

that a combination of thiopental, 600 mg (6 mg/kg) iv, and lidocaine, 400 mg (4 mg/kg) iv is a "standard" induction dosage regimen for unpremedicated outpatients is inappropriate in our opinion. The cardiovascular depressant effects of this drug combination could produce profound hypotension and bradycardia in otherwise healthy fasted outpatients. Finally, it is not clear how "admitting this patient to the hospital on the night prior to surgery and ordering a routine chest film, electrolyte panel, complete blood count, urine analysis, and electrocardiogram" would have prevented the problem. We are not convinced that a "borderline" chest film and electrocardiogram would have led to a more exhaustive evaluation of an apparently healthy, active young man. However, if one chooses to eliminate routinely ordered preoperative screening laboratory tests, it is essential that a thorough history and physical exam be performed prior to ambulatory surgery.

Apparently the "moderate" mitral regurgitation that was noted on the echocardiogram was not detected during cardiac auscultation. In addition, the history of alcohol usage was not elicited, and consequently, the search for alcoholic cardiomyopathy or hepatic insufficiency was not instituted. Were the two best questions to search for alcohol usage²—"Have you had a drink in the last 24 hours?" and "Have you ever had a drinking problem?"—even asked? Were these questions included on the health survey this patient was given? We would recommend that these questions be included on every health survey designed specifically for preoperative purposes.³ While being thorough is often difficult in the brief time we spend preoperatively with surgical outpatients, either a check-off form or an automated system can be used to improve our efficiency.⁴

In summary, it seems to us that the problem described might have been avoided had either an adequate preoperative history been taken (and testing indicated by it pursued) or more usual doses of the iv anesthetics been administered (*e.g.*, 3–4 mg/kg of thiopental with or without 1–2 mg/kg of lidocaine).⁵ After all, didn't this problem result from an anesthetic overdosage rather than inadequate preoperative laboratory testing?

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Cardiac Effects of Anabolic Steroids

To the Editor:—I read with great interest the case reported by Hanson¹ wherein a presumably healthy individual harboring a significant cardiomyopathy that becomes evident at the time of induction of anesthesia. By all appearances a more rigorous work-up preoperatively would not be called for based upon the present accepted standards of care. There is, however, one element here that may require greater investigation. Historically this patient is a fit individual suggested by the history of semiprofessional ice hockey play and continued weekend softball games. Recent literature has documented the prevalence of use of anabolic steroids among participants of many age groups in sports.^{2,3} The effects of anabolic steroid use on the heart include increased risk of coronary artery disease and hence infarction secondary to changes in lipid metabolism and concentric myocardial hypertrophy with decreased ventricular volume possibly altering pressure-volume relationships within the heart.^{3–5} There is no information I am aware of regarding long-term changes in myocardial function after discontinuation of these drugs. As part of the preoperative history and physical

examination evidence of involvement (current or past) in organized sports or weight lifting should suggest the question of androgenic steroid use; if this is elicited further, cardiac work up may be needed such as an ECG and chest x-ray or even echocardiogram if the former are suspicious. There is no mention of steroid use in this instance so we have no way of knowing if this is the case; the patient refused follow up leaving several unanswered questions. I bring this to the attention of the reader as a history of sports activity may not only indicate health and fitness but disease as well.

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In Reply:—I would like to thank Drs. Roizen and White for their thoughtful and provocative comments on the conduct of the anesthetic and our conclusions surrounding the events detailed in the Case Report. The point that I wished to make in presenting this patient is the potential fallibility of conscientious physicians and "check-off form(s) or . . . automated system(s)" in screening for unusual disease processes in unlikely patients.

Postoperative evaluation permits the use of much higher magnification in the scrutiny of adverse events, as Drs. White and Roizen have nicely demonstrated in their letter, and yet a cause could not be established for this patient's cardiac event immediately after the case. He specifically denied a drinking problem, although his family later confirmed a significant alcohol intake. In a quiet recovery room, on listening specifically for adventitious heart sounds, only a soft fourth heart sound could be heard. An EKG showed persistent sinus tachycardia, right atrial enlargement, left axis deviation, a nonspecific intraventricular conduction delay, and inverted anterolateral T waves. Assuming this was his baseline EKG and that it was available preoperatively, "a more exhaustive evaluation of (this) apparently healthy, active young man" would have occurred at this institution. This does not negate Dr. Roizen's contention¹ that routine preoperative EKGs are unwarranted in patients under 40. Unfortunately, some patients at increased risk for anesthesia will pass through reasonable screening procedures.

In summary, we anesthetized a seemingly vigorous patient with titrated, albeit generous doses of anesthetic which resulted in a cardiac arrest (by any other name). We subsequently discovered an occult disease process which accounted for his near demise. Specifically addressing some of the points made by Drs. Roizen and White, we do not ask

questions relating to alcohol consumption in our health survey, and perhaps should; but the knowledge that the patient consumed large amounts of alcohol along with his athletic history would justify the use of more induction agent rather than less. As an internist, and a veteran of the Veteran's Hospital system, I would also stress that it is not standard practice to evaluate all patients with a history of alcohol usage for alcoholic cardiomyopathy.

I would like to thank Dr. Herschman for describing the concerns surrounding anabolic steroid use in athletes. This patient's anesthetic was administered in 1987 at a time when the prevalence of steroid use was unrecognized, and I suspect its risks are still underestimated. We did not question this patient about steroids, although I should note that this patient had a dilated cardiomyopathy rather than the concentric hypertrophy noted by Dr. Herschman.

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Transtacheal Jet Ventilation. I.

To the Editor:—Benumof and Scheller provide a comprehensive review of the theory and technique of transtacheal jet ventilation.¹ I agree that this equipment should be immediately available to every anesthesia practitioner. It should also be available on at least one hospital-wide crash cart connected to an oxygen cylinder with a DISS

fitting, as shown in their table 3, as emergencies often occur in hallways and other areas remote from a piped-in oxygen source.

However, the authors state that as a last alternative, an iv catheter can be connected to a self-inflating bag-valve unit *via* a 15-mm adaptor for a 3-mm ID endotracheal tube. Yealy *et al.*² have shown that while