3. Shannon M, Merola J, Lovejoy FH Jr: Hypotension in severe tricyclic antidepressant overdose. Am J Emerg Med 1988; 6(5):439–42

4. Hoffman JR, McElroy CR: Bicarbonate therapy for dysrhythmia and hypotension in tricyclic antidepressant overdose. West J Med 1981; 134(1):60–4

5. Marshall JB, Forker AD: Cardiovascular effects of tricyclic antidepressant drugs: Therapeutic usage, overdose, and management of complications. Am Heart J 1982; 103(3):401–14

(Accepted for publication July 8, 1997.)

Anesthesiology
1997; 87:1260

In Reply:—Dr. Rosenthal raises two issues concerning our report—alternative treatments and the possibility that the hypotension resulted from acute effects, and not long-term effects, of tricyclic antidepressants (TCAs).

We focused our discussion on the controversy of whether direct-acting or indirect-acting sympathomimetics should be given to manage TCA-induced hypotension, an issue of major importance to anesthesiologists dealing acutely with this problem intraoperatively, rather than focusing on the various therapies. We agree with Dr. Rosenthal that the American Heart Association (AHA) guidelines are a mainstay of treatment, and we followed the guidelines; our patient's arterial blood gas pH was 7.47 and the $PaCO_2$ was 30 mmHg, thus the pH was in the target range the AHA recommends. Reporting the blood gas values would have provided readers with this information. Instead of using bicarbonate to alkalinize the patient with TCA cardiotoxicity, we induced respiratory alkalosis by hyperventilating the lungs. This approach has the same end-effect—it decreases the free form of the drug in plasma. However, even this approach does not guarantee the success, as was seen in our case and in the case presented by Sener *et al.*[2] Another treatment for TCA-induced cardiotoxicity is the administration of glucagon (10-mg bolus followed by an infusion of 10 mg over 6 h).[2] The role of glucagon in managing TCA-induced cardiotoxicity is a dose-dependent increase in intracellular cyclic AMP synthesis and reduction of calcium efflux from the cells.[3] Sener *et al.*[2] found that administration of sodium bicarbonate and volume expansion in their patient with TCA-induced cardiovascular collapse had no effect, whereas administering glucagon immediately normalized the low blood pressure.

Although we did not emphasize the possible acute effects of TCAs, we acknowledged that such effects may be important because for the subsequent surgery, our patient had not taken his TCA dose for 24 h and did not experience severe hypotension. However, an acute effect cannot account completely for the cardiotoxicity of the aborted first surgery because, as we stated, the blood pressure and heart rate were still low during the subsequent surgery, never exceeding 110/65 mmHg or 80 beats/min. We then concluded that discontinuing TCAs, even 24 h before surgery, may be beneficial because the plasma TCA concentration has a dose-dependent inhibitory effect on sympathetic nerve activity.[4] Whether this acute effect is a result of TCA centrally inhibiting sympathomimetic actions[4] or blocking the peripheral α_1 receptors[5] is not certain, but we did not ignore the possibility of an acute effect, as Dr. Rosenthal implies.

Juraj Sprung, M.D., Ph.D.
Peter K. Schoenwald, M.D.
Staff Anesthesiologists
Department of General Anesthesiology
The Cleveland Clinic Foundation
9500 Euclid Avenue
Cleveland, Ohio 44195
Electronic mail: sprungj@cesmtp.ccf.org

References

1. Sprung J, Schoenwald PK, Levy P, Krajewski LP: Treating intraoperative hypotension in a patient on long-term tricyclic antidepressants: A case of aborted aortic surgery. ANESTHESIOLOGY 1997; 86:990–2

2. Sener EK, Gabe S, Henry JA: Response to glucagon in imipramine overdose. Clin Toxicol 1995; 33:51–3

3. Farah AE: Glucagon and the circulation. Pharmacol Rev 1983; 35:181–217

4. Szabo B, Schultheiss A: Desipramine inhibits sympathetic nerve activity in the rabbit. Naunyn Schmiedebergs Arch Pharmacol 1990; 324:469–76

5. Ludwig J, Halbrugge T, Vey G, Walter J, Graefe KH: Haemodynamics as a determinant of the pharmacokinetics of and the plasma catecholamine responses to isoprenaline. Eur J Clin Pharmacol 1989; 37:493–500

(Accepted for publication July 8, 1997.)