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Preservative-Free Is Not Antioxidant-Free

To the Editor:—In recent years the practice of giving a small (3-ml) test dose injection of lidocaine containing a 1:200,000 dilution of epinephrine before giving a larger epidural dose has become popular. The purpose of test-dosing with lidocaine and epinephrine is to determine whether the epidural catheter tip is misplaced either in the subarachnoid space or the intravascular space. There are epidural kits being manufactured that provide the anesthetist with premade "test-dose" solutions of lidocaine with epinephrine (1:200,000). In at least one of these kits the label on the test dose vial states: "No preservatives added." This may be misleading to the anesthetist, in that the sodium metabisulfite is considered an antioxidant for epinephrine and not a preservative for the lidocaine. All prepackaged local anesthetic solutions containing epinephrine contain sodium metabisulfite.

In 1980 case reports began to appear implicating 2-chloroprocaine as neurotoxic.^{1,2} Subsequent clinical reports and animal studies suggested that the low pH and metabisulfite are possible causes of neurotoxicity and that the spinal nerve roots are more susceptible than peripheral nerves.^{3,*} The standard epidural kit containing the lidocaine with epinephrine used for giving a test dose contains 0.5 mg/ml sodium metabisulfite and has an acidic pH. If 3 ml is given as a test dose, a total of 1.5 mg sodium metabisulfite is given. If, however, a fresh solution of lidocaine with epinephrine (1:200,000) is made (obtaining the epinephrine from the standard 1-ml vial of epinephrine, which itself contains 1 mg/ml sodium metabisulfite), then only 0.015 mg sodium metabisulfite per 3 ml would be given. Hence, by making a fresh solution, 100-fold less sodium metabisulfite is injected.

To my knowledge, no case reports of neurotoxicity have been reported after inadvertent subarachnoid injection of a test dose using a prepackaged test-dose solution containing lidocaine with epinephrine.

* Gissen AJ, Datta S, Lambert D: The chloroprocaine controversy. II. Is chloroprocaine neurotoxic? *Reg Anaesth* 9:135, 1984

It may be that the neurotoxicity of this prepackaged solution is minimal or nonexistent because of the small volumes (3 ml) used in the test dose. However, the use of similar premade solutions containing epinephrine in larger volumes for dosing the catheter without absolute certainty of the location of the catheter tip can lead to complications other than high or total spinal anesthesia. The anesthetist should be aware that labeling of solutions "no preservatives added" means that no methylparaben is present but that antioxidants, such as EDTA or metabisulfite, may still be present. Neurotoxicity may result if larger volumes of sodium metabisulfite are unintentionally injected into the subarachnoid space. Although the risks may be minimal, we should know what risks we are taking and not be misled by the terms preservative-free versus antioxidant-free.

H. V. DE VERA, M.D., M.S.
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