To the Editor—We read with interest the article by Johnson and Swanson on procaine neurotoxicity, and are interested in why they decided to use undiluted 10% procaine instead of 5% procaine prepared with 10% procaine and equal volumes of either 10% glucose or cerebral spinal fluid.

When the first report of transient radicular irritation with spinal anesthesia using 5% lidocaine appeared, our department decided to change to the routine use of 10% procaine for spinal anesthesia. We decided to use a 5% concentration as advocated by Winnie in his use of procaine for differential spinals in 1978. The statement that recent anesthesia texts do not recommend using a maximum concentration of 5% procaine is incorrect. Two anesthesia texts from our library either stated that spinal procaine should not be injected in concentrations exceeding 5%, or that spinal procaine in a strength of 5% or less is not irritating to nervous tissue and meninges. The recommendation to use 5% procaine is not referenced in these texts, but may have come from papers published in the 1930s that described neurotoxicity with 10% spinal procaine. It is true that there are no current studies available describing the neurotoxicity of spinal procaine, although it has been stated that “local anesthetics all have the potential to be neurotoxic particularly in concentrations and doses larger than those used clinically.” It appears that 10% spinal procaine may have that potential and should not be used for spinal anesthesia.

We still feel that 5% spinal procaine remains a viable alternative to lidocaine, because there is no evidence at present that it is neurotoxic.

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To the Editor—I read the article “Procaine Spinal Neurotoxicity” by Drs. Johnson and Swanson with great interest. At the same time, I became curious about their use of 10% procaine for spinal anesthesia. The risks of intrathecal administration of highly concentrated procaine were outlined before, in both a clinical report describing 14 cases of cauda equina syndrome after durocaine (10% procaine with a vehicle of glycerin were outlined before, in both a clinical report describing 14 cases of cauda equina syndrome after durocaine (10% procaine with a vehicle of glycerin and ethanol) and an animal study suggesting that the induced cauda equina syndrome resulted not from drug additives but procaine itself.

In 1991, Rigler et al. described four cases of cauda equina syndrome after spinal anesthesia using 5% lidocaine or 0.5% tetracaine. Their report resulted in rediscovering and widely reporting the serious reality of the risks associated with the highly concentrated local anesthetics in use for spinal anesthesia. Although various mechanisms for local anesthetic neurotoxicity have been advocated, the mechanisms remain unclear. However, it is widely accepted that the use of highly concentrated local anesthetics is associated with a substantial risk for cauda equina syndrome. Eisenach and Yaksh also indicated the importance of this risk in an editorial, citing the dictum of Paracelsus that “there is no safe drug, only safe doses or concentrations.”

Why did the authors, who had previously raised concerns about the potential risks of procaine spinal anesthesia, decide to use 10% procaine? I cannot find an acceptable justification in their report.

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References

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Why Was 10% Procaine Used?

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