Title

80. Auditory Target Processing Deficits in Individuals at Clinical High Risk for Psychosis

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Authors

Hamilton, Holly
Bachman, Peter
Belger, Aysenil
et al.

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[1]University of California, San Diego; [2]Kingston University, London; [3]Wright State University; [4]University of Wisconsin; [5]University of California, Irvine

Background: Converging evidence indicates that the prefrontal cortex is critically involved in executive control and that executive dysfunction is implicated in schizophrenia. Reduced dopamine D2/D3 receptor binding potential has been reported in schizophrenia, and the correlations with neuropsychological test scores have been positive and negative for different tasks. The aim of this study was to examine the relation between dopamine D2/D3 receptor levels with frontal and temporal neurocognitive performance in schizophrenia.
Methods: Resting-state 18F-fallypride positron emission tomography was performed on 20 medication-naive and 5 previously medicated for brief earlier periods patients with schizophrenia and 19 age- and sex-matched normal controls. Striatal and extra-striatal dopamine D2/D3 receptor levels were quantified as binding potential using fallypride imaging. Magnetic resonance images in standard Talairach position and segmented into gray and white matter were co-registered to the fallypride images, and the AFNI stereotaxic atlas was applied. Two neuropsychological tasks known to activate frontal and temporal lobe function were chosen, specifically the Wisconsin Card Sorting Test (WCST) and the California Verbal Learning Test (CVLT).
Results: Images of the correlation coefficient between fallypride binding and WCST and CVLT performance showed a negative correlation in contrast to positive correlations in healthy volunteers. Prefrontal Brodmann area 10 and striatal areas showed the greatest differences. Heat maps of correlation patterns of fallypride binding potential and neuropsychological performance were obtained. Differences in correlation patterns between healthy volunteers and patients were confirmed with Monte Carlo permutation analysis. Correlation coefficient histograms also showed significant differences in shape.
Conclusion: The results of this study demonstrate that lower fallypride binding potential in patients with schizophrenia may be associated with better performance and consistent with previous studies that failed to find cognitive improvement with typical dopamine-blocking medications.

80. AUDITORY TARGET PROCESSING DEFICITS IN INDIVIDUALS AT CLINICAL HIGH RISK FOR PSYCHOSIS

Holly Hamilton*[,1], Peter Bachman[2], Aysenil Belger[3], Ricardo Carrion[4], Erica Duncan[5], Jason Johannesen[6], Gregory Light[7], Margaret Niznikiewicz[8], Brian Roach[1], Jean Addington[9], Carrie Bearden[10], Kristin Cadenhead[7], Tyrone Cannon[6], Barbara Cornblatt[4], Thomas McGlashan[6], Diana Perkins[3], Larry Seidman[11], Ming Tsuang[7], Elaine Walker[5], Scott Woods[6], and Daniel Mathalon[1]
[1]San Francisco VA Health Care System; University of California, San Francisco; [2]University of Pittsburgh; [3]University of North Carolina; [4]Zucker Hillside Hospital, [5]Emory University; [6]Yale University; [7]University of California, San Diego; [8]Boston Veterans Affairs Healthcare System; [9]University of Calgary; [10]University of California, Los Angeles; [11]Massachusetts Mental Health Center

Background: Reductions in the auditory P300 event-related potential (ERP) component are well established in schizophrenia and reflect early attention-mediated auditory processing deficits. Two subcomponents of P300 are evident depending on oddball task conditions; P3b is elicited by infrequent target stimuli and reflects top-down attention allocation, whereas P3a is elicited by infrequent non-target novel distractor stimuli and reflects bottom-up orienting of attention. The present study examined whether auditory P300 abnormalities precede illness onset and are associated with future clinical status by assessing both target P3b and novel P3a in individuals at clinical high risk for psychosis (CHR) and healthy controls (HC) collected as part of the North American Prodrome Longitudinal Study.
Methods: CHR (n = 552) and HC (n = 235) participants completed baseline EEG recording during an auditory oddball task. CHR participants were further categorized by clinical status after 24 months of study participation (n = 298) and included a subgroup who transitioned to psychosis (CHR-Transition; n = 73), a subgroup who did not transition but remained symptomatic (CHR-Symptomatic; n = 135), and a subgroup who did not transition and was in symptom remission (CHR-Remission; n = 90).
Results: CHR participants had reduced target P3b and novel P3a amplitudes relative to HC (*P*s < .001). There was also an effect of 24-month clinical status group on both P3b and P3a amplitudes ($P < .001$ and $P = .006$, respectively). Planned contrasts revealed that compared to HC, CHR participants had smaller target P3b amplitudes at baseline ($P < .001$). In addition, CHR-Transition participants had attenuated P3b amplitudes at baseline relative to all CHR participants who did not transition to psychosis ($P = .037$). Furthermore, both CHR-Transition and CHR-Symptomatic had smaller P3b amplitudes than both HC (*P*s < .001) and CHR-Remission ($P = .003$ and $P = .005$, respectively), while P3b of CHR-Remission did not differ from HC at baseline ($P > .05$). In contrast, although CHR participants also had smaller novel P3a amplitudes than HC at baseline ($P < .001$), P3a did not differentiate CHR-Transition participants from CHR participants who did not transition within 24 months ($P > .05$). Despite CHR-Transition and CHR-Symptomatic having smaller P3a amplitudes than HC ($P = .028$ and $P = .002$, respectively), they did not differ from CHR-Remission (*P*s > .05) at baseline. Moreover, target P3b predicted the time to psychosis onset in CHR participants over and above novel P3a amplitude ($P = .024$).
Conclusion: Both target P3b and novel P3a are reduced in individuals identified to be at risk for developing a psychotic disorder, and P3b in particular appears sensitive to future transition to psychosis. Given this association with clinical outcomes, results implicate target P3b as a neurophysiological vulnerability marker for psychosis.

81. RELATIONSHIP BETWEEN UNTREATED PSYCHOSIS AND INTRINSIC CORTICOSTRIATAL CONNECTIVITY IN PATIENTS WITH RECENT-ONSET SCHIZOPHRENIA

Deepak Sarpal*[,1], Delbert Robinson[2], Christina Fales[3], Todd Lencz[2], Miklos Argyelan[2], Katherine Karlsgodt[4], Juan Gallego[5], Majnu John[3], John Kane[2], Philip Szeszko[6], and Anil Malhotra[2]
[1]Hofstra Northwell School of Medicine; [2]Hofstra Northwell School of Medicine; The Zucker Hillside Hospital; Feinstein Institute for Medical Research; [3]The Zucker Hillside Hospital, Feinstein Institute for Medical Research; [4]University of California, Los Angeles; [5]Weill Cornell Medical College; [6]Icahn School of Medicine at Mount Sinai

Background: Patients with first-episode psychosis experience psychotic symptoms for a mean of up to 2 years prior to initiation of treatment, and long duration of untreated psychosis (DUP) is associated with poor clinical outcomes. Meanwhile, evidence compiled from numerous studies suggests that longer DUP is not associated with structural brain abnormalities. To date, few studies have examined the relationship between DUP and functional neuroimaging measures. In the present study, we used seed-based resting-state functional connectivity to examine the impact of DUP on corticostriatal circuitry.
Methods: We examined patients with first-episode schizophrenia who underwent resting state scanning prior to entering 12 weeks of prospective treatment with second-generation antipsychotic drugs. DUP was quantified