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Metabolism

PLASMA GLUCOSE AND CORTISOL FOLLOWING EPIDURAL BLOCK

This study was undertaken to determine the differences between blood glucose and cortisol responses to extensive surgery in patients having general anesthesia only and in those having general anesthesia with epidural blockade. For 44 patients undergoing upper abdominal or thoracic operations, anesthesia consisted of a combination of barbiturate–nitrous oxide–narcotic anesthesia and local analgesia or barbiturate–nitrous oxide anesthesia, and epidural analgesia. The patients were randomized. There was no statistically significant difference between the increases of plasma cortisol during and 19 hours after operation. On the other hand, blood glucose increased significantly more with general anesthesia alone than with general anesthesia with epidural blockade. The authors postulate that epidural anesthesia blocks the neural pathways to the adrenal medulla and the liver, thus minimizing glycogenolysis. The release of cortisol is mediated via the vagus nerve, which is not blocked during epidural analgesia of the thoracic and lumbar areas. The afferent impulses carried by the vagus nerve stimulate the pituitary to release ACTH, which in turn stimulates cortisol release from the adrenal cortex. This neurohumoral reflex does not appear to be depressed or inhibited by either light general anesthesia or epidural blockade. The biological significance of a suppressed hyperglycemic response remains to be determined. (*Bromage, P. R.: Influence of Prolonged Epidural Blockade on Blood Sugar and Cortisol Response to Operations upon the Upper Part of the Abdomen and the Thorax, Surg. Gynec. Obstet. 132:1051–56, 1971.*)

ABSTRACTER'S COMMENT: Although the study was well intentioned, its physiologic or biochemical relevance to body economy remains to be established. It is permissible to assume that endocrine responses to thoracic surgery will be identical to those during and following upper abdominal surgery? Are metabolic responses apt to vary according to the general anesthetics used, or the patients' ages, diseases, etc.? It is regrettable that the data were not submitted to statistical evaluation.