HIGHLIGHTS

Epidural Clonidine Treatment for Refractory Reflex Sympathetic Dystrophy

Richard L. Rauck, M.D., James C. Eisenach, M.D., Kyle Jackson, M.D., Larry D. Young, Ph.D., Joan Southern, R.N.

REFLEX sympathetic dystrophy (RSD) is a syndrome that can pose problems in its management because it can be of extended duration and may be relatively refractory to treatment with opioids. Preclinical work has shown that spinal α_2 adrenoceptors can regulate nociceptive processing by an action on small primary afferents. Preclinical data in several species have shown the safety of spinal clonidine, and clinical studies have shown its efficacy in postoperative and cancer pain. Rauck *et al.*, in this issue of the journal (page 1163), examined the effects of the α_2-adrenoceptor agonist clonidine given epidurally to patients suffering from a pain state associated with RSD. In these studies, two doses of clonidine (300 and 700 μg) and placebo were delivered in a blinded randomized fashion through cervical or lumbar epidural catheters, respectively, for patients suffering from RSD of the upper or lower extremities. These studies revealed a reduction in the visual analog scale rating score for patients with either an upper or a lower extremity syndrome, with no difference in pain score between the two clonidine doses (although there were fewer side effects with the lower dose.) After the study, 19 patients continued receiving clonidine for periods ranging from 7 to 225 days with continued improvement in the pain report. These well controlled studies thus provide a clear indication that spinal α_2 receptors can regulate the nociceptive processing that is engaged by the pathologic processes evoked by the original injury leading to the hyperpathia common to this syndrome.

Several points are of interest. First, although the mechanisms of this effect are not clear, the dissociation between the short-lasting hypotension and the longer lasting pain relief suggests that the changes in pain did not arise simply from a block of sympathetic function. Second, there was no difference between the analgesic efficacy of the two doses used. This suggests that there may be a plateau effect in the efficacy of the agent. Whether this plateau is due to the fact that clonidine is a partial agonist or that the pain state in these patients has several components, one of which is α_2-insensitive, cannot be determined. Conversely, the ability to produce prominent pain relief with either of the two doses suggests that yet further reductions in dose may be possible (resulting in even fewer side effects). Given that previous studies in cancer patients and postoperative pain patients have used larger doses to obtain pain relief, one might argue that the α_2-responsive component of the present pain state is, in fact, extraordinarily sensitive to this spinal modulation. These data suggest that further investigations are in order. Several questions that arise relate first to the consideration of the long-term efficacy of spinal clonidine. Second, it would be insightful to have crossover studies using epidural morphine and clonidine to determine whether there are definable differences in the efficacy of μ-opioid *versus* α_2 receptors in regulating the RSD pain state. Such information would shed light on mechanism. Finally, ample preclinical data have shown that there is a significant μ/α_2 interaction that may lead to further reduction in dose and enhancement of efficacy. In short, this is a provocative report.

Tony L. Yaksh, Ph.D.

Use of the Electrospinogram for Predicting Harmful Spinal Cord Ischemia during Repair of Thoracic or Thoracoabdominal Aortic Aneurysms

Klaus-Dieter Stühmeier, M.D., Klaus Grabitz, M.D., Bernd Mainzer, M.D., Wilhelm Sandmann, M.D., Jörg Tarnow, M.D.

MANAGEMENT of patients with thoracoabdominal aneurysms remains one of the great challenges in cardiovascular surgery and anesthesia, and severe spinal cord injury is one of the common complications of such procedures. Many methods have been tried in an effort to prevent paraplegia, including systemic and in-