Intrathecal Morphine: A New Method of Obstetric Analgesia?

The imaginative and provocative study by Yaksh and his colleagues, reported in this issue of the Journal, prompts some editorial musings and, not surprisingly, raises as many questions, if not more, than are answered or even answerable.

The quest for a totally effective and completely safe method of pain relief for the parturient is an ancient one. In the mid-nineteenth century, following the discovery of surgical anesthesia, its application to obstetric patients soon became controversial on both ecclesiastical and medical grounds. Among the objections to the use of anesthesia during childbirth, one loomed large: the issue of safety. In the words of Channing in 1848, "My object was to learn if this use of it (ether) had been safe, safe both to mother and to child; and thus, to contribute something towards settling the most important point concerning its future use, namely, that of its safety." [Emphasis in the original.] To this day, in scientific inquiry, before government agencies and in the lay media, the same question is still asked, with widely divergent answers.

Most of the desiderata of obstetric pain relief may be satisfied by intrathecal morphine. Hypothetically, its site of action at the opiate receptors in the spinal cord should provide a controllable area of analgesia without actions on other sensory or motor functions. In turn, one would expect, as shown in the present study, little or no effect on the processes of labor and delivery. Since the dose of morphine is small and absorption from the subarachnoid space slow, little drug should be found in maternal or fetal blood. Thus, one may avoid unwanted effects in the mother and, perhaps more importantly, in the fetus and newborn. The latter is of special interest in view of the recent controversy surrounding the possible short- and long-term effects of perinatally administered drugs on the developing fetal and infant brain. Finally, and very appealing, is the possibility, not present with any other form of analgesia or anesthesia, of the ability to reverse the effects of morphine by the administration of a specific antagonist, naloxone.

All of these safety-related issues are properly raised by Yaksh and his associates. Their early studies in rats and rabbits, although clearly exploratory in nature with relatively crude endpoints, are very promising and will undoubtedly stimulate many more studies. Other questions such as controllability, spread, density of block, reversibility, and choice of drug and dose remain open. An obvious drawback to intrathecal morphine is the need to perform a lumbar puncture and perhaps to insert a subarachnoid catheter. The possibility of post-lumbar-puncture headache, so annoying a complication in the healthy postpartum patient, is still present, in contrast to lumbar epidural analgesia.

The question of efficacy remains unanswered. What is the relationship, if any, between the pain of labor and delivery in women and alterations in responses to thermal stimulation in rats and rabbits? Carl Sagan, in his recent book, The Dragons of Eden, states, "So far as I know, childbirth is generally painful in only one of the millions of species on Earth; human beings. This must be a consequence of the recent and continuing increase in cranial volume. . . . Childbirth is painful because the evolution of the human skull has been spectacularly fast and recent."4

One must question the applicability to the human situation of data derived from experimental pain in animals. The assessment of the need for and effectiveness of pain-relieving interventions in the woman in labor remains one of the most controversial areas in obstetrics. For example, the effectiveness of various methods of psychoprophylaxis in decreasing or eliminating the need for pharmacologic pain relief remain unproven, largely because of the scientific and ethical problems inherent in designing and carrying out a definitive study.5 The psychological, social, cultural, environmental and physiologic factors that influence pain, its perception, and behavioral responses, seem especially complex in obstetrics. The plethora of methods and techniques advocated as both safe and effective, including the various psychoprophylactic regimens, hypnosis, acupuncture, transcutaneous electrical stimulation, as well as more conventional methods, indicates not only the difficulties in evaluating pain relief in obstetrics, but also the controversy over currently available, medically acceptable methods. The clarification of these issues in patients, for both old and new modalities of pain relief, is necessary and will not be easy.

The theoretical basis for the use of intrathecal morphine is briefly but carefully discussed by Yaksh

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and his associates, and is not further elaborated here. However, it is interesting that of the 26 references cited, 22 are dated 1975 or later. This admittedly crude index suggests the pace at which our concepts of pain mechanisms and control are changing.

The putative advantages of pain relief by intrathecal morphine are great. Preliminary findings in man with intractable pain of inoperable cancer, although limited in scope, are encouraging, but support the notion that evaluation will not be simple. It is ironic but perhaps fitting that the earliest studies of this potentially revolutionary concept should be directed at both the beginning and the end of life.

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References