

Neuroinflammation in temporal cortex in schizophrenia



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INTRODUCTION

There is increasing evidence that neuroinflammation is associated with schizophrenia.

Neuroinflammation is characterized by the activation of microglial cells. Increased expression of the translocator protein is a biomarker for microglial activation and can be measured *in vivo* using the positron emission tomography (PET) ligand [¹¹C]PK11195.

OBJECTIVE

The aim of the study was to assess the regional distribution of activated microglial cells in schizophrenia patients using [¹¹C]PK11195 and PET.

METHODS

- Dynamic 3D scan (ECAT EXACT HR+)
- Data analysis with receptor parametric mapping together with supervised cluster imaging analysis to define the reference region
- Regions of interest: frontal, temporal, parietal, and occipital cortex and cerebellum (automatic procedure)
- Outcome: binding potential (BP_{ND})

Table 1. Characteristics of schizophrenia patients

Patients characteristics	Mean ± SD
Age	24 ± 3
Age of onset	21 ± 3
Disease duration	3 ± 2
PANSS total score	53 ± 10
PANSS positive subscale	12 ± 3
PANSS negative subscale	15 ± 4
PANSS general psychopathology subscale	25 ± 4

RESULTS

- Overall significant effect of group (F(5)=5.7, p=0.005)
- Significant difference in BP_{ND} values of temporal cortex between patients and controls (F(1)=5.5, p<0.05)
- No significant differences in mean [¹¹C]PK11195 BP_{ND} in the other areas tested

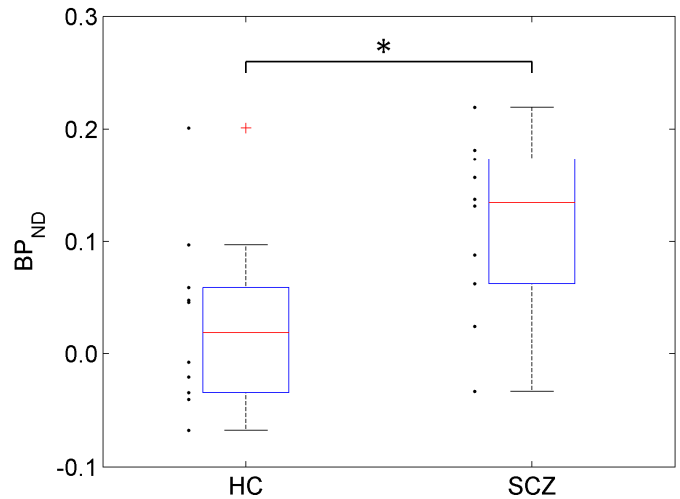


Figure 1. Boxplots showing [¹¹C]PK11195 binding potential (BP_{ND}) in the temporal cortex of healthy controls (HC) and schizophrenia patients (SCZ) (*p<0.05).

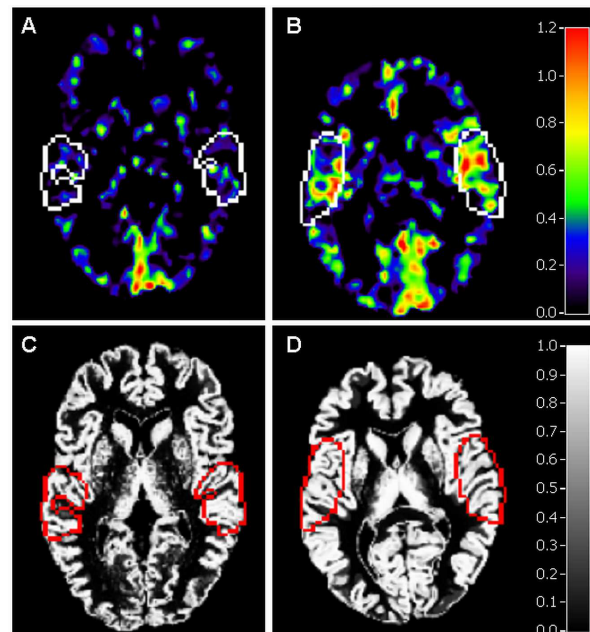


Figure 2. Example of [¹¹C]PK11195 BP_{ND} parametric images and corresponding segmented T-1 MRI images of (A,C) a healthy control and (B,D) a schizophrenia patient. The temporal region is indicated with a white (A,B) and red (C,D) line.

DISCUSSION

[¹¹C]PK11195 BP_{ND} in the temporal cortex was higher in schizophrenia patients than in healthy controls, suggesting focal neuroinflammation in schizophrenia.

