The Role of \( \beta \)-Adrenoceptor Blockers in the Treatment of Psychiatric Disorders

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Summary

Although \( \beta \)-adrenoceptor blockers (in particular, propranolol) have been used in the treatment of psychiatric disorders for many years, their indications, extent of efficacy and place in therapy remain unclear. This overview assess the published reports on the use of these drugs in psychiatric disorders.

It can be concluded that \( \beta \)-adrenoceptor blockers may be helpful in the management of some forms of anxiety disorders, including performance anxiety and
other types of situational anxiety, especially when somatic symptoms are prominent. In the same way, alcohol (ethanol) withdrawal syndrome of moderate severity, antipsychotic-induced akathisia and lithium-induced tremor seem to be responsive to this drug class. Because of the fact that they are well tolerated, the use of β-adrenoceptor blockers in these disorders should be considered whenever drug treatment is being contemplated.

In contrast, the efficacy of high doses of β-adrenoceptor blockers in schizophrenia remains unestablished. However, they may be of benefit in some patients presenting with aggressive behaviour due to organic brain disease. Studies have shown a high rate of improvement in this condition, especially in patients who have previously failed to respond to other treatments. Finally, preliminary results suggest that β-adrenoceptor blockers may be useful as adjunctive medication in the treatment of depression and chronic anxiety, but further investigations are needed in these areas of patient management.

β-Adrenoceptor blockers (β-blockers) have been used in many areas of medicine, primarily in the cardiovascular sphere, for more than 30 years. Propranolol was introduced as a treatment for angina pectoris and hypertension in the mid-1960s. Since then, several other β-blockers have been developed and have enjoyed increasing clinical use. Literally thousands of well controlled studies have testified to the efficacy and have documented the adverse effects of this class of drug. Table I lists some of the currently available agents.

Unfortunately, such systematic evaluations have not yet permeated into the psychiatric sphere. Thus, although propranolol was used in the treatment of anxiety and related disorders soon after its introduction, the use of β-blockers in other areas of psychiatry is less well established. Although β-blockers have been reported to be helpful in the management of some psychiatric disorders, including anxiety disorders, alcohol (ethanol) withdrawal, antipsychotic-induced akathisia and lithium-induced tremor, generally speaking their indications, extent of efficacy and place in therapy remain unclear.

In addition, the mode of action of these drugs in psychiatric disorders has never been satisfactorily clarified. However, an increasing interest has been taken in β-blockers, not least because of their relative safety. Thus, more careful and expert investigations will probably define which patients are most likely to respond to β-blockers and for whom such treatment is most appropriate.

This article describes the pharmacokinetic and pharmacological properties of β-blockers and then reviews the published reports on the use of these agents in the treatment of psychiatric disorders.

1. Pharmacological Effects

1.1 General Pharmacodynamic Properties

The β-blockers differ regarding their selectivity for β-receptors, degree of protein binding, intrinsic activity and lipid solubility (see table I). In addition, some compounds (alprenolol, oxprenolol, pindolol and propranolol) have a direct action on cell membranes, i.e. a membrane-stabilising (local anaesthetic) effect. Another pharmacological property of many β-blockers, and more particularly of nonselective β-blockers such as oxprenolol, pindolol and propranolol, is blockade of serotonin (5-hydroxytryptamine; 5-HT) receptors, although the effects on serotonin mechanisms are probably quite complex.

1.2 CNS Effects and Possible Mechanisms

Recent reviews of β-blockers have noted that there is little replicated evidence of neuropsychological side effects of these drugs. Nevertheless, CNS effects of β-blockers usually include a variety of reactions such as hallucinations, night-