

pathology. This case report emphasizes closer observation, including neurologic consultation, of patients with unusual symptoms.

The role of the blood patch is not clear. Although radicular back pain has been reported,² two series of 108 and 116 epidural blood patches did not reveal any neurologic complication.^{3,4}

HONORIO T. BENZON, M.D.
*Department of Anesthesiology
Northwestern University Medical School
Chicago, Illinois 60611*

Anesthesiology
60:259-260, 1984

REFERENCES

1. Mantia AM: Clinical report of the occurrence of an intracerebral hemorrhage following post-lumbar puncture headache. *ANESTHESIOLOGY* 55:684-685, 1981
2. Cornwall RD, Dolan WM: Radicular back pain following lumbar epidural blood patch. *ANESTHESIOLOGY* 43:692-693, 1975
3. DiGiovanni AJ, Galbert MW, Wahle WM: Epidural injection of autologous blood for postlumbar-puncture headache. II. Additional clinical experiences and laboratory investigation. *Anesth Analg* 51:226-232, 1972
4. Crawford JS: Experiences with epidural blood patch. *Anaesthesia* 35:513-515, 1980

(Accepted for publication August 12, 1983.)

Anaphylaxis to Intraperitoneal Dextran

To the Editor:—The use and administration of various substances by our surgical colleagues may on occasion lead to serious complications that the anesthesiologist must both diagnose and treat. The following brief case presentation illustrates this situation and calls attention to a previously unreported problem.

REPORT OF A CASE

A 66-yr-old woman with ascites due to ovarian carcinomatosis was brought to the operating room for the placement of an intraperitoneal catheter with attached subcutaneous reservoir device (Port-a-Cath). This system is used to administer chemotherapeutic agents. She had mild hypertension, which was well controlled with thiazide diuretics. A halothane-N₂O-O₂ endotracheal anesthetic was administered, and monitoring consisted of a cardiograph, stethoscope, blood pressure cuff, temperature probe, and spectrographic analysis of inspired and exhaled gases. Blood pressure remained stable at 120-130/80 mmHg and pulse rate was 100 beats/min. At the conclusion of the operative procedure, 20 ml 32% dextran-70 in 10% dextrose (Hyskon) were injected by the surgeon into the reservoir and catheter system to prevent the formation of adhesions. Shortly thereafter, the patient's blood pressure decreased to 50/30 mmHg and the pulse rate was 30 beats/min, with an idioventricular rhythm and marked depression of the ST segments. The patient was treated initially with ephedrine and then a dopamine infusion for what was thought to be cardiogenic shock secondary to acute myocardial injury. Her blood pressure responded only marginally and she began wheezing and developed a flushed appearance. The diagnosis of anaphylactoid reaction to the dextran was entertained, and intravenous epinephrine was administered in two 200- μ g doses. This resulted in a substantial improvement in perfusion pressure and a diminution in the wheezing. An arterial line was placed as well as a pulmonary artery catheter, and the patient was admitted to the coronary care unit maintained on an epinephrine infusion. Although the differential included myocardial infarction and pulmonary thromboembolism, all studies for these possibilities were negative over the next 36 h. The patient fully recovered and was discharged to home.

The occurrence of anaphylactoid reactions to dextrans has been well documented, and the incidence appears to

be approximately 3/10,000 administrations.¹⁻³ The management of acute anaphylaxis has similarly been well described in the current literature.^{4,5} The purpose of this report is to alert the anesthesiologist to the possibility of this complication with intraperitoneal placement of dextran. The possibility of intravascular injection in our case does remain even though no blood could be aspirated from the system. The package insert accompanying the solution (Hyskon®) does caution that the absorption characteristics from the peritoneal and uterine cavities are unknown and that anaphylaxis is a possibility. This substance is utilized in gynecologic procedures to distend the uterine cavity for hysteroscopy, to prevent tubal adhesions after reconstructive tubal surgery for infertility, and for the purpose indicated in this case. Anesthesiologists must remain aware that such an adverse reaction may occur even with intended intraperitoneal placement and they must be prepared to treat accordingly.

ADDENDUM

Since the preparation of this letter, I have become aware of a very recent case report in the gynecologic literature describing a similar anaphylactoid response to intraperitoneal dextran.⁶ The authors' contribution should be acknowledged as the first such report.

