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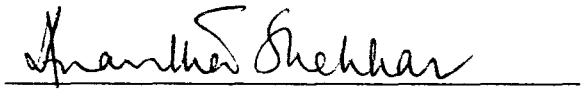
**Dopamine Transporter Signal in Patients with Schizophrenia:  
Relevance to Clinical Symptoms and Pathophysiology**

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Submitted to the faculty of the University Graduate School  
in partial fulfillment of the requirements  
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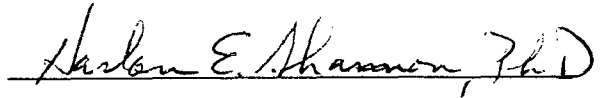
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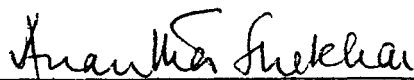


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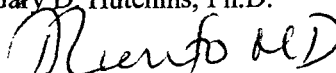
To investigate the role of dopamine innervation in schizophrenia and tardive dyskinesia, this study examined the amount of dopamine transporter (DAT) signal in normal controls, schizophrenic subjects without tardive dyskinesia (NTD), and schizophrenic subjects with tardive dyskinesia (TD), using positron emission tomography and the selective DAT radioligand [ $^{11}\text{C}$ ]- $\beta$ -CFT. The results indicate that in the caudate and putamen, NTD subjects have a higher amount of DAT signal compared to controls and TD subjects, and that TD subjects appear to have a decrease in DAT signal compared to controls and NTD subjects. Significant negative correlations were found with the amount of DAT signal in schizophrenic subjects and the severity of the patients' negative symptom scores as measured by PANSS. In addition, a novel method to objectively analyze [ $^{11}\text{C}$ ]- $\beta$ -CFT scan data was developed. This technique, Frequency Histogram Analysis (FHA), appears to be a promising new way to examine data from PET scans that utilize radioligands for receptors and transporters. The FHA also yielded data supportive of the above results, indicating that the populations of DAT in control, TD, and NTD subjects are indeed different. These findings indicate that the dopamine system is possibly related to components of the pathology of schizophrenia as well as the generation of tardive dyskinesia.



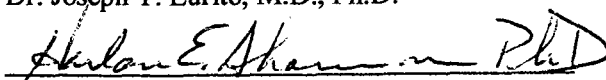
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