Anesthesiology
78:1188, 1993

Epidural Hematoma Associated with Epidural Anesthesia: Complications of Anticoagulant Therapy

To the Editor:—We read the article by Osnishchuk and Carlsson, describing a patient who had a major compression of the spinal cord after epidural hematoma.[1]

The perception of back pain involves central and peripheral neural pathways, both of which can be impaired by diabetes.[2,3] In patients with diabetes and an evolving hematoma, back pain may not be an early symptom, and peripheral neurologic change may be the only clinical sign. Therefore, it is important that peripheral neuropathy be documented before epidural placement so that subsequent changes may be noted.

In addition to the recommendation proposed by Onishchuk *et al.*, we suggest that patients with long-standing diabetes should have neurologic assessment before epidural anesthesia.

Gary Vasdev, M.B.B.S.
Fellow, Obstetric Anesthesiology

Craig Leicht, M.D.
Director, Obstetric Anesthesiology
Department of Anesthesiology
Charlton Building, 2S-301
Mayo Clinic
Rochester, Minnesota 55905

References

1. Onishchuk JL, Carlsson C: Epidural hematoma associated with epidural anesthesia: Complications of anticoagulant therapy. ANESTHESIOLOGY 77:1221–1223, 1992
2. Abram SE: Pain mechanisms in lumbar radiculopathy. Anesth Analg 67:1135–1137, 1988
3. Carsten RE, Whalen LR, Ishii DN: Impairment of spinal cord conduction velocity in diabetic rats. Diabetes 38:730–736, 1989

(Accepted for publication March 2, 1993.)

Anesthesiology
78:1188–1189, 1993

A Simple Alternative Precordial Stethoscope

To the Editor:—Commercially available precordial stethoscopes exist in several sizes, designs, and prices. Standard neonatal precordial stethoscopes have limited efficacy in extremely small premature infants, in whom the diameter of the precordial may preclude proper contact on the chest wall and stethoscope weight might inhibit spontaneous ventilation. We found an excellent substitute using relatively inexpensive materials found universally in clinical areas (fig. 1). Using disposable syringe plunger-tips (Monoject Sherwood Medical, St. Louis, MO) of the appropriate diameter, a 14-G intravenous catheter is inserted into the side of the isolated plunger tip and trimmed to fit (fig. 2). This is then connected to standard tubing and an ear piece. The wholesale cost of this apparatus is approximately $0.50, which is much less than the standard precordial stethoscopes, with costs ranging from ($6.50 to $8.50). This precordial stethoscope can be applied to the patients' chest wall using the standard precordial adhesive ring (Double-Stick disks, 3M, St. Paul, MN).

In addition to the diverse sizes and excellent sound quality, this light-weight precordial stethoscope (table 1) has other advantages. Its low cost allows this to be used as a disposable item, when required by infection control considerations. Since this model contains no

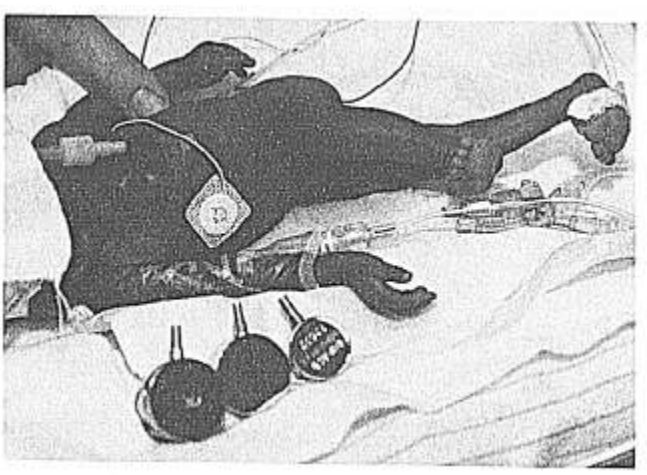

Fig. 1. A 560-g neonate with a 3-ml precordial stethoscope in place, with commercial metallic pediatric and neonate precordial stethoscopes for comparison.

