

anesthetic technique for their model, SNP requirements might have been consistent with those used clinically.

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In reply: In our cat studies describing the effects of sodium nitroprusside on ICP, pentobarbital was used exclusively as our sedative-hypnotic. Inspired gases included room air or variations of oxygen and carbon dioxide tensions. Baseline blood pressures were high and, consequently, excessive doses of nitroprusside were also high. In applying the model to the clinical setting, Doctor Berry's point is well taken: excessive doses of sodium nitroprusside are reduced when combined with adequate general anesthesia. However, it is worth mentioning two practical circumstances in which higher doses and the described administrative caution may pertain: first, in the ICU patient with Cushing's triad of elevated ICP, elevated blood pres-

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The Consequences of Not Applying Sensory Decision Theory

To the Editor:—The recent editorial, "On the Possible Painful Consequences of Misapplying Signal Detection Theory," by Ominsky,¹ provides a clear description of the sensory decision theory model as applied to pain perception. He correctly points out that the model provides more information about the response to painful stimulation than does the traditional psychophysical threshold measure. We concur, particularly since the traditional pain threshold may also be computed from sensory decision data.

However, he concludes his editorial by wondering whether this added information will predict the clinical usefulness of analgesic drugs, or will be a hindrance or even misleading. By addressing only the problem of analgesics and possible changes in but one of the parameters of sensory decision theory, discriminability, the reviewer has skirted the major contribution of our study.² We were particularly concerned with the combined use of the discriminability and the pain

REFERENCES

1. Marsh ML, Aidinis SJ, Naughton KVH, et al: The technique of nitroprusside administration modifies the intracranial pressure response. *ANESTHESIOLOGY* 51:538-541, 1979
2. Palmer RF, Lasseter KD: Sodium nitroprusside. *N Engl J Med* 293:294-297, 1975
3. Fray, JCS, Siwk LG, Strull WM, et al: Influence of dietary sodium on renin activity and arterial pressure during anesthesia. *Am J Physiol* 231:1185-1190, 1976

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sure, and reduced heart rate who is perhaps not a candidate for general anesthesia but needs blood pressure control and, second, in a similar patient with suspected but unmeasured intracranial hypertension who must undergo anesthetic induction (with endotracheal intubation) but also needs prior blood pressure control. In both circumstances the effective doses of sodium nitroprusside will be predictably higher than those in the comparable anesthetized state.

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report criterion indices to evaluate drugs such as diazepam that may possess both mood-altering and analgesic properties. Our study demonstrated that the increased morphine threshold was caused by a combination of reduced discriminability (the neurosensory component) and raised pain report criterion (the psychological component). In contrast, the increased diazepam threshold was largely due to a change in the pain report criterion. However, there also was a decrease in discriminability, which was masked in the threshold measure.

The discriminability measure $P(A)$ is independent of the report of "pain." Thus, sensory decision theory represents the sole approach to the study of those drugs which influence both the subject's mood and his pain sensation. It is well known that a decrease in anxiety will decrease the incidence of pain reports. Thus, a raised pain threshold following the administration of an antidepressant or an

anxiolytic may well be the result of reduced anxiety, not analgesia. However, there may be a specific analgesic effect in addition to the pain criterion change. Discriminability provides the only marker for an analgesic effect in the presence of a mood shift. We agree that sensory decision theory results should be treated with caution, and further confirmation with a variety of other drugs is needed. There is always a risk of drawing the wrong conclusion from the application of any technique, but history teaches us that there may be a far greater risk in failing to examine the possible merits of a new technique, especially one that, as the reviewer himself points out, provides more information than the old.

We protest the inference that we "equate" decreased discriminability with analgesia, or that studies that employ sensory decision theory actually tell whether the pain experience has been altered. Pain is a subjective sensation; it can never be known to an outside observer. This problem is prominent in the conventional threshold measure, for the experimenter must accept the subject's report as true. In contrast, sensory decision discriminability is independent of whether the sensation is reported as painful or not. Decreased discriminability is certainly not analgesia (nor is a raised pain threshold), but

there is mounting evidence that it will prove to be a useful correlate.

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REFERENCES

1. Ominsky AJ: On the possible painful consequences of misapplying signal-detection theory. *ANESTHESIOLOGY* 51:491-492, 1979
2. Yang JC, Clark WC, Ngai SH, et al: Analgesic action and pharmacokinetics of morphine and diazepam in man: An evaluation by sensory decision theory. *ANESTHESIOLOGY* 51: 495-502, 1979

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Radial Arterial Pseudoaneurysm Following Cannulation

To the Editor:—Wolf and Mangano¹ are to be congratulated for bringing to the attention of the anesthesia community the problem of radial-artery pseudoaneurysm following apparently uneventful radial-artery cannulation and decannulation. However, the authors' statement that "Late complications, such as [radial-artery] pseudoaneurysm, have been suggested as possibilities, but have not been documented [following radial-artery cannulation]" is in error. Other investigators have clearly documented the possibility of radial arterial pseudoaneurysm following frequent radial-artery puncture² and following uncomplicated radial-artery cannulation.³ Russell *et al.*³ described three cases of pseudoaneurysm following radial-artery cannulation. In one patient, a 2 × 3.5-cm pseudoaneurysm of the radial artery was observed three days following a seven-day cannulation. In a second patient, a week following a five-day radial-

artery cannulation, a radial arterial pseudoaneurysm was observed; it eroded the skin, ruptured, and necessitated emergency arterial ligation. Interestingly, in a third patient, a 2.5 × 2-cm radial arterial pseudoaneurysm was not observed until 18 months after radial-artery cannulation, at which time the patient came to the hospital for a separate surgical procedure.

Russell *et al.*³ recommend that radial arterial ligation, as described in the case reported by Wolf and Mangano,¹ not be performed as the treatment of choice for radial arterial pseudoaneurysm. Rather, they suggest that, following excision of the radial arterial pseudoaneurysm, end-to-end anastomosis of the radial artery be performed, or if direct repair is not possible without excessive arterial tension, that venous interpositional grafts be applied. Considering the rare, but possible, hazard of extremity necrosis following radial arterial thrombosis,⁴ it would