

Should OTFC continue to prove to be safe, efficacious, and useful in the remaining on-going studies, an appropriate trade name will be carefully chosen before FDA approval to avoid public confusion and unnecessary alarm. Of course, we hope our semantic mistakes of the past do not necessitate a long or difficult re-education process in the future.

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### An Increase in Serum Creatine Kinase Concentration due to Variant Creatine Kinase during Preterm Labor

*To the Editor:*—We report a case in which serum creatine kinase (CK) was abnormally high with the appearance of variant CK, complicating the preoperative evaluation.

A 34-yr-old, 33 week pregnant woman, suffering from hydroamnios and fetal hydrops, was admitted because of impending premature labor. Administration of ritodrine, a  $\beta_2$  adrenoceptor agonist, was started immediately. Three days after admission, serum examination revealed a serum CK concentration of 1124 IU/l (normal, less than 80). CK electrophoresis showed a broad CK-MM band and an abnormal band of variant CK between CK-MM and CK-MB, which we regarded as macro CK type 1 from its electrophoretic mobility (fig. 1).<sup>1</sup> Although

muscle disease or myocardial injury were suspected, there was no symptom, sign, or history of such a disorder. We continued to administer ritodrine and the serum CK concentration remained increased. Cesarean section was performed under general anesthesia 7 days after the admission. We did not use halothane or succinylcholine, and there was no problem in anesthetic management. Variant CK disappeared by the following day, and serum CK concentration became normal in 2 days.

Macro CK type 1 is a complex of CK and immunoglobulin, and appears or disappears for unknown reasons in a wide variety of disorders.<sup>1</sup> It has no diagnostic importance, but confusion with myocardial infarction has also been reported in cardiac patients.<sup>2</sup> Relevance between macro CK type 1 and malignant hyperthermia has also been recently suggested.<sup>3</sup>

The appearance of variant CK during pregnancy has not been reported. Either the hydroamnios or the use of ritodrine may have caused these abnormalities in serum CK. A few years ago, we experienced another case similar to the present one. That patient also suffered from hydroamnios and was given terbutaline, a  $\beta_2$  stimulant. Fortunately, discontinuance of the drug decreased the CK concentration from 5000 IU/l to 81 IU/l in 10 days, following disappearance of variant CK.

Electrophoresis of CK revealed no increase in CK-MB and CK-BB, which suggested that the myocardium, myometrium, and brain were not injured. Although CK-MM seemed to be increased, its abnormally broad peak indicated distortion by the variant CK. In addition, there was no clinical evidence of muscle disease or myopathy. Thus, the increase in serum CK concentration was due to the appearance of variant CK.

Detailed examination may be necessary when an increased serum CK concentration and variant CK are found preoperatively, although it does not indicate MH susceptibility.

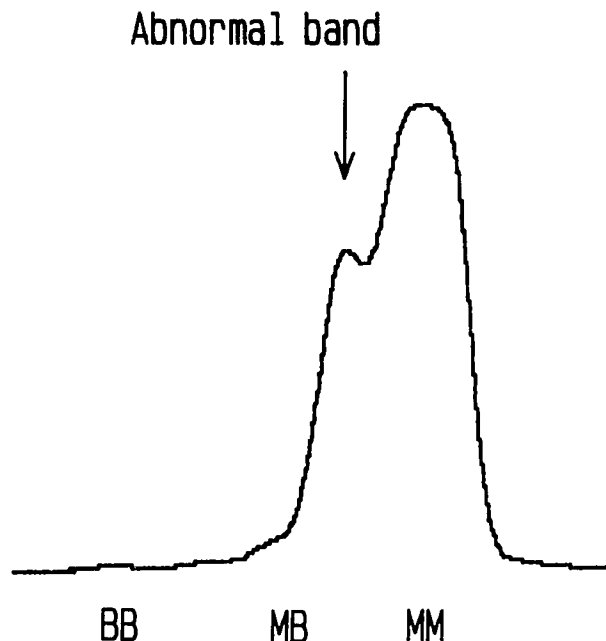


FIG. 1. Isoenzymatic pattern of CK of patient's serum after electrophoresis.

