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Back to the Future: Epidurography

David W. Johnson M.D

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In this issue of the *AJNR*, Johnson (no relation) et al (page 697) describe their experience with the use of fluoroscopy and epidurography in the placement of epidural steroids. The authors assert that the subarachnoid injection of corticosteroids is a serious complication that can be avoided with the use of epidurography. A series of 5334 outpatient epidural steroid injections were performed after epidurography with nonionic contrast to confirm needle tip position. Only four minor complications were encountered (0.07%), and the dura was never transgressed.

At first glance, presenting such conclusions regarding the use of fluoroscopy and nonionic contrast to the readership of the *AJNR* would be like Jerry Falwell preaching to the choir. Why bother? Furthermore, most radiologists, neuro- and otherwise, are doing fewer myelograms with the firm establishment of MR as the primary imaging technique for the diagnosis of spinal disease. And when was the last time anyone intentionally did an epidurogram? Remember Thorotrast?

Before you treat the conclusions of this paper too lightly, consider this. For many years spinal injection therapy has been the purview of the anesthesiologists. Their familiarity with blind epidural needle placement for epidural anesthesia has made them the natural choice for placement of other spinal medication.

Yet, spinal injection is an enlarging field in neuro- (and orthopedic-) radiology. Work is beginning to emerge in our journal (1), and the role of the neuroradiologist in dealing with back pain is growing (2). There is a debate going on among those who perform spinal injection procedures, and I believe it reflects the differing nature of their training as anesthesiologists or as radiologists. Is fluoroscopy medically necessary for the performance of translaminar (interlaminar) lumbar epidural steroid injections? For a more careful review of this issue, I recommend you visit the following website:

http://www.spinalinjection.com/newsltrs/nl1997j/contro.htm.

In the above-cited debate, Dr. Eckman, who supports fluoroscopy, eludes to the further usefulness of epidurography and Johnson et al take epidurography to its logical conclusion. Even though Johnson's series was not constructed with control and experimental groups, it becomes obvious nevertheless that their complication rate is very low. Because the number of complications in this study are few, one may assume this follows a Poisson distribution. A Poisson distribution is a probability distribution for the number of outcomes occurring during a given time interval or in a specified region. The number of outcomes that occur in one interval is independent of the number that will occur in any other interval. In an attempt to answer the question how many complications might occur in the next 5300 procedures, one could calculate a 95% confidence interval. A 95% confidence interval on a complication rate of .07% over 5300 patients ranges from .02% to .19%. That means there is a 95% likelihood that in the next 5300 patients there will be a minimum of 1 and a maximum of 11 minor complications. This means the complication rate is still very low, and it still remains to be seen what may be the complication rate of dural tap with epidurography, but it should be lower. The most recent reference I could find regarding dural tap complication rate without fluoroscopy quoted a rate of about 0.5% (3). This lies well outside the 95% confidence interval for Johnson's results.

Baby boomers are getting older, the incidence of back pain is increasing, and more of these procedures will be done in the future. These (I should say we) are some of the most informed patients we encounter in our practices. They will expect a high-tech approach to spinal injection, and will demand a greater accountability in the success or failure of the procedure. Fluoroscopy and epidurography should enhance the efficacy of epidural steroid injection, and lower the risk of dural tap. Radiologists trained in the use of fluoroscopy and epidurography can meet this growing need.

DAVID W. JOHNSON, M.D.
Associate Professor of Radiology
University of Pittsburgh Medical Center
Pittsburgh, PA

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