European Psychiatry 29 (2014) 153–159

Available online at
SciVerse ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en

Original article

Do psychosis prodrome onset negative symptoms predict first presentation negative symptoms?

J. Lyne [a,b,*], L. Renwick [a,b], K. Madigan [a], B. O'Donoghue [a,b], M. Bonar [a], T. Grant [c], A. Kinsella [a], K. Malone [d], N. Turner [a], E. O'Callaghan [a,e,f,†], M. Clarke [a,e,f]

[a] Dublin and East Treatment and Early Care Team (DETECT) Services, Blackrock Co., Dublin, Ireland
[b] College of Life Sciences, University College Dublin, Belfield, Dublin 4, Ireland
[c] Centre for Support and Training in Analysis and Research (CSTAR), University College Dublin, Belfield, Dublin 4, Ireland
[d] Department of Psychiatry, Psychotherapy and Mental Health Research, St. Vincent's University Hospital / School of Medicine and Medical Science, University College Dublin, Elm Park, Dublin 4, Ireland
[e] School of Medicine and Medical Science, University College Dublin, Belfield, Dublin 4, Ireland
[f] St. John of God Community Services Ltd., Blackrock, Co., Dublin, Ireland

ARTICLE INFO

Article history:
Received 4 December 2012
Received in revised form 21 January 2013
Accepted 13 February 2013
Available online 22 March 2013

Keywords:
Schizophrenia
Psychosis prodrome
Negative symptoms
Expressivity
Experiential

ABSTRACT

Background: Negative symptoms have been previously reported during the psychosis prodrome, however our understanding of their relationship with treatment-phase negative symptoms remains unclear.
Objectives: We report the prevalence of psychosis prodrome onset negative symptoms (PONS) and ascertain whether these predict negative symptoms at first presentation for treatment.
Methods: Presence of expressivity or experiential negative symptom domains was established at first presentation for treatment using the Scale for Assessment of Negative Symptoms (SANS) in 373 individuals with a first episode psychosis. PONS were established using the Beiser Scale. The relationship between PONS and negative symptoms at first presentation was ascertained and regression analyses determined the relationship independent of confounding.
Results: PONS prevalence was 50.3% in the schizophrenia spectrum group ($n = 155$) and 31.2% in the non-schizophrenia spectrum group ($n = 218$). In the schizophrenia spectrum group, PONS had a significant unadjusted ($\chi^2 = 10.41$, $P < 0.001$) and adjusted (OR = 2.40, 95% CI = 1.11–5.22, $P = 0.027$) association with first presentation experiential symptoms, however this relationship was not evident in the non-schizophrenia spectrum group. PONS did not predict expressivity symptoms in either diagnostic group.
Conclusion: PONS are common in schizophrenia spectrum diagnoses, and predict experiential symptoms at first presentation. Further prospective research is needed to examine whether negative symptoms commence during the psychosis prodrome.

1. Introduction

Negative symptoms have been described as a core feature of psychosis [9,21], and a major determinant of functioning and outcome [38,43]. Despite their prognostic importance [15] our understanding of how and when negative symptoms develop remains unclear, although this could assist in preventative or targeted treatment strategies [40].

There are already clues that the psychosis prodrome is important to our understanding of the evolution of negative symptoms. Negative symptoms may be a risk factor for transition to psychosis, both in a clinical high risk and a general population [10,26,29,33,37,42]. Although studies have found a relationship between duration of untreated psychosis (DUP) and negative symptoms [28], others describe an association between negative symptoms and both duration of untreated illness (DUI) and duration of psychosis prodrome (DP) [12,14].

A high prevalence of negative symptoms such as poor functioning and social withdrawal has been reported in the putatively prodromal stage of psychosis [19,23,31,32,45]. These symptoms are more similar to the recently described experiential domain of negative symptoms (avolition-apathy and anhedonia-asociality) than the expressivity domain (affective flattening and alogia) [7,35], however this has not been studied in detail.

To our knowledge only one study has reported on the relationship between clinical features during the psychosis prodrome and negative symptoms at first presentation for psychosis, which found that impaired prodromal functioning

* Corresponding author. DETECT Services, Avila House, Block 5, Blackrock Business Park, Blackrock Co., Dublin, Ireland. Tel.: +353 1 2791700; fax: +353 1 2791799.
E-mail address: johnlyne@mail.com (J. Lyne).
† Deceased author.

0924-9338/$ – see front matter © 2013 Elsevier Masson SAS. All rights reserved.
http://dx.doi.org/10.1016/j.eurpsy.2013.02.003

was associated with greater negative symptoms at first presentation [34]. No study has specifically focused on the relationship between negative symptoms in the psychosis prodrome and negative symptoms at first presentation across diagnostic groupings or across negative symptom domains.

1.1. Aim

The first aim of this study was to report prevalence of psychosis prodrome onset negative symptoms (PONS) in a schizophrenia spectrum and non-schizophrenia spectrum population. The second aim was to determine whether PONS predicted negative symptoms at first presentation with psychosis.