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## Legal View of Informed Consent for Anesthesia during Labor

*To the Editor:*—The authors of a recent study in ANESTHESIOLOGY concluded that the woman in labor is at least as competent to give informed consent for an anesthetic as is someone about to undergo cardiac surgery.<sup>1</sup> Many anesthesiologists, however, feel that consent given during labor is invalidated by stress and pain. Many also feel that the legal view focuses on the patients present recollection and interpretation of her consent. Both concerns, it turns out, are groundless. The courts have been relatively unconcerned with the subjective claims of the patient, and far more favorable to anesthesiologists than many of them would suspect.

In the Lexis database there are three cases that address the issue of adequacy of anesthetic consent given during labor.\*†‡ Each court decided the issue in favor of the defending anesthesiologist. Not one even speculated that a consent obtained during the stress of labor might be inadequate for that reason. Each court cited three common factors that supported its finding of informed consent: the information given to the patients, the lack of objection by the patients, and the cooperation given by the patients during performance of the procedures.

Two points here are important to the anesthesiologist. First, there are three factors, rather than just one, that support a finding of adequate consent during labor. This works in favor of the anesthesiologist, since it is unlikely an anesthetic will be given over the objection of the patient or without her cooperation. Second, of the three common factors only one, the information given to the patient, is open to subjective interpretation. Here, again, the courts have favored the anesthesiologist. They have not looked exclusively at the opinion of the patient, nor

have they sought a specific kind of documentation. Instead, they have looked for evidence that reasonable information was given. For the two courts that discussed this issue explicitly, reasonable information would be a brief description of the anesthetic and its effects, a general acknowledgement of serious risks with an approximate probability of occurrence, and an opportunity for the patient to ask questions.†‡

Acquiring anesthetic consent during labor should not be viewed as an impossible or even an academic task. Consent is recognized by the courts as both appropriate and necessary. However, its components are not particularly demanding. It is found as much in the patient's actions as in what is claimed the physician did or did not say. Only for that part of consent based on the information given by the physician does a court need some tangible indication that reasonable information was given. For this, we can best assist the court toward a favorable conclusion by noting on the chart that reasonable information was given by the physician and considered by the patient.

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\* *Hall v. United States*, 136 F. Supp. 187 (1955).

† *Dunlap v. Marine*, 51 Cal. Rptr. 158 (1966).

‡ *Patterson v. Van Weil*, 570 P.2d 931 (1977).

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## Should Vecuronium Be Used for Rapid Sequence Induction?

*To the Editor:*—Recently, Ginsberg *et al.*<sup>1</sup> provided us with useful information on the dose-response relationships of vecuronium during induction of general anesthesia. However, I believe that the conclusions and experimental protocol deserve comment.

Ginsberg *et al.* concluded: "High doses of vecuronium may, therefore, be a useful alternative to succinylcholine when a rapid onset of neuromuscular blockade is required." The conclusion has significant clinical implications because the time from loss of consciousness (or apnea) until the time required to obtain high-quality intubation conditions could be critical (*e.g.*, patient with a full stomach). Unfortunately,

the design of the study does not permit us to rule out bias introduced by factors that could effect the quality of intubation conditions. For example, prior to tracheal intubation the dosages of diazepam, fentanyl, and thiopental varied greatly among patients: 5-10 mg diazepam, 1-3 ug/kg fentanyl, and 4-7 mg/kg thiopental.

Succinylcholine is the standard for rapid, predictable onset of neuromuscular blockade. Vecuronium could have been directly compared in a randomized, blinded trial with succinylcholine in the context of a rapid sequence induction. Until this comparison is done, caution should be exercised in using the results from this study as a basis for choosing