sure in the subarachnoid space remained approximately 10 cm H_2O during the epidural injection, then under the circumstances described by Ward *et al.* the gradient would frequently favor exit of local anesthetic solution through the distal orifice into the subarachnoid space even with slower injections. The balance is, however, further complicated by the fact that an increase in epidural pressure may be transmitted to the subarachnoid space.[2]

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REFERENCES

1. Ward CF, Osborne R, Benumof JL, et al: A hazard of double-orifice epidural catheters. ANESTHESIOLOGY 48:362–364, 1978
2. Usubiaga JE, Usubiaga LE, Brea LM, et al: Effect of saline injections on epidural and subarachnoid space pressures and relation to postspinal anesthesia headache. Anesth Analg (Cleve) 46:293–296, 1967
3. Usubiaga JE, Wikinski JA, Usubiaga LE: Epidural pressure and its relation to spread of anesthetic solutions in epidural space. Anesth Analg (Cleve) 46:440–446, 1967

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Vaporizer Overflow a Preventable Hazard

To the Editor:—Sharrock and Gabel[1] described a death caused by halothane overdosage due to a mechanical fault in an anesthesia machine equipped with a side-arm Vernitrol® vaporizer. The authors believe that if the machine had not been effectively scavenged, they might have been able to recognize the problem of liquid halothane delivered from the vaporizer to the patient breathing system. The equipment used suffers from an inherent design deficiency, in that when by coincidence a high flow of gas is passed through the side-arm Vernitrol vaporizer filled to the maximum level, liquid anesthetic may be displaced from the reservoir and into the patient breathing system of the anesthesia machine. This hazard was reported nine years previously from the same city.[2] If the anesthetists had considered gross overdose of anesthetic owing to delivery of liquid volatile anesthetic as a possible cause of the dysrhythmias, then disconnection of the scavenging transfer hose from the scavenged pop-off valve would have verified the cause of the problem. The difficulty is to keep in mind the ever-present possibility of equipment failure as the cause of unexpected happenings. Confirmation of the coincidental faults and subsequent patient condition is possible within the design of a proper scavenging system. The correct diagnosis of the problem was made by visual recognition of the abnormally located rotameter bobbin and the "missing" halothane. There also existed an audible warning, the "gurgling" sound as the halothane was being displaced from the reservoir downstream into the machine. The authors' emphasis on the scavenging system diverts one's attention from the basic cause, a design fault in the vaporizer. It is hoped that the manufacturer of this vaporizer will make known to every individual and institutional owner of such equipment that a retrofit device is available at a reasonable cost to correct the design fault and obviate the hazard.

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REFERENCES

1. Sharrock NE, Gabel RA: Inadvertent anesthetic overdose obscured by scavenging. ANESTHESIOLOGY 49:137–138, 1978
2. Kopriva CJ, Lowenstein E: An anesthetic accident: Cardiovascular collapse from liquid halothane delivery. ANESTHESIOLOGY 30:246–247, 1969

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