

**TITLE:** EPIDURAL EPINEPHRINE TEST DOSES :  
INFLUENCE OF AGING

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All previous studies defining the efficacy of epinephrine (EPI) test doses were performed in young, healthy, individuals. However, aging is known to decrease the heart rate response to  $\beta$ -agonists (1). This study is designed to evaluate the influence of aging on the reliability of epinephrine test doses.

After informed consent and Institutional Review Board approval, we studied 30 patients, 21-81 yo, ASA 1-3, who were free from cardiovascular disease. All patients were fasting, non-premedicated, and in the supine position. 3 ml boluses of 1% lidocaine either plain or mixed with 10 or 15 mcg of EPI were injected into an antecubital iv line, at 5 min intervals, in a random and double blind fashion. EKG and blood pressure (Finapres) were continually recorded. We used paired t-test, ANOVA, and regression analysis, and considered  $p < 0.05$  significant.

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**TITLE:** SUBLIMINAL CONCENTRATIONS OF PROCAINE AND DIETHYLAMINOETHANOL REDUCE THE EXCITABILITY, BUT NOT THE ACTION POTENTIAL AMPLITUDE OF HIPPOCAMPAL PYRAMIDAL CELLS

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**Introduction:** Both general and local anesthetics have been shown to raise firing threshold of peripheral nerve at concentrations which do not reduce action potential (AP) spike amplitude (1,2). We determined whether brain cells respond to local anesthetics in a similar manner.

**Materials and Methods:** 20 male Sprague-Dawley rats were anesthetized and decapitated. A single intracellular microelectrode was inserted into pyramidal cells in hippocampal slices to measure firing threshold and AP spike amplitude (3). Responses were measured before and after each cell was exposed to one drug concentration.

**Results:** Data are reported from studies in 34 pyramidal cells. Inhibition of pyramidal cell excitability and AP amplitude by increasing concentrations of diethylaminoethanol (DEAE) is illustrated in fig 1. Procaine produced similar effects to DEAE and was roughly 10-fold more potent. Neither drug significantly changed input resistance.

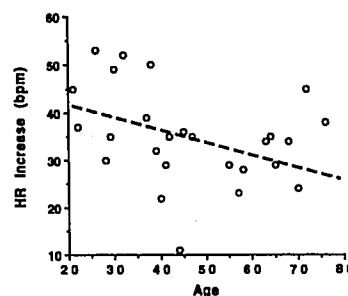
**Discussion:** Both drugs reduce excitability at concentrations well below those which reduce AP spike amplitude. At higher concentrations, both drugs reduce AP spike amplitude and further increase firing threshold. Inhibition of AP spikes occurred at similar concentrations to those which inhibit isolated frog and rat nerves (4). These findings offer an explanation for the prolonged central effects of procaine infusions, and suggest a locus at which local and general anesthetics may interact. Procaine (or chloroprocaine) metabolism to DEAE, an active metabolite, may

HR and SBP significantly increased after all EPI injections, but did not change after plain lidocaine. Increasing age decreased the HR response after 10 mcg EPI ( $p=0.006$ ), but did not affect the response to 15 mcg EPI ( $p=0.25$ ). Aging did not alter the increases in SBP observed after 10 or 15  $\mu$ g of EPI ( $p>0.3$ ).

Although all patients increased their heart rate by at least 20 bpm after the 15  $\mu$ g dose, we found that increasing age correlated with a significant decrease in responsiveness after the 10  $\mu$ g dose. Thus we conclude that 15  $\mu$ g remains the appropriate test dose in elderly patients.

**Ref's 1.** Vestal RE: Clin Pharmacol Ther 26:181, 1979

**Figure 1** Heart rate increase after 10  $\mu$ g of Epinephrine in 3 ml 1% Lidocaine



not terminate procaine's (or chloroprocaine's) pharmacological activity.

**References:**

1. J Physiol (Lond) 411:493, 1989
2. Inactivation of Hypersensitive Neurons, p331, 1987
3. Brain Slices, pp381-431, 1984
4. Anesthesiology 68:501, 1988

