

appears to involve the direct stimulation of 5HT<sub>1A</sub> receptors; these characteristic motor effects are enhanced by blockade of 5HT<sub>2A</sub> receptors. An equivalent motor syndrome has been reported in man following the co-administration of SSRI's with MAOI's. However, while there is no evidence to show that clinically SSRI's alone cause such profound motor effects, there is evidence that fluoxetine exacerbates extra pyramidal reactions that are initiated by chronic neuroleptic use due to idiopathic Parkinsonism. Dystonic reactions have also been reported to occur in a minority of patients treated with this SSRI, while experimental studies in non-human primates have shown that SSRI's can produce an oral dyskinesia and exacerbate haloperidol induced dystonia. The question arises whether the movement disorders, produced by some SSRI's is a class effect arising as a consequence of an inhibition of dopaminergic function in the basal ganglia or a unique property of specific SSRI's due to their action on sigma receptors. In the rat, a high density of sigma-2 receptors is found in the red nucleus, and cerebellum, a regions concerned with the control of head and upper limb movements. Both fluoxetine and fluvoxamine cause moderate dystonia and torticollis following acute injection into the red nucleus, whereas sertraline and citalopram increased spontaneous chewing and grooming behaviour without causing dystonia. The results of the experimental and clinical studies suggest that an increase in 5HT in motor regions of the brain can cause a disruption in aspects of motor behaviour probably directly by reducing dopaminergic function in the basal ganglia or by stimulating sigma 2 receptors in the rubro-cerebellar pathway.

#### SEROTONIN AND THE EXTRAPYRAMIDAL SYSTEM — A NEUROLOGICAL PERSPECTIVE

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Neurological disease is increasingly recognised as a significant cause of psychiatric illness. Studies at this complex interface have contributed to our understanding not only of the mechanisms of the neuropsychiatry of neurological disease but also of mechanisms underlying neurological dysfunction in primary psychiatric illness. Neurological disease of sub cortical structures involving the paramedian-limbic zone of the brain appears to be particularly associated with neuropsychiatric and movement disorders. Extrapyrmidal dysfunction resulting in movement disorders (Parkinson's disease, Huntington's disease, sub cortical small vessel disease) is commonly associated with neuropsychiatric disorders and, conversely, movement disorder is increasingly recognised as an integral part of psychiatric illness such as in schizophrenia and as a result of drug treatment of psychiatric disease (neuroleptic and antidepressant drugs).

Serotonin appears to be involved in a wide range of physiological and behavioural processes and represents an important neurotransmitter system in the paramedian limbic zone of the brain that appears to have important actions in the extrapyramidal system. The rapidly developing knowledge of the neuropharmacology of serotonin in the central nervous system has led to the development of a considerable number of pharmacological agents and drugs (serotonin selective reuptake inhibitors) capable of interacting with the serotonin system.

Serotonin has been implicated, at least in part, in the neuropsychiatric disorders seen in Parkinson's, Huntington's disease and in some forms of cerebrovascular disease. Depression, anxiety and dopaminomimetic psychosis in Parkinson's disease appear to be responsive to drugs active at serotonergic sites such as serotonin selective reuptake inhibitors and atypical neuroleptic drugs. Serotonin is also implicated in the wide range of psychiatric illness seen in Huntington's disease, including depression, emotional lability, impulsivity, obsessive-compulsive disorder and suicide. Emotionalism after stroke also appears to respond to serotonin reuptake inhibitors.

Detailed study of the neurological diseases involving the extrapyramidal system in terms of abnormalities of monoaminergic transmission offers exciting new therapeutic options for neurological and primary psychiatric disease.

#### SEROTONIN CENTRAL SYNAPTIC TRANSMISSION AND THE REGULATION OF THE EXTRAPYRAMIDAL SYSTEM: THE PSYCHIATRIC PERSPECTIVE

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It is becoming clear that dysfunction in the extrapyramidal system, in particular the limbic striatum, is associated with the development of a wide range of psychopathology. Anatomical links between these brain regions and associated cortical and subcortical structures have been discussed in terms of parallel circuits through these sites in increasing detail over the past 10 years. However, understanding of the neurotransmitter correlates of these circuits, of their functional significance and of their modulation by other cerebral systems has lagged behind the anatomical developments.

It was established more than 25 years ago that in rats serotonin could effect extrapyramidal function and alter the release of dopamine in the striatum. However, it is only relatively recently that these neurophysiological observations have been incorporated into the investigation and management of human psychiatric states. This review will focus on several psychiatric conditions in which consideration of interactions between serotonergic and dopaminergic activities in the extrapyramidal system may shed light on the underlying pathophysiology and may suggest novel opportunities for psychopharmacological intervention. In particular, the review will aim to synthesise findings from several psychiatric states in order to suggest why the extrapyramidal system, which until relatively recently was largely of interest only to neurologists working with movement disorders, is now implicated in the development and management of a wide range of psychopathology. Data will be drawn from studies of the 'serotonin-dopamine antagonist' concept in the development of antipsychotics, from the extrapyramidal side-effects associated with antidepressant therapy, from neurochemical theories of drug dependence and from observations made in patients with idiopathic Parkinson's disease, obsessive compulsive disorder and the Gilles de la Tourette syndrome.

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#### ST7. Do teams work? A multidisciplinary perspective on collaborative care

*Chairman: J Leff*

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Abstracts not received.