -0.034, p = 0.973), tobacco use (62.05 ± 29.13 vs 50.42 ± 27.64, t = 1.284, p = 0,207) and cannabis use (63.46 ± 33.78 vs 50.17 ± 21.39, t = 1.486, p = 0.145) and affective and non – affective psicosis (54.81 ± 29.83 vs 76.04 ± 24.92, t = -1.498, p = 0.144).

Table 1. Clinical and sociodemographic characteristics at baseline.

Age (m, ds)	24.72 (5.758)
Gender (%men)	64.3
Tobacco use (%)	35.1
Tobacco per day (m, ds)	5.32 (10.147)
Cannabis use (%)	53.5
Cannabis per week (m, ds)	8.79 (15.920)
DUP days (m, ds)	124.74 (193.276)
Diagnosis (%)	
Schizophreniform	28.6
Psychosis nos	57.1
Affective psychosis	14.3
PANSSP (m, ds)	27.57 (6825)
PANSSN (m, ds)	21.03 (15.370)
PANSSPG (m, ds)	45.08 (9.185)
PANSST (m, ds)	91.61 (18.289)
GAF (m, ds)	32.08 (11.875)
Calgary (m, ds)	2.91 (4.083)
BDNF (m, ds)	56.82 (28.71)

Table 2. Correlations between BDNF serum levels and clinical characteristics at baseline.

	Age	Tobacco	PANSS P	PANSS N	PANSS PG	PANSS T
BDNF	0.116	0.038	0.149	-0.153	0.177	0.065
(r, p)	0.482	0.836	0.408	0.394	0.333	0.724

DISCUSSION

In our sample of first episode psychosis, there aren't any clinical characteritic at baseline in relation to BDNF serum levels at baseline.
Although, it seems to be a tendency to have a higher BDNF levels in patients without tobacco and cannabis use, and affective psychosis. These results are in agremeent with some recent studies which describe that acute cannabis use can initially increase, whereas chronic use can decrease, peripheral BDNF levels [4].
In relation to tobacco use, it has been shown that nicotine use is associated with the alteration of BDNF levels in serum, and an association between smoking and the BDNF Val (66) Met polymorphism has also been found. But the effects of this association are still unclear [5].
The hypothesis that FEP with affective psychosis have higher BDNF serum levels could be explained by the fact that patients with higher BDNF levels have a better prognosis [6], like patients with affective psychosis [7].
However, more studies should be done to clarify the association between BDNF and clinical characteristics of schizophrenia.

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INAD Institut de Neuropsiquiatria i Addiccions
Parc de Salut MAR Barcelona