LAURENCE S. REISNER, M.D.
*Departments of Anesthesiology and Reproductive Medicine
University of California, San Diego Medical Center
225 Dickinson Street, H-770
San Diego, California 92103*

REFERENCES

1. Getzen JH, Speigle W: Anaphylactic reaction to dextran. *Arch Intern Med* 112:168-170, 1963

2. Lorenz W, Doenicke A, Messmer K, Reimann HJ, Thermann M, Lahn W, Berr J, Schmal A, Dormann P, Regenfuss P, Hamelmann H: Histamine release in human subjects by modified gelatin (Haemaccel) and dextran: An explanation for anaphylactoid reactions observed under clinical conditions? *Br J Anaesth* 48:151-164, 1976
3. Isbister JP, Fisher MM: Adverse effects of volume expanders. *Anaesth Intensive Care* 8:145-150, 1980
4. Morrow DH, Luther RR: Anaphylaxis: Etiology and guidelines for management. *Anesth Analg* 55:493-499, 1976
5. Stoelting RK: Allergic reactions during anesthesia. *Anesth Analg* 62:341-356, 1983
6. Borten M, Seibert CP, Taymor ML: Recurrent anaphylactic reaction to intraperitoneal dextran 75 used for prevention of postsurgical adhesions. *Obstet Gynecol* 61:755-757, 1983

(Accepted for publication August 17, 1983.)

Anesthesiology
60:260, 1984

Preventing Barotrauma

To the Editor:—Drs. Rendell-Baker and Meyer have made an excellent proposal regarding an alarm-safety mechanism to prevent barotrauma and warn of accidental disconnection from the ventilator.¹ We agree about the need for incorporation of further protective equipment on the gas machine. We endorse completely the concept that any device designed to protect the patient must be activated automatically with the machine if it is to be effective. Frequently this increases complexity and limits versatility. In this light we would like to comment on an alternative approach to circuit pressure safety.

Analysis of cases of barotrauma under anesthesia shows the pressure source that usually causes the damage is not a ventilator but the anesthesia machine. All current machines will deliver pressures capable of rupturing lungs. Ventilators or their connections, where involved, are usually implicated as a source of outflow obstruction not as the source of pressure.

Several authors^{2,3} have pointed out that the inclusion of a fixed pressure relief valve set for some value between 40-60 cm H₂O would effectively prevent barotrauma in current breathing systems. At least two such valves are available currently.^{2,3} Inclusion into the system is easy, requiring nothing more than an appropriate T-connector. They are inexpensive. One of us (BL) is familiar with several English hospitals that use such valves routinely without difficulties.

Limiting the pressure in the system should be adequate to prevent most causes of alveolar rupture. It will not, however, prevent the effects of prolonged pressure application without ventilation. Such a situation would occur if the pop-off valve in a circle were closed and no heed

paid to the ever-increasing size of the reservoir bag. The simple expedient of incorporating an alarm in the relief valve to signal a high pressure should bring rapid correction of this oversight.

The system proposed by Drs. Rendell-Baker and Meyer goes further than the simple relief valve-alarm. It reduces the pressure as well as provides ventilation. We agree that it is more advanced, albeit more complex. It is difficult to imagine such a system as a retrofit item easily attachable to the wide variety of current machines. We feel that, while the proposed design is excellent for the future, a circuit safety valve with alarm represents a more practical solution for present machines. At this time, manufacturers' attention might best be directed toward this simple solution.

GEORGE P. HERR, M.D.
Associate Professor

BERNARD LIBAN, F.F.A.R.C.S.
Visiting Lecturer
Department of Anesthesiology
UCLA School of Medicine
Los Angeles, California 90024

REFERENCES

1. Rendell-Baker L, Meyer JA: Accidental disconnection and pulmonary barotrauma. *ANESTHESIOLOGY* 58:286, 1983
2. Norry MT: A pressure limiting valve for anaesthetic and respiratory. *Can Anaesth Soc J* 19:583, 1972
3. Newton NI, Adams AP: Excessive airway pressure during anaesthesia. *Anaesthesia* 33:689, 1978

(Accepted for publication August 17, 1983.)

Anesthesiology
60:260-261, 1984

Ventilator Malfunction—Another Cause

To the Editor:—Equipment failure in the anesthetic setting is a constant concern for the anesthesiologist. Numerous reports of such failures have appeared in the literature, often with tragic consequences for the pa-

tient.^{1,2} Although causes of ventilator malfunction are diverse, a previously unreported cause is that of a ventilator malfunction in association with a Drager Volumeter.