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72:769, 1990

Correction

To the Editor:—We failed to state in our article[1] that Ovassapian *et al.*[2] proposed that glycine may produce visual disturbance. It was our oversight, and there was no intention to not give credit where credit is due.

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Cardiovascular Responses to Noxious Stimuli in Experimental Animals: "Pressor or Depressor"?

To the Editor:—We read with interest the recent reports by Gibbs *et al.* of cardiovascular reflex responses to noxious stimuli in rats.[1,2] In their study, noxious stimuli to the rat's tail were applied during halothane anesthesia by clamping with a rubber-shod clamp, a commonly used and "standard" method of evaluating anesthetic potency for animal experiments.[3] In rats, increasing depth of halothane anesthesia reversed the cardiovascular responses to the noxious stimulation from the pressor (hypertensive) to the depressor (hypotensive) responses.

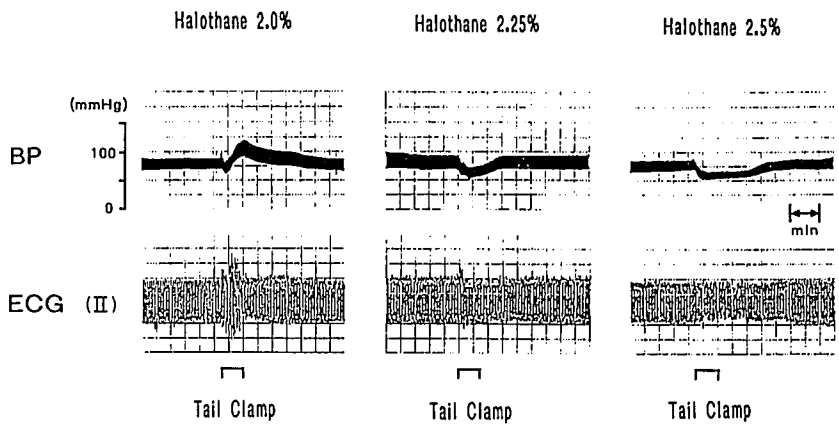

FIG. 1. Typical arterial blood pressure responses to tail clamp at inspired halothane concentration of 2%, 2.25%, and 2.5% respectively, in a spontaneously breathing rabbit. Baseline deviations in ECG tracings indicate animal movements.

The purpose of this letter is: 1) to suggest an alternative method of applying a consistent level of noxious stimuli in a manner that is easily reproducible; and 2) to report similar findings regarding the hemodynamic responses elicited by Gibbs *et al.* when either form of noxious stimulus is applied in another species.

After clamping the tail of rabbits anesthetized with halothane, we observed similar cardiovascular responses to those seen in rats; higher inspired concentration of halothane (2.25% and 2.5%) converted the pressor response to the depressor response (fig. 1). We also evaluated another form of noxious stimulus, *i.e.*, electrical current, and found similar and consistently reproducible results. Application of the electrical stimuli (Grass S48 Stimulator) enabled us to obtain more predictable and reproducible cardiovascular responses than using the tail clamp method. These responses were either of a pressor or a depressor nature or both depending upon the intensity of stimulation and inspired halothane concentration (fig. 2).

These cardiovascular reflex responses were not significantly affected by the pretreatment with anticholinergic drug (atropine sulfate) or bilateral vagotomy. Thus, our findings are in agreement with those of Gibbs *et al.*

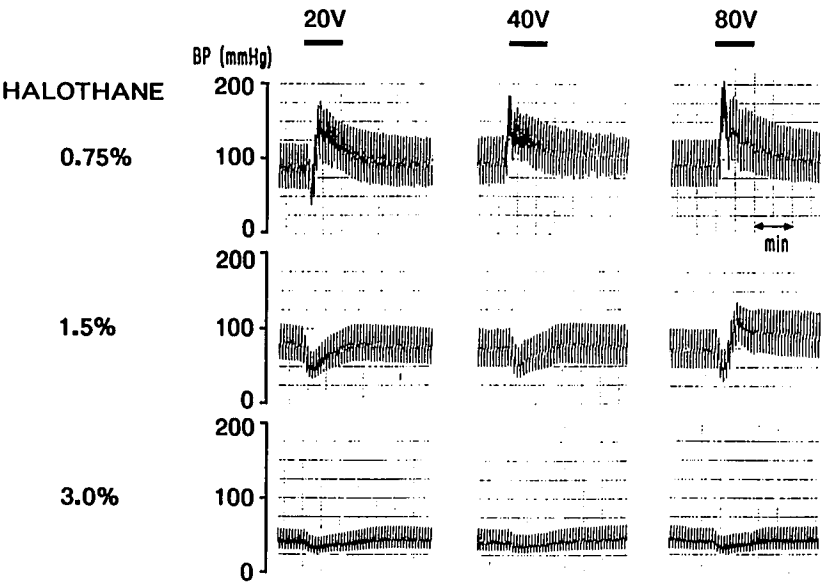

FIG. 2. Arterial blood pressure (BP) responses to electrical stimulation (square wave, 10 ms, 10 Hz) applied to the rabbit's tail with different intensities (20 V, 40 V, 80 V) and different inspired halothane concentrations (0.75%, 1.5%, 3% respectively). Black bar indicates duration of stimulation for 60 s.

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A Pain in the Neck—and Shoulder

To the Editor:—The phrenic nerve has been injured and anesthetized accidentally on several occasions during central venous cannulation. Permanent injury to the phrenic nerve during internal jugular vein cannulation was reported first in 1980.[1] In 1982, we reported a case of transient diaphragmatic paralysis[2] similar to that reported by Schiessler *et al.*,[3] except that our patient experienced respiratory distress and required therapy with continuous positive airway pressure. This patient was our fourth personally observed case of diaphragmatic weakness following internal jugular vein cannulation. Subsequently, we have treated another such case. It is possible that other patients have had similar results but were asymptomatic, thus preventing detection. Perhaps the complication is much more frequent than previously suspected. Both in our report and during other nonreported occasions, most patients have complained of shoulder pain prior to the injection of local anesthetic. Therefore, when patients complain of pain during the cannulation of the internal jugular vein, they should be asked to locate the pain. If the pain is identified in the shoulder, it is likely that the phrenic nerve is being stimulated or injured by the tip of the needle, which should be redirected. Further, no local anesthetic should be injected until the needle is repositioned and the patient is free of shoulder pain.

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Cardiac Arrest in a Day Surgery Patient

To the Editor:—In a recent Case Report,[1] Dr. Hanson suggested that a presumed cardiac arrest during induction of general anesthesia in the Day Surgery Unit (DSU) at the University of Pennsylvania might have been avoided by a more thorough preoperative evaluation.

First, from the description provided in the Case Report, it is not clear that the patient even experienced a cardiac arrest. Both the automated blood pressure cuff and the pulse oximeter are unreliable in the presence of acute hypotension and bradycardia. Second, to suggest