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Dexmedetomidine

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α_2-Adrenoceptor agonists have sympatholytic, sedative and analgesic properties, all of which have been exploited for perioperative use. The most selective and specific of these agents to undergo clinical trials is dexmedetomidine. Shown to have multiple beneficial effects, dexmedetomidine has been evaluated recently for use in intensive care management.

Dexmedetomidine has several physiological effects. It decreases blood pressure and heart rate, reduces plasma catecholamine levels, causes sedation and analgesia, reduces anaesthetic and analgesic requirements, and prevents shivering. These effects are dose-dependent and highly predictable. Most of the adverse effects of dexmedetomidine are extensions of its pharmacological profile, e.g. hypotension, bradycardia, dry mouth and vasoconstriction.

As a sedative, dexmedetomidine is unique in several ways. First, the mechanism and site of sedative action of this compound are known. Secondly, when it is administered at an appropriate dosage, patients are readily arousable. Thirdly, even at high doses, while providing profound sedation, dexmedetomidine has minimal effects on respiration. Although likely to be marketed as a sedative, dexmedetomidine should not be perceived only as a sedative because it also has significant sympatholytic effects and some analgesic properties.

The future of dexmedetomidine will depend not only on its efficacy, but on the management of this potent drug in an appropriately selected patient population. Inappropriate use may increase the risk of serious adverse effects such as sinus pauses, second degree heart block, and reduced cardiac output. Future studies must investigate the safety and efficacy of prolonged dexmedetomidine use and monitor dose response in patients with high sympathetic tone. Although comparative studies have not been conducted, the main difference between dexmedetomidine and clonidine appears to be their half-life. ▲