

nor considered terminal when the dantrolene was started. We have had extensive experience in the use of dantrolene in MH pigs in doses up to 10 mg/kg, iv, without cardiac arrest, even with deteriorating animals.

Despite species differences, the use of dantrolene sodium in humans has been recommended because of success in treating porcine MH. The pig is thought to be less sensitive to dantrolene than humans, the recommended dose in the pig being 2 to 2.5 times that for humans. We suggest that the cardiovascular effects of dantrolene may be more pronounced than has been thought, and recommend that intravenous dantrolene be administered slowly and not as a 1 mg/kg bolus.

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Permanent Paralysis of C-5 after Cannulation of the Internal Jugular Vein

To the Editor:—In order to administer parenteral nutrition to a 40-year-old patient after bilateral truncular vagotomy and pyloroplasty, the left internal jugular vein was cannulated according to the technique described by Boulanger.¹ The left side was used due to several failed attempts at right venipuncture. Sorenson® equipment was used without any problems; correct catheter tip position was demonstrated by roentgenograms.

In the postoperative period, approximately 24 hours after puncture, a flaccid paralysis of the left arm appeared. The catheter was removed without subsequent improvement. Twenty days later, an electromyographic (EMG) analysis revealed a complete denervation of C-5. Because the brachial plexus apparently was not stretched during surgery, we believe this neurologic damage was caused by the puncture of the internal jugular vein. An additional EMG analysis was not performed because the patient died 10 days later due to diffuse peritonitis and septic shock. An autopsy was not performed.

Transient or permanent neurologic damage related to cannulization of the superior vena cava is unusual. This complication has been attributed to direct needle trauma,² diffusion of local anesthetic,³ hematoma compressing the nerve,⁴ and chemical action of drugs and fluids escaping from the vein when the catheter is only partially inserted.⁵ In our case, we believe the

neurologic damage of C-5 was probably caused by the needle used for puncture. This problem probably can be minimized by performing punctures in awake patients whenever possible, and advising them to report any paresthesia which might be felt during the insertion.

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