2. Materials and methods

2.1. Participants

This research was conducted in Dublin and East Treatment and Early Care Team (DETECT), an early intervention for psychosis service, located in Dublin between 2005 and 2011. All consecutive in and outpatient presentations with suspected first episode psychosis (< 30 days previous antipsychotic treatment; 16–65 years) were assessed within a defined catchment area of 390,000. Informed consent was obtained from all study participants and ethics approval was obtained from the three participating mental health services. This research is part of a larger study investigating the impact of an early intervention service on first episode psychosis outcomes.

2.2. Measures

The Scale for Assessment of Negative Symptoms (SANS) was used to measure negative symptoms at first presentation [3]. The presence of first presentation expressivity and experiential symptoms were based on the previously published SANS remission criteria [5]. Remission for a SANS subscale was defined as a score less than 3 on that subscale total, and negative symptom domain remission as a score less than three on each of the relevant subscales for that domain (affective flattening and alogia for expressivity; anhedonia-asociality and avolition-apathy for experiential). Participants not in remission were considered to have presence of the subscale or domain in question. As the relevance of attention items to the negative symptom construct has been questioned [27,39] and given they are not included in the SANS remission criteria definition, they were excluded from the analysis.

The Beiser Scale is used to determine symptom onset in psychosis, and is divided into three sections [6]. Beiser I Scale, consisting of 34 items, determines first noticeable sign of symptoms; several of these are similar to negative symptoms. Beiser II Scale, consisting of 35 items, determines first onset of prominent psychotic symptoms, none of which overlap with negative symptoms. Beiser III Scale, consisting of 35 items, is used to determine precipitation of treatment seeking, and was not used in this study. The Beiser Scale was completed by interviews with patients and families.

The presence of a negative symptom component in the psychosis prodrome is supported by previous factor analyses suggesting that negative symptoms form a valid construct in a clinical high risk population [13,18,20,37]. We prioritised the clinical similarity of Beiser I Scale items with SANS items for defining PONS rather than using factor analysis. This allowed a more direct comparison with first presentation negative symptoms, and there were insufficient cases in each diagnostic group to conduct Principal Components Analysis (PCA) for the 34 Beiser I Scale items.

The clinical similarity between Beiser I Scale items and SANS items was determined by consensus opinion among two senior clinicians (J.L. and M.C.). Six Beiser I Scale items were identified as overlapping with SANS items: 'marked reduction or loss of interest, initiative and drive', 'emotional withdrawal', 'blunted affect', 'deterioration in performance of usual activities &/or tasks', 'social withdrawal', and 'deterioration in hygiene &/or dress'. These symptoms include some aspect of each SANS subscale, except for the alogia subscale. PCA on the entire sample subsequently confirmed that the six chosen items loaded on the same component with a loading > 0.4. The only other symptom which loaded onto this component > 0.4 was 'depressive mood' (0.43).

PONS consisted of a binary variable of those with (PONS group) and without (no PONS group) onset of at least one negative symptom in the psychosis prodrome, decided by whether date of onset of one of the six Beiser Scale negative symptom items was during the psychosis prodrome. Beiser I Scale was also used to determine the DP, while Beiser II Scale determined DUP. Due to positive skew, logarithmic transformations were applied to DP and DUP for analysis.

We also considered other psychosis prodrome onset features as potential confounders of the PONS-negative symptom relationship. These included depressive, cognitive and low-threshold positive symptoms. The Beiser Scale items to represent these symptoms were again chosen by consensus opinion (J.L. and M.C.). Items for psychosis prodrome onset depressive symptoms (PODS) included 'Depressive mood' and 'Guilt feeling'; items for psychosis prodrome onset cognitive symptoms (POCS) included 'Confused' and 'Poor concentration'; items for psychosis prodrome onset low-threshold positive symptoms (POPS) included 'Suspiciousness' and 'Strange ideas'. Similar to PONS these consisted of a binary variable of those with and without onset of at least one symptom in the psychosis prodrome.

Several other variables were considered as potential confounders including first presentation positive symptoms which was measured using the Scale for Assessment of Positive Symptoms (SAPS) [4], and depressive symptoms using the Calgary Depression Scale for Schizophrenia (CDSS) [1]. Square root transformation was used to normalise the positively skewed CDSS variable. Diagnosis was determined with the Structured Clinical Interview for DSM IV [16].

Premorbid adjustment was measured using the Premorbid Adjustment Scale (PAS), which is divided into four sections based on premorbid adjustment in different age categories:

- childhood (up through age 11);
- early adolescence (12–15 years of age);
- late adolescence (16–18 years of age);
- adulthood (age 19 and above) [11].

PAS total was calculated by summing all items excluding items from age groups which occurred subsequent to psychosis prodrome onset. Items from age groups which overlapped with psychosis prodrome onset were also excluded to ensure PAS scores were not influenced by prodromal symptoms. The sum of items included was divided by the total possible score for these items to determine PAS total [2].

Intraclass correlation coefficients for SANS global total ranged between 0.67–0.99, and both concordance of SCID diagnosis and kappa values were greater than 0.82 for all assessors. Cases were discussed with a senior clinician at weekly meetings where a consensus diagnosis was reached.

2.3. Statistical analysis

Chi squared tests determined relationship between PONS and presence of first presentation negative symptom domains. Poten-