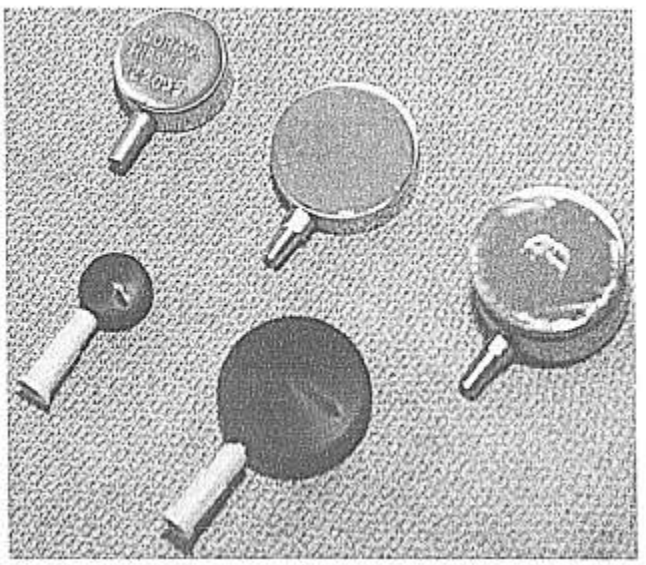

Fig. 2. Common pediatric- and neonate-sized precordial stethoscopes compared to precordial stethoscopes made from 6- and 50-ml syringes.

metal, it can be used in magnetic resonance imaging or computed tomography scans, for which pediatric patients frequently require monitored sedation or general anesthesia.

Edwin Dunteman, M.D., M.S.
Resident, Anesthesiology
Department of Anesthesiology
Washington University School of Medicine
Box 8054
660 South Euclid
St. Louis, Missouri 63110

Gary E. Hirshberg, M.D.
Associate Professor of Anesthesiology
Washington University School of Medicine
St. Louis Children's Hospital
One Children's Place
St. Louis, Missouri 63110

Table 1. Precordial Statistics

	Outer Diameter (mm)	Weight (g)
Monoject syringe size (ml)		
3	9	0.5
6	13	0.7
12	17	1
20	21	1.7
60	26	4
Commercial precordial stethoscopes		
Martin-premie	22	11
Martin-light	25	11
Martin-infant	29	14
Wenger-child	29	79
Wenger-adult	38	184

(Accepted for publication March 2, 1993.)

Anesthesiology
78:1189–1190, 1993

Subanesthetic Isoflurane and the Ventilatory Response to Hypoxemia

To the Editor:—Several years ago, I reported that 0.1 MAC isoflurane selectively impairs the ventilatory response to hypoxemia.[1] Recently, Temp *et al.* observed that 0.1 MAC isoflurane reduces this response when sustained hypoxemia is induced with hypercapnia but not when hypoxemia is induced with normocapnia.[2] They concluded that their "data indicate that 0.1 MAC levels of isoflurane do not affect the response to sustained normocapnic hypoxia."[2] In considering possible reasons for the disparate conclusions of their study and ours, Temp *et al.* overlook certain critical differences between the studies themselves.

Study Conditions. During testing, our subjects relaxed in a darkened and completely quiet room.[1] The subjects of Temp *et al.* were "required to watch a documentary videotape" and may have been aware of the sounds of circuit motors. In addition, while exposed to 0.1 MAC isoflurane, Temp *et al.*'s subjects were touched or spoken to periodically to prevent presumed complicating effects of sedation or changes in level of consciousness.[2] As Severinghaus has pointed out, *all* extraneous stimuli must be avoided when testing the response to hypoxemia because this particular response can be augmented falsely by even subtle stimuli—such as whispering by laboratory personnel.[3] Further, Temp *et al.*'s rationale for imposing such stimuli appears misplaced because anesthetic-induced sedation does not in itself necessarily depress the hypoxemic response[4] and, even if it were to do so, it would be inappropriate to attempt to neutralize this component of its action when characterizing the effect overall.

Size of Control Response. When moderate normocapnic hypoxemia was induced in our subjects in the control condition over a period of 8–10 min, ventilation increased to 18.1 ± 1.0 L/min (mean